



Environmental Consequences

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences of implementing any of the alternatives being considered. It is organized by resource topic and provides a standardized comparison among alternatives based on topics described in chapter 1 and further described in chapter 3. In accordance with the *National Environmental Policy Act of 1969* (NEPA), impacts are described in terms of context, intensity, and duration; cumulative impacts and mitigating measures for adverse impacts are also described. The analysis for each impact topic includes the methods used to assess the type and relative level of impact. In addition to determining the environmental consequences of implementing the preferred and other alternatives, *NPS Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values. The determination of non-impairment for the preferred alternative is found in appendix C.

INTRODUCTION

GENERAL METHODOLOGY FOR ANALYZING IMPACTS

Potential impacts or effects are described in terms of type, context, duration, and intensity, which are generally defined below, while more specific impact thresholds are given for each resource at the beginning of each resource section. A threshold is the point that must be exceeded to begin producing a given effect or result or to elicit a response. For the analysis, context, duration, and intensity have been categorized into negligible, minor, moderate, and major and are defined in more detail in each resource section. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. No impacts to a resource may also be applicable for some alternatives and sites if dogs are prohibited.

Type of Impact—Impacts can be either beneficial or adverse. A beneficial impact would be a positive change in the condition or appearance of the resource. An adverse impact would be a change that would detract from its appearance or condition.

Context—Context describes the area or location (site-specific, local, parkwide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur within the general vicinity of the study area, parkwide impacts would affect a greater portion of the park, and regional impacts would extend beyond park boundaries, which in coastal GGNRA sites extends beyond the tideline.

Duration—Duration describes the length of time an effect would occur, either short term or long term. Long term impacts are described as those persisting for the life of the plan/environmental impact statement (EIS) (the next 20 years). At the beginning of the plan's implementation, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the compliance-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all resources would occur, regardless of the alternative chosen. During this period, impacts would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts would then become long term, as described below for each resource and alternative.

Intensity—Intensity describes the degree, level, or strength of an impact. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic.

Direct and Indirect Impacts—NPS policy requires that direct and indirect impacts including cumulative be considered in the analysis of alternatives, but the impacts do not have to be specifically identified as

either direct or indirect. A direct effect would occur at the same time and place as the action. An indirect effect would be caused by an action but would be later in time or farther removed in distance, but would still be reasonably foreseeable.

COMPLIANCE-BASED MANAGEMENT STRATEGY

As described in chapter 2, compliance-based management strategies has been designed to ensure that compliance with the Code of Federal Regulations (CFR) applicable to dog management is high to ensure protection of park resources, visitors, and staff. If noncompliance occurs at a site, compliance-based management strategies would be implemented to increase compliance with the new dog management regulations. Noncompliance would include dog walking within restricted areas, dog walking under voice and sight control in designated on-leash dog walking areas, and dog walking under voice and sight control outside of established regulated off-leash walking areas (ROLAs). When noncompliance is observed in an area, park staff would focus on enforcing the regulations, educating dog walkers, and establishing buffer zones, time and use restrictions, and special use permit (SUP) restrictions. If noncompliance continues and compliance falls below 75 percent in a management zone (measured as the percentage of total dogs / dog walkers observed during the previous 12 months not in compliance with the regulations), the area's management would be changed to the next more restrictive level of dog management. Impacts from noncompliance could reach short-term adverse, but the compliance-based strategy is designed to return impacts to a level that assumes compliance, as described in the overall impacts analysis, or provide beneficial impacts where dog walking is reduced or eliminated.

CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality (CEQ) regulations that implement the provisions of NEPA require that cumulative impacts be assessed in the decision-making process for federal projects. Cumulative effects are defined by the CEQ regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually negligible (or minor), but collectively significant, actions taking place over a period of time. The cumulative impact analysis includes actions both inside and outside the boundary of the park. Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the park and outside the boundary of the park.

A list of past, present, and reasonably foreseeable future actions, projects, and programs within the park and outside the boundary of the park were compiled for consideration in the cumulative impact analysis. This list is included in appendix K. The list is organized by plans and projects that have been completed, current projects that are underway, long term projects, and future projects. From this list projects and actions were pulled out and discussed as applicable under each resource and site. The Park Stewardships Programs includes programs performed by the Trails Forever Program and other Volunteer Programs.

Increasing Visitation

The temporal scope of this plan/EIS has been defined as twenty years. As previously discussed in chapter 3, visitation to GGNRA is not expected to experience a significant increase in visitation over the next 20 years given the overall visitation trends to the park. Assuming there are no major changes in park boundaries or facilities, park visitation would range between 12.5 million to 16 million people annually, similar to how it has been operating over the previous 20 years. Therefore increased visitation to GGNRA should not result in cumulative impacts to GGNRA resources.

SOILS AND GEOLOGY

GUIDING POLICIES AND REGULATIONS

NPS Management Policies 2006

NPS *Management Policies 2006* requires the NPS “to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources.” “Management action will be taken by superintendents to prevent or at least minimize adverse, potentially irreversible impacts on soil” (NPS 2006b, section 4.8.2.4, 56).

NPS *Management Policies 2006* also requires the NPS to “preserve and protect geologic resources as integral components of park natural systems. As used here, the term “geologic resources” includes both geologic features and geologic processes. The Service will (1) assess the impacts of natural processes and human activities on geologic resources; (2) maintain and restore the integrity of existing geologic resources; [and] (3) integrate geologic resource management into Service operations and planning” (NPS 2006b, section 4.8.1, 53).

STUDY AREA

The geographic study area for soils and geologic resources includes the individual sites of GGNRA under consideration for this plan/EIS that could be impacted by dog management activities including new lands. There are 21 individual sites relevant to this project, which have been described in detail in chapter 3.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long term impacts to soils are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3 month period testing the compliance-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on soils would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on soils would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

This analysis considers the changes in rates of erosion, soil composition, or soil function that would occur as a result of the implementation of the various management activities. Heavy dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. The analysis of soils began with the existing condition of the soil. Natural soil function has been lost in areas that have been converted to urban uses or compacted by use (e.g., parking lots, picnic areas, and trails). Impacts on soil resources as a result of dogs were analyzed qualitatively due to a lack of site-specific scientific data regarding the effects of dogs on soils at GGNRA. Best professional judgment, input from experts in the field and at the park, and other supporting literature (as cited in the text) were used in determining impact categories.

The analysis of geologic resources considered disturbance of geologic features and processes that would occur as a result of the implementation of the various management activities. For example, heavy dog use

can interrupt natural dune processes and accelerate coastal bluff erosion. Impacts on geology were analyzed qualitatively.

IMPACT THRESHOLDS

Soil and geology impacts were determined by examining the potential effects of dog walking activities on soils or soil function, geologic features, or geologic processes as well as distribution, quality, and quantity of soils within a park site. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. A beneficial impact would be a positive change in the condition or appearance of the resource. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. No impacts to soils or geology may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the effects to soils and geology under the various alternatives being considered:

- Beneficial* A beneficial impact is a beneficial change from the current condition and is a relative indicator of progress compared to the no action alternative. In general, a beneficial impact would include increases to the natural soil function or soil/geologic composition, or a decrease in soil erosion.
- Negligible* Impacts would be at such low levels of detection that there would be no discernible effect on soils or soil function, geologic features, or geologic processes at a park site. Impacts would also be negligible at park sites where natural soil function has been lost previously due to development or use (parking lots, roads, compacted trails, picnic areas, lawn areas).
- Adverse* **Minor.** Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function, geologic features, or geologic processes at a park site. Changes would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on soils or geologic processes.
- Moderate.** Impacts would be long term and readily apparent, and cause noticeable changes in soils or soil function, geologic features, or geologic processes at a park site.
- Major.** Impacts to soils or soil function, geologic features, or geologic processes at a park site would be substantial, highly noticeable, and permanent.

POTENTIAL SOIL IMPACTS COMMON TO ALL ALTERNATIVES

Soil Disturbance

In areas with unconsolidated or unvegetated surficial deposits, dog traffic can physically move the soil or geologic material. The sandy coastal bluff faces and sand dunes at Fort Funston are an example of geologic resources that are very susceptible to disturbance. Where loose or mobile soils are present and dogs are not prohibited, the impacts are considered moderate because the disturbance would be readily apparent but not major because other factors also affect the resource such as human traffic, wind, and storm events.”

Soil Compaction and Erosion

Dog traffic can compact the soil, which would kill vegetation and expose the soil to erosion. Also, soil compaction can create subsurface barriers for water, nutrients, and microorganisms that result in changes to vegetation integrity. Soil compaction could be a problem along social trails that are established by dogs or where on-leash dog walking or dog walking under voice and sight control would limit dog traffic to the existing trail or road bed. At most sites, the area affected is relatively small compared to total park area. Soil compaction also is impacted by multiple other sources, including human foot traffic, bicycles, and horses.

Soil Function

Dog waste contains nitrogen and phosphorus, which are nutrients required by plants for growth. However, because dogs are not considered natural species in the park habitats, dog waste would increase the amount of nutrients in the soil above natural levels. An increase in nutrients from dog excrement in concentrated areas could result in some areas becoming overfertilized and lead to changes in species, both soil organisms and vegetation. Also, dog urine would increase the natural salinity of soil. At sites where natural habitat exists and dog waste is not routinely removed by dog owners, impacts would occur. Nutrient addition also occurs from other sources, including other animals natural to the habitat and atmospheric deposition. At sites where natural habitat is no longer present (paved areas, picnic grounds, lawns, and trails/roads), the natural soil function has been lost and compaction has already occurred. Nutrients may move with runoff from the compacted area into the adjacent habitat areas along the trails and any other developed areas adjacent to those habitat areas; however, these nutrients would be diluted with rainwater.

At sites with serpentine soils, adding nutrients would change soil composition and eventually cause detrimental effects on sensitive plant species adapted to serpentine soils.

Dog waste on beaches may add nutrients to the beach soil and digging on beaches may disturb the soil. An increase in salinity in the soil on beaches may kill some dune plant species, including the non-native European beachgrass (*Ammophila arenaria*). Future management alternatives that would prohibit dogs are expected to eliminate dog waste and nutrient additions to the soil. It is assumed that future management alternatives of leash control and/or voice and sight control would reduce dog waste and nutrient addition in comparison to current voice-control restrictions because owners would be in closer contact with their dogs and presumably would be more likely to comply with cleanup regulations. On-leash dog walking is based on an allowed 6-foot dog leash. In general, and assuming compliance, impacts as a result of the action alternatives (B–E) would be limited to the existing trails/roads and the 6-foot corridors of land adjacent to both sides of the trail (“limit of disturbance,” or LOD; LOD = width of trail plus 12 feet). Restricting dogs to trails would concentrate impacts on the already compacted soils of trails/roads, whereas dog walking off leash may cause more dispersed impacts over a wider area.

Dog waste can also add pathogens to the soil; this impact is discussed in the *Human Health and Safety* section.

CUMULATIVE IMPACTS TO SOILS THAT ARE COMMON TO ALL ALTERNATIVES

Past, present, and future project actions in and near GGNRA were considered in combination with each alternative for the cumulative impacts analysis (appendix K). Site-specific and resource-specific projects and actions are discussed in detail under each site and alternative.

Influences on soils and geology in GGNRA could result in alterations to the soil condition in the park, which could influence the vegetation and wildlife communities in the park. Alterations to the soils that result in effects on soil include disturbance, compaction and erosion, and soil function.

Soil disturbance occurs through the physical movement of soil. This can happen by wind, storms, and dog and human traffic. Many different habitats are particularly susceptible to disturbance. Similarly to this, soil compaction and erosion can occur from these same factors. Soil compaction can result in a loss of vegetation, which is unable to grow in compacted soils. Erosion can result in the loss of vegetation communities and sediment loss. Dog waste can change the composition of soils, and can also introduce bacteria and parasites into soil. These can impact the wildlife and vegetation communities, as well as health and safety of park visitors.

Potentially adverse impacts could occur through development both within and adjacent to the park boundaries, including the various transportation plans and trail plans. These efforts would involve ground disturbance that could add to or exacerbate existing erosion problems and the spread of invasive species along road and trail corridors. However, efforts to identify mitigations would reduce the potential for impacts. Current transportation and development planning efforts both within the park and beyond park boundaries would affect soils, but mitigations for these projects would reduce the potential for impacts. Lastly, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996.

Current and reasonably foreseeable future actions positively affecting soils in the park are activities that restore and enhance habitat, and reduce erosion problems. These projects include habitat protections and closures, education and outreach, wetland restoration, as well as removal of non-native plants and reestablishment of native plant communities. These efforts have direct benefits to soils. Completed, current, and future projects that will have a beneficial impact on soils and geology within the GGNRA sites are listed below and discussed under each alternative as applicable:

- Park Stewardship Programs that have worked with GGNRA since 2003 on trail rehabilitation and non-native plant removal programs that have resulted in reduced erosion and increased soil quality and also focus on restoration and enhancement efforts.
- Many projects under the Marin Countywide Plan are providing benefits to soil quality.
- The GGNRA Maintenance Division, which is responsible for many projects that include road, trail, and stormwater system maintenance.
- The Wildland/Urban Interface Initiative funds projects that benefit restoration and enhancement of natural areas.
- The restoration of native vegetation as a part of the Lower Easkoot Creek Restoration Plan.
- The proposed Bolinas Lagoon Ecosystem Restoration Project would restore natural sediment transport and ecological function and control invasive species.
- The Lower Redwood Creek Floodplain and Salminoid Habitat Restoration restored channel function, which reduced flooding and reconnected the creek to its floodplain. The project also increased riparian vegetation.
- Trail segments are being realigned and degraded areas are being restored as part of the *Dias Ridge Restoration and Trail Improvement Project*.

- The Muir Beach Wetland and Creek Restoration Project is restoring and enhancing ecological processes and contributing to the quality of soils, as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions.
- The removal of hazardous waste in 1997 and creation of tidal marsh and dune habitats at Crissy Field resulted in beneficial restoration and remediation of the area.
- 73,000 tons of landfill debris was unearthed and conveyed to the top of the cliffs at Baker Beach in 2007 as part of restoration and remediation efforts.
- The Lobos Creek Valley Dune Restoration restored coastal scrub, and improved the population of the listed native plant San Francisco lessingia.
- Dune habitat restoration and stabilization at Sutro Heights Park included native vegetation planting.
- The Ocean Beach-Great Highway Erosion Control Project is working on long-term solutions for beach and bluff erosion over Highway 1 that will also enhance natural processes.
- The Vista Grande Drainage Basin Alternatives Analysis is providing alternatives that will reduce flooding and erosion while providing habitat enhancement and lake level augmentation.
- The Mori Point Restoration and Trail Plan is working to reduce threats to native plants and natural processes to preserve and restore habitat, as well as improving wetland and upland connectivity, and creating a sustainable trail system.
- The Pedro Point Headland Stewardship Project is minimizing erosion through habitat restoration and trail development.

Conclusion. Overall, these past, current, and future projects, whether short-term or long-term, would have a beneficial impact on soils, soil quality, and geology. Dog management alternatives that prohibit dogs or restricts dog walking to on-leash or within a designated ROLA, together with the benefits derived to soils by the various restoration and enhancement projects listed above would provide a cumulative benefit to soils in GGNRA. Sites and proposed actions within alternatives that may have a different cumulative impact to soils are discussed below.

COMPLIANCE-BASED MANAGEMENT STRATEGY

In order to ensure protection of soils from dog walking activities, the dog walking regulations defined in action alternatives B, C, D, and E would be regularly enforced by park law enforcement, and compliance monitored by park staff. A compliance-based management strategy would be implemented to address noncompliance and would apply to all action alternatives. Noncompliance would include dog walking within restricted areas, dog walking under voice and sight control in designated on-leash dog walking areas, and dog walking under voice and sight control outside of established ROLAs. If noncompliance occurs, impacts to soil and geology have the potential to increase and become short-term minor to major adverse. Impacts to soil would include compaction of soils in undisturbed areas, which would prevent the growth of vegetation and create soil erosion. Noncompliant dog walking would also impact soil through nutrient addition. Nutrient addition would alter the natural chemistry of the soils and could change the natural function of the soil. To prevent these impacts from increasing or occurring outside of the designated dog walking areas the NPS would regularly monitor all sites. When noncompliance is observed in an area, park staff would focus on enforcing the regulations, educating dog walkers, and establishing buffer zones, time and use restrictions, and SUP restrictions. If noncompliance continues and compliance falls below 75 percent (measured as the percentage of total dogs / dog walkers observed during the previous 12 months not in compliance with the regulations) the area's management would be

changed to the next more restrictive level of dog management. In this case, ROLAs would be changed to on-leash dog walking areas and on-leash dog walking areas would be changed to no dog walking areas. Impacts from noncompliance could reach short-term minor to major adverse, but the compliance-based management strategy is designed to return impacts to a level that assumes compliance, as described in the overall impacts analysis, or provide beneficial impacts where dog walking is reduced or eliminated.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. Under the no-action alternative at Stinson Beach, dog owners are restricted to having dogs on leash in the parking lot and picnic areas. Dogs are currently not allowed on the beach because it is a swimming beach. Currently, compliance with the leash regulations in the parking lot and picnic areas is good; however, there is low compliance with the no dog walking restriction on the beach (table 9). Impacts on soils from dogs include soil compaction, which would prevent the growth of vegetation; erosion from vegetation disturbance; and the addition of nutrients into the soil, which would change soil chemistry and impact vegetation and microorganisms. Since soils in the picnic areas and parking lot have been previously compacted and disturbed, the soils no longer have a natural function. Therefore, impacts associated with the no-action alternative in these areas would be negligible. Soils outside the picnic areas and parking lot, including the beach, contain soils that have not been previously disturbed and still have natural function that supports the growth of vegetation. Since compliance in these areas is low, impacts on soils would continue to be long term, minor, and adverse, because impacts would be detectable but would not be large enough to cause changes in soils or natural soil function. Therefore, alternative A would result in negligible impacts to long-term minor adverse impacts on soils at Stinson Beach.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1), which would benefit the soils of the Stinson Beach area. The Gulf of the Farallones National Marine Sanctuary (GFNMS) has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the United States Army Corps of Engineers (USACE) (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this

spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible to long-term, minor, adverse impacts on soils from dogs at Stinson Beach under alternative A were considered together with the effects of the projects mentioned above. Since the nearby projects would be beneficial to soils, the impacts from alternative A would be reduced slightly resulting in negligible impacts on soils at or in the vicinity of Stinson Beach when added to these projects. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts in the parking lot and picnic areas	Soils no longer have natural function	Negligible cumulative impacts No indirect impacts on soils in adjacent lands	N/A
Negligible impacts to long-term minor adverse impacts in areas outside the parking lot and picnic areas	Naturally occurring soils would be subjected to compaction, nutrient addition, and erosion in areas where dogs are not allowed		

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would have the same dog walking restrictions as alternative A: on-leash dog walking would be allowed in the parking lot and picnic areas. Dogs are currently restricted from the swimming beach. Since soils in the picnic areas and parking lot have been previously compacted and disturbed, the soils no longer have natural function. Therefore, impacts from dogs in these areas would be negligible. Since dogs would be restricted from the beach, soil composition and function would not be altered.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

Overall and assuming compliance, alternative B would produce negligible impacts to soils at Stinson Beach because the beach is not within areas where dogs are allowed. Soils in the areas where dogs are permitted have been previously altered and no longer have natural function.

Cumulative Impacts. The negligible impacts on soils from dogs at Stinson Beach under alternative B were considered together with the effects of the projects mentioned above in alternative A. Since the nearby projects would result in beneficial impacts on soils and there would be negligible impacts on soils from this alternative, a negligible cumulative impact on soils would be expected.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative B, since there would be no change in dog management conditions at the site.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Overall negligible impacts, assuming compliance	Soils in allowed areas no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on soils would be the same: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking at Stinson Beach is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on soils.

Overall impacts on soils as a result of the dog walking under alternative C would be negligible. Soils in these areas have been previously altered and no longer have a natural function.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on soils in adjacent lands.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Overall negligible impacts, assuming compliance	Soils in allowed areas no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since no dog walking would be allowed under alternative D, no impacts on soils from commercial dog walking would occur.

Cumulative Impacts. Because there would be no impacts on soils from alternative D and other past, present, or foreseeable future actions have contributed to beneficial impacts on soil resources, there would be beneficial cumulative impacts on this resource as a result.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, since this alternative does not allow dogs; however, indirect impacts on soils in adjacent lands from increased dog use are expected to range from negligible to long term, minor, and adverse, since Stinson Beach is considered a moderate to high use site for dog walking.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Overall, no impact assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	No cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on soils would be the same: negligible.

Under alternative E all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. At some sites, any dog walker can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity at Stinson Beach is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on soils.

Overall impacts on soils as a result of the dog walking regulations under alternative E would be negligible. Soils in the allowed areas have been previously altered and no longer have natural functions.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on soils in adjacent lands.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Overall negligible impacts, assuming compliance	Soils in allowed areas no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Stinson Beach. On-leash dog walking would be allowed in the parking lot and picnic areas. Dogs are currently restricted from the swimming beach. Since soils in the picnic areas and parking lot have been previously compacted and disturbed, the soils no longer have a natural function. Therefore, impacts from dogs in these areas would be negligible. Since dogs would be restricted from the beach, soil composition and function would not be altered.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking at Stinson Beach is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on soils.

Overall impacts on soils as a result of dog walking under the preferred alternative would be negligible. Soils in the allowed areas have been previously altered and no longer have a natural function.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1), which would benefit the soils of the Stinson Beach area. The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Stinson Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dogs at Stinson Beach under the preferred alternative were considered together with the effects of the projects mentioned above. Since these projects would result in beneficial impacts on soils and there would be negligible impacts on soils from this alternative, a negligible cumulative impact on soils would be expected. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since there would be no change in dog management conditions at the site.

STINSON BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Overall negligible impacts, assuming compliance	Soils in allowed areas no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change

Homestead Valley

Alternative A: No Action. Alternative A would allow dogs under voice control or on leash throughout the site. Even though this site has low visitor use and low numbers of citations and incident reports related to dog activities (see table 9), soil compaction and nutrient addition and possible erosion from dogs is assumed to be currently happening along the fire road/trails and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trails. Since dogs would continue to be allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on soils in previously undisturbed areas located along the fire road/trails. Impacts on soils in these adjacent areas would include soil compaction, which would prevent the growth of vegetation; erosion from vegetation disturbance; and the addition of nutrients to the soil, which would change soil chemistry and impact vegetation and microorganisms. These impacts on soil are considered long term, minor, and adverse, because impacts would be detectable along the fire road/trails, but would not be large enough to cause changes in soils or natural soil function.

Under alternative A, no permit system exists for dog walking. At Homestead Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Homestead Valley. In Homestead Valley, the park is planning trail improvements to convert some of the existing social trails into legitimate park trails, and beneficial impacts on soils, such as reduced erosion, would be expected. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Homestead Valley.

The long-term minor adverse impacts on soils from dog activities at this site under alternative A were considered together with the effects of the projects mentioned above. Since the projects listed above would be beneficial to soils this would reduce the adverse effects of alternative A resulting in a negligible impacts on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 26). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location permit off-leash access). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off trail since dogs would be under voice control	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in a LOD area for soils that would extend 6 feet out from both edges of the fire road or trails. In general, impacts on soils would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Soils along the existing fire road/trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing fire road/trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire road (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation; impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Homestead Valley, the long-term, minor, adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Homestead Valley would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Since the projects listed previously would be beneficial to soils, there would be beneficial impacts on soils at this site when added to the negligible impacts from alternative B.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative B, since dog walking under voice control would no longer be allowed at this site. Impacts on soils in adjacent lands from potential increased dog use would be negligible, since this is a low use site for dog walking activities.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trails	Soil no longer has natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impact assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire road and LOD area are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and the overall impact on soils would be the same: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Homestead Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible impacts on soils in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire road and LOD area are small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Homestead Fire Road; dogs would be prohibited in other areas of the site. The LOD area would include the fire road and the 6 feet of land adjacent to both sides of the road, as described in alternative B. Soils along the existing fire road have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms, and the impacts to these fire roads would be negligible. Impacts from dogs on soils adjacent to the fire road in the LOD area would be long term, minor, and adverse, since these soils still have natural function that supports the growth of existing vegetation and these soils have not been previously disturbed. If on-leash dogs enter the adjacent areas along the fire road, impacts on soils could occur, including soil compaction, erosion, and nutrient addition from dog waste and urine. Even though alternative D would allow dog access in a smaller area of the site, the difference from alternative B is not considered large enough to cause a reduction in the intensity of the impact relative to the area of the site. As a result, alternative D would have the same overall impacts on soils: negligible.

No commercial dog walking would be allowed under alternative D; therefore no impacts to soils would occur from commercial dog walking.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Since the projects listed previously would be beneficial to soils, there would be beneficial impacts on soils at this site when added to the negligible impacts from alternative D.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative D, since dog walking under voice control would no longer be allowed at this site. Impacts on

soils in adjacent lands from potential increased dog use would be negligible, since this is a low use site for dog walking activities.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impact, assuming compliance	Physical restraint of dogs would protect soil function off trail; fire road and LOD area are small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. At some sites, any dog walker can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Homestead Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and in adjacent lands would be the same those under alternative B: Beneficial cumulative impacts and negligible impacts on soils in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire road and LOD area are small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Homestead Valley. The preferred alternative would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the fire road or trails. In general, impacts on soils would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Soils along the existing fire road/trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing fire road/trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire road (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation; impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Homestead Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Homestead Valley, the minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Homestead Valley would be negligible.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at

GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Homestead Valley. In Homestead Valley, the park is planning trail improvements to convert some of the existing social trails into legitimate park trails, and beneficial impacts on soils, such as reduced erosion, would be expected. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Homestead Valley.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. Since the projects listed previously would be beneficial to soils, there would be beneficial impacts on soils at this site when added to the negligible impacts from the preferred alternative.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 26). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location permit off-leash access). The adjacent lands may experience some increased visitation under the preferred alternative, since dog walking under voice control would no longer be allowed at this site. Impacts on soils in adjacent lands from potential increased dog use would be negligible, since this is a low use site for dog walking activities.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impact, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire road and LOD area are a small portion of the entire site		

Alta Trail, Orchard Fire Road, and Pacheco Fire Road

Alternative A: No Action. Alternative A would allow dogs under voice control or on leash on the trails and fire roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 9), with typically 5 to 12 dogs under voice control per commercial walker. Soil

compaction, nutrient addition, and possible erosion from dogs would continue to occur, since dogs would be allowed under voice control and there would be a higher likelihood of dogs going off the trails and fire roads than if they were on leash. Dogs would disturb the soil in the natural areas located along the trails and fire roads. Impacts in these areas would include soil compaction, which would prevent the growth of vegetation; erosion from vegetation disturbance; and the addition of nutrients into the soil, which could impact vegetation and microorganisms. These impacts are considered long term, moderate, and adverse due to the high use by commercial dog walkers. Impacts would be large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term moderate adverse impacts on soils. Dogs under voice control would continue to disturb the soils in the natural areas located along the trails/fire roads through soil compaction, erosion, and nutrient addition.

Cumulative Impacts. Projects and actions in and near Alta Trail, and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Alta Trail and Orchard and Pacheco fire roads.

The long-term moderate adverse impacts on soils from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the projects mentioned above. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Alta Trail and Orchard and Pacheco fire roads. Overall, the actions identified above would result in beneficial impacts on soils at or in the vicinity of Alta Trail and Orchard and Pacheco fire roads. These beneficial effects should reduce some of the adverse impacts to soils resulting from implementation of this alternative resulting in a negligible to long-term, minor, and adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park that allows off-leash dog use is Remington Dog Park in Sausalito, (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off trail since a high number of dogs would be under voice control	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road, and on Pacheco Fire Road. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include Alta Trail, Orchard Fire Road, Pacheco Fire Road, and all areas adjacent to both sides of the trail/roads (up to 6 feet on each side of the trail). In general, impacts on soils would be limited to the existing trail and fire roads and the 6-foot corridors along the trail/roads. Soils along the existing trail and fire roads have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trail and fire roads, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. Even though this site receives high use from dog walkers, impacts would remain negligible since soils no longer have natural function and impacts would be at such low levels of detection. Impacts in areas adjacent to the trail/fire roads (6-foot corridors, or LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would be moderate due to the high use of the area by dog walkers and the creation of noticeable changes in the quality and chemistry of the soil.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since the percentage of commercial dog walkers is considered high at Alta trail, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts to soils from dogs at the site. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

In this site, the moderate adverse impacts from the high use of dogs in the LOD area would occur in a relatively reduced area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Overall, the actions identified above would result in beneficial impacts on soils at or in the vicinity of Alta Trail and Orchard and Pacheco fire roads. These beneficial effects should reduce some of the adverse impacts from this alternative on soils resulting in a negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. Visitation by individual and commercial dog walkers may increase at adjacent lands, since dog walking under voice control would no

longer be allowed at this site. Impacts would range from negligible to long term, minor, and adverse, since Alta Trail and the fire roads are considered high use areas for commercial dog walkers.

ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impact on fire roads and trail	Soils no longer have natural function	Negligible cumulative Impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in 6-foot corridors adjacent to trail/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire roads; nutrient addition and erosion would also occur; area receives high use		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire roads and LOD area are a small portion of the entire site; area receives high use		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and overall impact would be the same: long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed for Alta trail. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta trail, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers, therefore impacts from commercial dog walking would be long-term, minor, and adverse.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils at adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts to long-term minor adverse impacts on soils in adjacent lands.

ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trail	Soils no longer have natural function	Negligible cumulative Impacts Negligible to long-term, minor, adverse impacts on adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in 6-foot corridors adjacent to trail/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire roads; nutrient addition and erosion would also occur; area receives high use		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire roads and LOD area are small portion of the entire site; area receives high use		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs at this site would occur, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since no dog walking would be allowed under alternative D, no impacts on soils from commercial dog walking would occur.

Overall, no impact on soils from dogs would result from the new dog regulations under alternative D, assuming compliance.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to soils. No impacts along with the benefits of the projects listed above under alternative A would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D, since this alternative would not allow dogs; therefore, indirect impacts on soils in adjacent lands from increased dog use are expected to be long term, minor, and adverse. Currently, impacts on soils from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road are long term, moderate and adverse, but since it is not known where these dog walkers will go it is reasonable to conclude that their impacts on soils in adjacent lands would be at least long term, minor, and adverse.

ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Long-term minor adverse impacts on adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and overall impacts would be the same: long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed for Alta trail. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta trail, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers, therefore impacts from commercial dog walking would be long-term, minor, and adverse.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts to long-term minor adverse impacts on soils in adjacent lands.

ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trail	Soils no longer have natural function	Negligible cumulative Impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in 6-foot corridors adjacent to trail/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire roads; nutrient addition and erosion would also occur; area receives high use		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire roads and LOD area are small portion of the entire site; area receives high use		

Preferred Alternative. Alternative C was selected as the preferred alternative for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The preferred alternative would allow on-leash dog walking on the

Alta Trail to Orchard Fire Road, and Pacheco Fire Road. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include Alta Trail, Orchard Fire Road, Pacheco Fire Road, and all areas adjacent to both sides of the trail/roads (up to 6 feet on either side of the trail). In general, impacts on soils would be limited to the existing trail and fire roads and the 6-foot corridors along the trail/roads. Soils along the existing trail and fire roads have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trail and fire roads, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. Even though this site receives high use from dog walkers, impacts would remain negligible since soils no longer have natural function and impacts would be at such low levels of detection. Impacts in areas adjacent to the trail/fire roads (6-foot corridors, or LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of the existing vegetation. Impacts would be moderate due to the high use of the area by dog walkers and the creation of noticeable changes in the quality and chemistry of the soil.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed for Alta trail. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta trail, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor, and adverse.

The long-term, moderate adverse impacts at this site from the high use of dogs in the LOD area would occur in a relatively reduced area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The long-term minor adverse impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. Overall, the actions identified above would result in beneficial impacts on soils at or in the vicinity of Alta Trail and Orchard and Pacheco fire roads. These beneficial effects should reduce some of the adverse impacts from the preferred alternative on soils resulting in a negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest

park that allows off-leash dog use is Remington Dog Park in Sausalito (map 26). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area. Visitation by individual and commercial dog walkers may increase in adjacent lands, since dog walking under voice control would no longer be allowed at this site. Impacts would range from negligible to long term, minor, and adverse, since Alta Trail and the fire roads are considered high use areas for commercial dog walkers.

**ALTA TRAIL, ORCHARD FIRE ROAD, AND PACHECO FIRE ROAD PREFERRED ALTERNATIVE
CONCLUSION TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trail	Soils no longer have natural function	Negligible cumulative Impacts Negligible to long-term, minor, adverse impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in 6-foot corridors adjacent to trail/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire roads; nutrient addition and erosion would also occur; area receives high use		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire roads and LOD area are small portion of the entire site; area receives high use		

Oakwood Valley

Alternative A: No Action. Alternative A would allow dogs under voice control or on leash on the Oakwood Valley Fire Road and Oakwood Valley Trail from junction with Fire Road to junction with Alta Trail, and on leash walking on the Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and equestrian riders and low to moderate use by dog walkers (table 9). In addition, this area has sensitive habitat. As a result of activities under alternative A, soil compaction, nutrient addition, and soil erosion would continue to occur along the fire road and trail and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trail. Since dogs would be allowed under voice control in some areas of the site, there would be a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on soils in adjacent, previously undisturbed areas. Therefore, these impacts would be considered long term, moderate, and adverse, because impacts would be noticeable and would cause changes to the soils or soil function.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term, parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Oakwood Valley. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Oakwood Valley.

The long-term moderate adverse impacts on soils from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. Overall, the actions identified above would result in beneficial impacts on soils at or in the vicinity of Oakwood Valley. These beneficial effects should reduce some of the adverse impacts from alternative A on soils resulting in long-term, minor adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off trail since dogs would be under voice control	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B, on-leash dog walking would be allowed and would be limited to the Oakwood Valley Fire Road and trail loop in the lower section of the site. No dog walking would be allowed above the junction of the fire road and trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trail/fire road. Soils along the existing fire road/trail have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the fire road/trail would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/fire road would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In the Oakwood Valley site, the long-term, minor, adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Oakwood Valley would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts from alternative B would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice control dog walking is not allowed under alternative B. However, indirect impacts on soils in adjacent lands from increased dog use would be negligible, since most of the area (road/trail) offered for dog walking would not change.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire road and LOD area are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. For alternative C, a ROLA is proposed for walking under voice control or on leash on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. The ROLA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat, which would also benefit soils at the site. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the fire road to a new gate at Alta Avenue. Impacts on soils on the fire road or trail would be negligible whether dogs are under voice and sight control or on leash. Soils on the trail/fire road have been

previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. The LOD area for dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would include the land between the edge of the fire road and fencing in place to protect sensitive habitat. These soils also hold natural function and support the growth of vegetation and microorganisms found in soil. Impacts on soils in this area would be long term, moderate, and adverse. Dogs in the ROLA would be confined in a smaller area, potentially increasing the impacts on the adjacent natural habitat and soils. Soil erosion can occur from dogs digging in the soil. In addition, there is a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Soil compaction, soil erosion, and the addition of nutrients would occur to the extent that impacts would cause noticeable changes in soils or soil function. Impacts on soils in the LOD area along the Oakwood Valley Trail would be long term, minor, and adverse. Impacts would result from soil compaction, erosion, and nutrient addition in areas where soils have not been previously disturbed and still support vegetation. Impacts would be detectable but not large enough to cause changes in soils or natural soil function. Dogs walked on leash would be under more control compared to the dogs under voice and sight control in the ROLA.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In the Oakwood Valley site, the long-term, minor to moderate, adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Oakwood Valley would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts from alternative C on soils resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A should not experience increased visitation under alternative C, since voice and sight control dog walking would be allowed under this alternative. No indirect impacts on soils in adjacent lands would occur.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts:	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in corridors between the fire road and fencing (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil		
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area) on the Oakwood Valley Trail	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Trails, LOD areas, and ROLAs are a small portion of the entire site; however, moderate impacts on soil in the ROLAs would cause changes to the natural function of the soil		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed along the Oakwood Valley Fire Road from Tennessee Valley Road to the junction with the Oakwood Valley Trail. The LOD area would include the fire road and the 6 feet of land adjacent to both sides of the road. Soils along the existing road have been previously disturbed and compacted, resulting in a loss of natural soil function. The soils no longer support the growth of vegetation or microorganisms. Impacts on soils on the fire road would be negligible, as impacts would be at such low levels of detection that there would be no discernible effect on soils or soil function. Impacts on soils in the 6-foot corridors (LOD area) would be long term, minor, and adverse. If on-leash dogs enter these adjacent areas, impacts would include soil compaction, soil erosion, and nutrient addition. Soils would be impacted, since these soils still have natural function that supports the growth of existing vegetation and these soils have not been previously disturbed. Even though alternative D would allow dog access in a smaller portion of the site, the difference in dog use between alternatives D and B is not considered large enough to cause a reduction in the intensity of the impact relative to the area of the site. As a result, alternative D would have the same impacts on soils: negligible.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

Overall, negligible impacts on soils would occur as a result of alternative D, because soil compaction and nutrient additions would be limited to a small area (LOD area) when compared to the site as a whole.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts from alternative D would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking would not be allowed under alternative D, and the Oakwood Valley Fire Road would be the only area offered for dog walking. However, indirect impacts on soils in adjacent lands from increased dog use would be negligible, since dog walking would still be offered under alternative D.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road	Soils no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; fire road and LOD area are a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow dog walking in the same areas as alternative C, which includes a ROLA along Oakwood Valley Fire Road to the junction with Oakwood Valley Trail for walking under voice control or on leash. The ROLA would have double gates at both ends (to separate this use from other visitors to the site), but unlike alternative C would have non-continuous fencing only where needed to protect sensitive habitat. On-leash dog walking would be allowed on the Oakwood Valley Trail from the junction with the fire road to the new gate on Alta Avenue. Dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fencing (LOD area). Soils in these areas still hold natural function and support the growth of vegetation and microorganisms commonly found in soil. Impacts on soils in this area would be long term, moderate, and adverse. Impacts on soils in the LOD area and within the Oakwood Valley Trail would be long term, minor, and adverse. Impacts would result from soil compaction, erosion, and nutrient addition in areas where soils have not been previously disturbed and still support vegetation. Dog walked on leash would be under more control compared to the dogs under voice and sight control in the ROLA.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is

likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In the Oakwood Valley site, the minor to moderate adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Oakwood Valley would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts on soils in adjacent lands.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in corridor between the fire road and fencing (LOD area)	Impacts on soils in sensitive habitat areas from compaction, erosion, and nutrient addition would change the natural function of the soil		
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area) on the Oakwood Valley Trail	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Trail/fire road, LOD area, and ROLA are a small portion of the entire site; however, moderate impacts on soil in the ROLA would cause changes to the natural function of the soil		

Preferred Alternative. Alternative C was selected as the preferred alternative for Oakwood Valley. For alternative C, a ROLA is proposed on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. The ROLA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the fire road to a new gate at Alta Trail. Impacts on soil on the fire road or trail would be negligible whether dogs are under voice and sight control or on leash. Soils on the trail/fire road have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function.

Dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would have access to the land between the edge of the fire road and fencing protecting sensitive habitat (LOD area). These soils also hold natural function and support the growth of vegetation and microorganisms found in soil. Impacts on soils in this area would be long term, moderate, and adverse. Dogs in the ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and soils. Soil erosion can occur from dogs digging in the soil. In addition, there is a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Soil compaction, soil erosion, and the addition of nutrients would occur to the extent that impacts would cause noticeable changes in soils or soil function. Impacts on soils in the LOD area along the Oakwood Valley Trail would be long term, minor, and adverse. Impacts would result from soil compaction, erosion, and nutrient addition in areas where soils have not been previously disturbed and still support vegetation. Impacts would be detectable but not large enough to cause changes in soils or natural soil function. Dogs on leash would be under more control compared to the dogs under voice and sight control in the ROLA.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In the Oakwood Valley site, the long-term, minor to moderate adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Oakwood Valley would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Oakwood Valley.

The long-term minor adverse impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from the preferred alternative resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands should not experience increased visitation under the preferred alternative, since voice and sight control dog walking would be allowed under this alternative. No indirect impacts on soils in adjacent lands would occur.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in corridor between the fire road and fencing (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil		
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area) on the Oakwood Valley Trail	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Trail/fire road, LOD area, and ROLA are a small portion of the entire site; however, moderate impacts on soil in the ROLA would cause changes to the natural function of the soil		

Muir Beach

Alternative A: No Action. Under alternative A, the boardwalk/path to beach, and the beach at Muir Beach would be open to dogs under voice control. The lagoon and creek are currently closed to dogs. The community of Muir Beach is directly adjacent to the beach, and staff members have observed that some local residents' dogs run freely on the beach and in nearby areas. Although this site has high visitor use and low numbers of citations and incident reports related to dog activities, some violations have been documented at the site (table 9). Since dogs would be allowed under voice control, there would be a higher likelihood of dogs running, running at higher speeds, and digging in soil. Impacts would occur from dogs disturbing the dunes, soil compaction on social trails and along the banks of Redwood Creek, and nutrient addition to soil from dog waste. At this site, the dunes (including a dune restoration area) are located adjacent to the beach and are not adequately protected. Ineffective post-and-cable fencing at Muir Beach discourages visitors from entering the dune restoration area but does not stop off-leash dogs, and lack of fencing at other dune areas does not physically exclude dogs. As a result, alternative A would continue to have long-term moderate adverse impacts on soils because the natural function of the dunes is being disturbed by impacts from dog activities at the site, which can interrupt the natural dune building and accelerate the natural sand migration processes (NPS 2010b). Beach sand provides habitat, and nutrient enrichment and changes in soil density could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Also, Muir Beach is a small beach when compared to other beaches in the park and the beach is surrounded by especially sensitive habitat that is dependent on the integrity of the soils.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1), which benefits the soils of the Muir Beach area. The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1), which would also contribute to soil quality at Muir Beach. Additional soil benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of soils, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1). Park Stewardship Programs at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010d, 1). The Pirates Cove project disturbed a large area of soil and resulted in a short-term adverse impact, but these impacts were offset by the long-term, beneficial impacts on soils and geologic resources (NPS 2010b).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on soils from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, and nutrient addition would occur on trails and pathway Disturbance to dunes and nutrient addition would occur on beach	Long-term, minor, and adverse cumulative impacts No impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B requires on-leash dog walking on the Pacific Way Trail, the boardwalk/path to beach, and the beach itself. The lagoon and creek are currently closed to dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the Pacific Way Trail and the path to the beach would be negligible, since soils along the trail and path have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the trail/path (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function. Under alternative B, on-leash dog walking would not allow dogs to roam freely along the beach. The dunes located adjacent to Muir Beach would be protected through physical restraint of dogs. Impacts on soils on the beach would be considered long term, minor, and adverse, due to the high use of the site. Even though dogs would be on leash, there would still be potential for dogs to dig in the sand and for nutrient addition to occur from dog waste. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

When including the long-term minor adverse impacts on the LOD area and the beach and the negligible impacts from commercial dog walking, the overall impact on soils under alternative B would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative B resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Mt. Tamalpais State Park, the closest dog use area, since dogs under voice control would no longer be allowed at the Muir Beach site. Voice control dog walking would no longer be allowed at Muir Beach under this alternative; however, dogs would still be allowed on the site on leash. Therefore, indirect impacts on soils in adjacent lands from increased dog use are expected to occur, but only at a negligible level.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Pacific Way Trail and path to beach	Soils no longer have natural function	Negligible cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/path (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/path; nutrient addition and erosion would also occur		
Long-term minor adverse impacts on beach	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail and would protect dunes		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: long term, minor, and adverse, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible indirect impacts on soils in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Pacific Way Trail and path to beach	Soils no longer have natural function	Negligible cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/path (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/path; nutrient addition and erosion would also occur		
Long-term minor adverse impacts on beach	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail and would protect dunes		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on the Pacific Way Trail, not on the beach or paths to the beach. The lagoon and creek are currently closed to dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the Pacific Way Trail would be negligible, since soils along the trail have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the trail (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the previously undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on soils.

Overall, negligible impacts on soils would occur as a result of alternative D, because soil compaction and nutrient addition would be limited to a small area when compared to the size of the entire site.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impact on soils from alternative D would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mt. Tamalpais State Park, because it is the closest dog use area. Since dog walking would not be allowed on Muir Beach, indirect impacts on soils in adjacent lands from increased dog use would be negligible to long term, minor, and adverse.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Pacific Way Trail	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall negligible adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail area is a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. At Muir Beach, the Pacific Way Trail, the boardwalk/path to the beach would be open for on-leash dog walking. The lagoon and creek are currently closed to dogs. The portion of the beach south of the access path would be a designated ROLA and would be open for dogs under voice and sight control. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the Pacific Way Trail and the path to the beach would be negligible, since soils along the trail and path have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the trail/path (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the previously undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function. The ROLA designated as part of this alternative is located immediately adjacent to the fenced dune restoration area. Impacts on soils in the ROLA would be long term, moderate, and adverse. Dogs off leash would run faster throughout the area, disturbing the dunes and the soil. In addition, there would be potential for more dogs digging in the sand and more nutrient addition from dog waste. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Since dog use is typically high at this site, nutrient addition would be more concentrated into a smaller area, which would change the natural function of the soil. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit

to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Muir Beach, the long-term minor adverse impacts on the LOD area would occur in a relatively small area when compared to the site as a whole. The long-term moderate adverse impacts on soils in the ROLA would occur on approximately 25 percent of the beach itself. Therefore, the overall impact on soils under alternative E would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative E, since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Pacific Way Trail and path to beach	Soils no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/path (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/path; nutrient addition and erosion would also occur		
Long-term moderate adverse impacts in ROLA	Naturally functioning soils would be disturbed by digging and nutrient addition in a concentrated area		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail and would protect dunes		

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. On-leash dog walking would only be allowed on the Pacific Way Trail, not on the beach or paths to the beach. The lagoon and creek are currently closed to dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the Pacific Way Trail would be negligible, since soils along the trail have been

previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the trail (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the previously undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

Overall, negligible impacts on soils would occur as a result of the preferred alternative, because soil compaction and nutrient addition would be limited to a small area when compared to the size of the entire site.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1), which benefits the soils of the Muir Beach area. The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1), which would also benefit soils at Muir Beach. Additional soil benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of soils, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1). Park Stewardship Programs at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010d, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts to soils from the preferred alternative would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). The adjacent lands may experience increased visitation under the preferred alternative, particularly Mt. Tamalpais State Park, because it is the closest dog use area. Since dog walking would not be allowed on Muir Beach, indirect impacts on soils in adjacent lands from increased dog use would be negligible to long term, minor, and adverse.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Pacific Way Trail	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on 6-foot corridors adjacent to trail (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall negligible adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail area is a small portion of the entire site		

Rodeo Beach/South Rodeo Beach

Alternative A: NoAction. Alternative A would allow on-leash dog walking or dog walking under voice control in all beach areas (Rodeo Beach and South Rodeo Beach). This site has moderate to high use by beachgoers and low to moderate use by dog walkers (table 9). Rodeo Beach is surrounded by cliffs, a lagoon, a road, and low undulating landforms that support foredune vegetation. The lagoon is currently closed to dogs and people. Under this alternative, off-leash dogs would continue to disturb the beach soils by running along the beach and digging in the soil. They would also add nutrients to the soils from their waste. Beach sand provides habitat for wildlife and changes in soil density and changes from nutrient enrichment could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Running along the foredunes areas could disturb the dunes and impact the vegetation that grows in these sensitive habitats. Impacts on soils would be long term, moderate, and adverse, due to the moderate to high use of the site by visitors with on-leash or under voice control dogs. The natural function of the dunes is being disturbed by impacts from dog activities at the site; dogs disturbing dune areas can interrupt the natural dune building

and accelerate the natural sand migration processes (NPS 2010b). Impacts would be readily apparent and would cause noticeable changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Rodeo Beach. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of Rodeo Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on beach soils from this spill lasted only a few weeks on most of the beaches within GGNRA; however, the impacts lasted longer (8 to 9 months) at Rodeo Beach. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA including Rodeo Beach should be reduced to a negligible level.

The long-term moderate adverse impacts on soils from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil disruption, digging, and nutrient addition would occur in areas along the beaches and in foredunes from dogs under voice control	Long-term, minor, adverse cumulative impact No indirect impacts on soils in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on Rodeo Beach, the wooden bridge over the lagoon, portions of the access trails to the beach and lagoon, and South Rodeo Beach. The lagoon is currently closed to people and dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils directly on the access trails would be negligible, since soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs on the access trails would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the access trails (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function. Under alternative B, on-leash dog walking would not allow dogs to roam freely along the beach. The foredunes located on the beach would be protected through physical restraint of dogs; however, some individuals may still walk their dogs through this sensitive area. Impacts on soils on the beach would be considered long term and adverse, due to the moderate to high use of the site by visitor and dogs, but minor, since dogs would be required to be on leash, which would have less of an impact than dogs under voice and sight control. Even though dogs would be on leash, there would still be potential for dogs to dig in the sand and for nutrient addition to occur from dog waste. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

When including the impacts in the LOD area and on the beach, the overall impact on soils at this site would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term, minor, adverse impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative B resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and this park is the closest dog use area that allows dogs off leash. Indirect impacts on soils in adjacent lands from potential increased dog use could be negligible to long term, minor, and adverse.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the access trails	Soils no longer have natural function	Negligible cumulative impacts Negligible impacts to long-term minor adverse indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on 6-foot corridors adjacent to the access trails (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to access trails; nutrient addition and erosion would also occur		
Long-term minor adverse impacts on beaches	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would help to protect soil function on beach		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would provide a ROLA on most of Rodeo Beach between the ocean and the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon. The lagoon is currently closed to people and dogs. The ROLA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon to the ridge on the beach just north of South Rodeo Beach. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs is not feasible in this area because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. On-leash dog walking would be allowed on the two trails that provide access to the beach. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the access trails would be negligible, since soils along the access trails have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function.

Soils located in the 6-foot areas adjacent to both sides of the access trails (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the previously undisturbed soils. Nutrient addition from dog waste would also occur. These impacts would not change the natural characteristics of

the soils or natural soil function. Designation of a ROLA, with its associated guidelines, at Rodeo Beach would create long-term minor to moderate adverse impacts on soils. Dogs would be able to run throughout the site, making abrupt stops, which would disturb/displace the naturally occurring soils. Nutrient addition and digging/playing in the sand would also occur, creating impacts. Beach sand provides habitat, and nutrient enrichment and changes in soil density could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Dogs would run and play throughout the foredune areas, which provide habitat for sensitive species. Impacts would be long term, would be readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

When factoring in the impacts in the LOD area and ROLA, the overall impact on soils at this site would be long term, minor to moderate, and adverse, assuming compliance.

Cumulative Impacts. The long-term, minor to moderate impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative C resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative C, since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation is expected.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on Coastal Trail and Lagoon Trail	Soils no longer have natural function	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts on soils in adjacent lands	Beneficial to no change assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails; nutrient addition and erosion would also occur		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term moderate adverse impacts in the ROLA	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function; soils would be disturbed in the beach ROLA.		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach in areas north of the footbridge, and on the footbridge to the beach. The lagoon is currently closed to people and dogs. Soils located in the 6-foot areas adjacent to both sides of the access trails (LOD area), would receive long-term minor adverse impacts from dogs compacting and eroding the undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function. On-leash dog walking would be allowed north of the footbridge to Rodeo Beach. Under alternative D, dogs would not be allowed off leash. The foredunes located on the beach would be protected through the physical restraint of dogs. Impacts on soils on the beach would be considered long term, minor, and adverse, due to the moderate use of the site by dog walkers. Even though dogs would be on leash and only allowed on half of the beach, there would still be potential for dogs to dig in the sand and for nutrient addition to occur from dog waste. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function. No dog walking would be allowed in South Rodeo Beach; therefore, there would be no impact on soils in this area.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on soils.

When including the impacts on the LOD area and the beach, the overall impact on soils at this site would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative D resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation under alternative D, particularly Remington Dog Park, since dogs under voice and sight control would not be allowed under alternative D and this park is the closest dog use area that allows dogs off leash. Indirect impacts on soils in adjacent lands from potential increased dog use would occur, but only at a negligible level.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in 6-foot corridors adjacent to access trails (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to paths; nutrient addition and erosion would also occur	Negligible cumulative impacts Negligible indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on beach north of the footbridge	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function; and dogs are only allowed on half of the beach area.		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would include a ROLA on Rodeo Beach that would extend from the crest of the beach west to the ocean shoreline. On-leash dog walking would be allowed on the remainder of the beach, on South Rodeo Beach, and on paths leading to the beach. The lagoon is currently closed to people and dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the access trails to the beach would be negligible, since soils along the access trails have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the access trails to the beach (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the undisturbed soils. Nutrient addition from dog waste would also occur; however, impacts would not change the natural characteristics of the soils or natural soil function. Designation of a ROLA, with its associated guidelines, at Rodeo Beach would create long-term moderate adverse impacts on soils. Dogs would be able to run throughout the ROLA, making abrupt stops, which would disturb/displace the naturally occurring soils. Nutrient addition and digging in the sand would also occur. Beach sand provides wildlife habitat, and nutrient enrichment and changes in soil density could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Dogs could run through the foredune areas, which provide habitat for sensitive species. Impacts in the ROLA would be long term and readily apparent, and would cause noticeable changes in soils or soil function. Impacts associated with on-leash dog walking on the beach would be long term, minor, and adverse. Some people may continue to walk their dogs through the foredunes area, nutrient addition would occur, and dogs may dig in the sand. Since dogs would be restricted to walking on leash, impacts would be less when compared to the ROLA.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would

not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

When including the impacts in the LOD area and ROLA, the overall impact on soils at this site would be long term, minor to moderate, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor to moderate adverse impacts on soils from dogs under this alternative were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative E, since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation would be expected.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in 6-foot corridors adjacent to access trails (LOD area) and in on-leash area of beach	Naturally functioning soils would be compacted from dogs walking adjacent to access trails; nutrient addition and erosion would also occur	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts on soils in adjacent lands	Beneficial to no change assuming compliance
Long-term moderate adverse impacts in the ROLA	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soils function but soils would be disturbed in the ROLA.		

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach. The preferred alternative provides a ROLA on most of Rodeo Beach between the ocean and the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon. The ROLA includes portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon to the ridge on the beach just north of South Rodeo Beach. The lagoon is currently closed to people and dogs. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs is not feasible in this area because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. On-leash dog walking would be allowed on the two access trails that provide access to the beach. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts on soils on the access trails would be negligible, since soils along the access trails have been previously disturbed and compacted, resulting in a loss of natural soil function. These soils no longer support the growth of vegetation or microorganisms commonly found

in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Soils located in the 6-foot areas adjacent to both sides of the access trails (LOD area) would receive long-term minor adverse impacts from dogs compacting and eroding the undisturbed soils. Nutrient addition from dog waste would also occur. These impacts would not change the natural characteristics of the soils or natural soil function. Designation of a ROLA, with its associated guidelines, at Rodeo Beach would create long-term minor to moderate adverse impacts on soils. Dogs would be able to run throughout the site, making abrupt stops, which would disturb/displace the naturally occurring soils. Nutrient addition and digging/playing in the sand would also occur, creating impacts. Beach sand provides habitat, and nutrient enrichment and changes in soil density could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Dogs would run and play throughout the foredune areas, which provide habitat for sensitive species. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

When factoring in the impacts in the LOD area and ROLA, the overall impact on soils at this site would be long term, minor to moderate, and adverse, assuming compliance.

Cumulative Impacts. Projects and actions in and near Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Rodeo Beach. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of Rodeo Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on beach soils from this spill lasted only a few weeks on most of the beaches within GGNRA; however, the impacts lasted longer (8 to 9 months) at Rodeo Beach. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA including Rodeo Beach should be reduced to a negligible level.

The long-term, minor to moderate impacts on soils from dogs under this alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail

rehabilitation and restoration projects should reduce some of the adverse impacts on soils from the preferred alternative resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation would be expected.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on the Access trails	Soils no longer have natural function	Negligible to long-term, minor cumulative impacts No indirect impacts on soils in adjacent lands	Beneficial to no change
Long-term minor adverse impacts in 6-foot corridors adjacent to access trails (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails; nutrient addition and erosion would also occur		
Long-term moderate adverse impacts in the ROLA	Naturally functioning soils would be disturbed by digging and nutrient addition		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soils in a small portion of the site; disturbance to soil function on the beach could affect habitat quality within the ROLA.		

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith – Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88 and includes portions of the Lagoon Trail), the Coastal, Wolf, and Miwok Loop, and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers, and there were 47 leash law violations issued in 2007/2008 (table 9). Soil compaction, nutrient addition, and erosion are currently happening along the trails and fire road and in off-trail areas throughout the site due to unleashed dogs. Nutrient addition from dog waste may also be occurring beyond the fire road/trails and off-trail areas as a result of erosion. Due to their nature, dogs are not expected to stay on the fire road/trails. Since dogs would be allowed under voice control in portions of

the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on soils in adjacent, previously undisturbed areas. Impacts would include soil compaction, which would prevent the growth of vegetation; erosion from vegetation disturbance; and the addition of nutrients to soil, which would change soil chemistry and impact vegetation and microorganisms. Therefore, impacts on soils as a result of alternative A would continue to be long term, minor, and adverse, because impacts would be detectable but not large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact the Marin Headlands Trails. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of the Marin Headlands Trails. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of this site.

The long-term minor adverse impacts on soils from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A, resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off trail since dogs would be under voice control	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would prohibit dogs on the trails at Marin Headlands Trails. Not allowing dog walking on the Marin Headlands Trails would eliminate soil

compaction by dogs and nutrient addition from dog waste. Therefore, alternative B would result in no impacts on soils at the site.

Since dogs would not be allowed on the trails at Marin Headlands Trails, there would be no impact from commercial dog walkers to soils.

Cumulative Impacts. Under alternative B, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs under voice control at the Marin Headlands trails. Indirect impacts on soils in adjacent lands from increased dog use would be negligible to long term, minor, and adverse, since dog walking use at this site is currently considered low to moderate.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow for dog access only on the perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trails/fire roads. Soils along the existing trails/fire roads have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the trails/fire roads would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Lower Rodeo Valley Trail Corridor is entirely adjacent to natural habitat, and some runoff of elevated nutrients in the soil may affect soils adjacent to the trails. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated

at Marin Headlands Trails, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In the Marin Headlands Trails site, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts on soils from alternative C would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice control at Marin Headlands Trails. Indirect impacts on soils in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire roads; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire roads and LOD area are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D would have the same restrictions as alternative B (dogs would be prohibited on the trails); therefore, no impacts on soils would occur as a result of alternative D.

Since dogs would not be allowed on the trails at Marin Headlands Trails, there would be no impact from commercial dog walkers to soils.

Cumulative Impacts. Under alternative D, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and negligible impacts to long-term minor adverse impacts on soils in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route. This alternative would allow for dog access only on the perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trails/fire roads. Soils along the existing trails/fire roads have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the trails/fire roads would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil.

Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Lower Rodeo Valley Trail Corridor is entirely adjacent to natural habitat, and some runoff of elevated nutrients in the soil may affect soils adjacent to the trails. Impacts would be detectable but not large enough to cause changes in soils or natural soil function. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause an increase in the intensity of the impact relative to the area of the site. Therefore, the impact of alternative E is the same as that of alternative C: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Marin Headlands Trails, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In the Marin Headlands Trails site, the minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Although more trails/fire roads would be available to dogs in comparison to alternative C, the overall impact on soils from on-leash dog walking in alternative E would be the same: negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice control at Marin Headlands Trails. Indirect impacts on soils in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire roads; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire roads and LOD area are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow for dog access only on the perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trails/fire roads. Soils along the existing trails/fire roads have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the trails/fire roads would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Lower Rodeo Valley Trail Corridor is entirely adjacent to natural habitat, and some runoff of elevated nutrients in the soil may affect soils adjacent to the trails. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Marin Headlands Trails, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In the Marin Headlands Trails site, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact the Marin Headlands Trails. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of the Marin Headlands Trails. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of this site.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest parks are Remington Dog Park in Sausalito (map 26). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase is a result of the preferred alternative not allowing dogs under voice control at Marin Headlands Trails. Indirect impacts on soils in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire roads and trails	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in 6-foot corridors adjacent to trails/fire roads (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trails/fire roads; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trails/fire roads and LOD area are a small portion of the entire site		

Fort Baker

Alternative A: No Action. Alternative A would require dogs to be on leash throughout Fort Baker, except that dogs would not be allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use. There were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Grounds, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum. Long-term minor adverse impacts on soils currently occur at Fort Baker. Dogs on leash would have access to areas adjacent to the trails/fire roads where natural soils still occur. Impacts on these soils would include soil compaction, soil erosion, and nutrient addition that would prevent the growth of new vegetation. Since compliance is an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads. The Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Runoff of nutrients from trails/fire roads into the adjacent habitat may result in some changes in soil nutrient levels.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Fort Baker.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on soils from dog activities at this site under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse effects from alternative A resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off the trails/fire roads since dogs would be under voice control	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including the Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trail/fire road. Soils along the existing fire road/trail have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the fire road/trail would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/fire road would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Runoff of nutrients from trail/fire road into the adjacent habitat may result in some changes in soil nutrient levels.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Fort Baker, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Fort Baker would be negligible.

Cumulative Impacts. The negligible impacts on soils from dog activities at this site under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire road and LOD area are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road, the Bay Trail including the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trail/fire road. Soils along the existing fire road/trail have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the fire road/trail would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/fire road would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Runoff of nutrients from trail/fire road into the adjacent habitat may result in some changes in soil nutrient levels.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In Fort Baker, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Fort Baker would be negligible.

Cumulative Impacts. The negligible impacts on soils from dog activities at this site under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative c, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire road and LOD area are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the lodge and conference grounds and on the Bay Trail (excluding the Battery Yates Loop). On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trail. Soils along the existing trail have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the trail would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that

there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/grounds would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Even though alternative D would allow less dog access at the site, the difference in dog impacts between alternatives D and B is not considered large enough to cause a reduction in the intensity of the impact because of the developed nature of the site and the previous loss of natural soil function.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on soils.

In Fort Baker, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Fort Baker would be negligible.

Cumulative Impacts. The negligible impacts on soils from dog activities at this site under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Negligible indirect impacts on soils in adjacent lands may occur under alternative D, since on-leash dog walking would not be allowed in the parade grounds. Visitors with dogs may choose to go to another park site that has a large area for walking dogs.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on trail	Soils no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail and LOD area are a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative C: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on trail/fire road	Soils no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire road and LOD area are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail including the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in both directions from the edges of the trail/fire road. Soils along the existing fire road/trail have been previously disturbed and compacted, resulting in a loss of natural soil function; therefore, impacts on soils along the fire road/trail would be negligible. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/fire road would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, nutrient addition, and soil erosion. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. The Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Runoff of nutrients from the trail/fire road into the adjacent habitat may result in some changes in soil nutrient levels.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Fort Baker, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Fort Baker would be negligible.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), can also beneficially affect soils at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Fort Baker.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dog activities at this site under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on fire road and trail	Soils no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts in 6-foot corridors adjacent to trail/fire road (LOD area)	Naturally functioning soils would be compacted from dogs walking adjacent to trail/fire road; nutrient addition and erosion would also occur		
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; trail/fire road and LOD area are a small portion of the entire site		

SAN FRANCISCO COUNTY SITES

Upper and Lower Fort Mason

Alternative A: No Action. Dogs would be required to be on leash at Fort Mason under alternative A, although many visitors walk their dogs under voice control. There is low to moderate dog walking use, including commercial dog walking, at this site and there were 15 leash law violations, 2 dog bites, and 5 pet rescues at this site in 2007/2008 (table 9). Soil compaction, nutrient addition, and erosion from dogs are assumed to be currently happening in lawn areas and areas adjacent to the sidewalks and paved trails. Even though these areas are landscaped, the soils still have natural function and support the growth of vegetation. Soil compaction would prevent the growth of vegetation and the addition of nutrients to the soil would change the soil chemistry and impact vegetation and microorganisms living in the soil. These impacts would be considered long term, moderate, and adverse. Since some dogs are currently off leash, dogs may run faster through the site and make abrupt stops, which would disturb soils and tear out vegetation in lawn areas and along sidewalks and paved trails. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Fort Mason does sometimes occur. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on soils. Commercial dog walkers with multiple dogs under voice control would impact the naturally functioning soils through soil compaction, soil erosion, and nutrient addition.

Cumulative Impacts. Projects and actions in and near Fort Mason were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Mason. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Mason. The improvement of the San Francisco Bay Trail at Laguna Street and Marina Boulevard at Fort Mason is part of Park Stewardship Programs, and includes efforts to enhance visitor safety and experience, improve pedestrian and bicyclist traffic flow, and revegetate the

landscape, which would reduce erosion (GGNPC 2010a, 1-2). Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Fort Mason. For example, the proposed extension of the Municipal Railway's Historic Streetcar Service would continue the F-line three blocks west to San Francisco Maritime National Historic Park (NHP) and then on through the Fort Mason tunnel to Fort Mason Center at GGNRA, for a total additional distance of about 0.85 mile (NPS 2010b, 1).

The long-term moderate adverse impacts on soils from dogs at Fort Mason under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Upper Fort Mason and 20 parks within about a 5-mile radius; the closest parks are Lafayette Park and Alta Plaza Park (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

UPPER AND LOWER FORT MASON ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, and nutrient addition would occur in lawn areas and areas off sidewalks and paved trails	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/a = not applicable.

Alternative B: NPS Leash Regulations. On-leash dog walking would be allowed at Fort Mason under alternative B. Dogs would be restricted to being on leash, but dogs and dog owners would have access to the lawn and landscaped areas adjacent to the paved trails and sidewalks. Some dog walkers may also walk dogs throughout the lawn areas in the Great Meadow and Laguna Green. Even though these areas are landscaped, the soils still have natural function and support the growth of vegetation. Impacts in the lawn areas and areas off paved trails and sidewalks would be long term, minor, and adverse. Impacts would include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

When factoring in the long-term minor adverse impacts on soils in the lawns and landscaped areas along the paved trails and sidewalks, including impacts from commercial dog walkers, and given that the site receives low to moderate use by dog walkers, the overall impact on soils at Fort Mason would be negligible to long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Fort Mason under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative B resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative B, since on-leash dog walking would still be allowed throughout the site; therefore, no impacts on soils in adjacent lands are expected.

UPPER AND LOWER FORT MASON ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts	Soils would be compacted from dogs walking on the lawn and landscaped areas; nutrient addition and erosion would also occur.	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Conclusion: Overall negligible to long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function of land adjacent to paved trails, but on leash areas are a large portion of the site and dogs are not limited to trails/roads		

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, on-leash dog walking and two ROLAs would be established: one in the Inner Great Meadow and the other in the Laguna Green. On-leash dog walking would be allowed on the lawn below the Laguna Street path and on all sidewalks, paved trails, and housing areas. On-leash dog walking would be allowed on the lawn below the Laguna Street path and on all sidewalks and paved trails. Impacts in these areas would be long term, minor, and adverse. Impacts would occur from soil compaction, soil erosion, and the addition of nutrients from pet waste and urine. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. The lawns and landscaped areas adjacent to the trails/sidewalks contain naturally functioning soils that support the growth of vegetation. Impacts on soils from dog walking in the ROLAs would be long term, moderate, and adverse. The ROLAs would be located in lawn areas. Since dogs would be allowed to run freely throughout the ROLAs, impacts are expected to be greater when compared to areas where dogs are allowed only on leash. Dogs off leash have the opportunity to run faster and make abrupt stops, which can disturb soils and tear out vegetation. Impacts would include soil compaction, soil erosion, and nutrient addition. Impacts would be greater, since dog activity would be concentrated into a smaller area. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed for Fort Mason. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Mason, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor, adverse impacts.

In Fort Mason, the long-term moderate adverse impacts on soils would only occur in a portion of the site (approximately one-third of the site). In addition, when including the impacts from commercial dog walkers and the low to moderate use by dog walkers at the site, the overall impact on soils at Fort Mason would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Fort Mason under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative C resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative C, since on-leash dog walking and two ROLAs would be offered under alternative C; therefore, no impacts on soils in adjacent lands are expected.

UPPER AND LOWER FORT MASON ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in areas along the paved trails and sidewalks	Soils would be compacted from dogs walking on the landscaped areas; nutrient addition and erosion would also occur	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in the ROLAs	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; soils disturbance would occur in ROLAs and land adjacent to paved trails and sidewalks; ROLAs are only a portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, a ROLA would be established on the Laguna Green and dog walking on leash would be allowed on the Great Meadow, the lawn below the Laguna Street path, and on all sidewalks, paved trails, and housing areas. Impacts in all areas on leash (Great Meadow, lawn, and land adjacent to the paved trails and sidewalks) would be long term, minor, and adverse. Impacts in these areas would occur from soil compaction, soil erosion, and the addition of nutrients from pet waste and urine. Soils in these areas still support natural vegetation and microorganisms. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Impacts on soils from dog walking in the ROLA would be long term, moderate, and adverse. The ROLA would be located in lawn areas of Laguna Green. Since dogs would be allowed to run freely throughout the ROLA, impacts are expected to be greater when compared to leashed areas. Dogs off leash have the opportunity to run faster and make abrupt stops, which can disturb soils and tear out vegetation. Impacts would include soil compaction, soil erosion, and nutrient addition. Impacts would be greater because dog activity would be concentrated into a smaller area. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In the Fort Mason site, the long-term moderate adverse impacts on soils would occur in a relatively small area when compared to the site as a whole. Also, Fort Mason receives low to moderate use by dog walkers and there would be no impacts from commercial dog walkers. Therefore, the overall impact on soils at Fort Mason would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Fort Mason under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative D resulting in negligible adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative D, since on-leash dog walking and a ROLA would be offered under alternative D; therefore, no impacts on soils in adjacent lands are expected.

UPPER AND LOWER FORT MASON ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on Great Meadow, lawn, and land adjacent to the paved trails and sidewalks	Soils would be compacted from dogs walking on the lawn and landscaped areas; nutrient addition and erosion would also occur	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in the ROLA	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; soils disturbance in ROLA and land adjacent to paved trails and sidewalks would occur; ROLAs are a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would establish the largest ROLAs at Fort Mason. ROLAs would be located in the Great Meadow and Laguna Green. On-leash dog walking would be available on the lawn below the Laguna Street path and on all sidewalks and paved trails. Impacts in all areas on leash (lawn and land adjacent to the paved trails and sidewalks) would be long term, minor, and adverse. Impacts in these areas would occur from soil compaction, soil erosion, and the addition of nutrients from pet waste and urine. Soils in these areas still support natural vegetation and microorganisms. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Impacts on soils from dog walking in the ROLAs would be long term, moderate, and adverse. The ROLAs would be located in lawn areas of the Great Meadow and Laguna Green. Since dogs would be allowed to run freely throughout the ROLAs, impacts

are expected to be greater when compared to leashed areas. Dogs off leash have the opportunity to run faster and make abrupt stops, which can disturb soils and tear out vegetation. Impacts would include soil compaction, soil erosion, and nutrient addition. Impacts would be greater because dog activity would be concentrated into a smaller area. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed for Fort Mason. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Mason, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor, adverse impacts.

In Fort Mason, the long-term moderate adverse impacts on soils would occur in only a portion of the site. In addition, Fort Mason receives low to moderate use by dog walkers, and commercial dog walkers would have a long-term minor adverse impact on soils. Therefore, the overall impact on soils at Fort Mason would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Fort Mason under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative E, since on-leash dog walking and ROLAs would be offered under alternative E; therefore, no indirect impacts on soils in adjacent lands are expected.

UPPER AND LOWER FORT MASON ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on land adjacent to the paved trails and sidewalks	Soils would be compacted from dogs walking on the lawn and landscaped areas; nutrient addition and erosion would also occur	Negligible cumulative impacts No indirect impacts to soils in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts in the ROLAs	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function off trail; soils disturbance in ROLA and land adjacent to paved trails and sidewalks would occur; ROLAs are only a portion of the entire site		

Preferred Alternative. Alternative B was selected as the preferred alternative for Upper Fort Mason. On-leash dog walking would be allowed at Fort Mason. Dogs would be restricted to being on leash, but dogs and dog owners would have access to the lawn and landscaped areas adjacent to the paved trails and sidewalks. Some dog walkers may also walk dogs throughout the lawn areas in the Great Meadow and Laguna Green. Even though these areas are landscaped, the soils still have natural function and support the growth of vegetation. Impacts in the lawn areas and areas off paved trails and sidewalks would be long term, minor, and adverse. Impacts would include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. Permits would be allowed for Fort Mason. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Mason, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be negligible to long-term, minor, adverse impacts.

When factoring in the long-term minor adverse impacts on soils in the lawns and landscaped areas along the paved trails and sidewalks, including impacts from commercial dog walkers, and given that the site receives low to moderate use by dog walkers, the overall impact on soils at Fort Mason would be negligible to long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Mason were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Mason. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Mason. The improvement of the San Francisco Bay Trail at Laguna Street and Marina Boulevard at Fort Mason is part of Park Stewardship Programs and includes efforts to enhance visitor safety and experience, improve pedestrian and bicyclist traffic flow, and revegetate the landscape, which would reduce erosion (GGNPC 2010a, 1-2). Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Fort Mason. For example, the proposed extension of the Municipal Railway's Historic Streetcar Service would continue the F-line three blocks west to San Francisco Maritime NHP and then on through the Fort Mason tunnel to Fort Mason Center at GGNRA, for a total additional distance of about 0.85 mile (NPS 2010b, 1).

The long-term minor adverse impacts on soils from dogs at Fort Mason under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from the preferred alternative resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Upper Fort Mason and 20 parks within about a 5-mile radius; the closest parks are Lafayette Park and Alta Plaza Park (map 27). The adjacent lands are not expected to experience increased visitation under alternative B, since on-leash dog walking would still be allowed throughout the site; therefore, no impacts on soils in adjacent lands are expected.

UPPER AND LOWER FORT MASON PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts	Soils would be compacted from dogs walking on the lawn and landscaped areas; nutrient addition and erosion would also occur	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Conclusion: Overall negligible to long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function of land adjacent to paved trails and sidewalks but area is large portion of the entire site and on-leash is not limited to roads/trails.		

Crissy Field

Common to All Alternatives. The two different definitions of the Crissy Field Wildlife Protection Area (WPA) (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) would result in similar impacts from dogs at Crissy Field for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Dogs are currently allowed under voice control throughout Crissy Field except for a seasonal leash restriction in the WPA. Crissy marsh is currently closed to dogs. This site has documented moderate to high visitor use, including dog walkers, and there are high numbers of citations (over 500 in 2007/2008) related to dog activities (table 9); commercial dog walking is popular at this site. There is currently considerable access to dune habitat at Crissy Field (NPS 2009b). Unfenced sparsely vegetated foredunes are located in the WPA and fenced restored dunes are located throughout Crissy Field; however, dogs often access these fenced areas because shifting sand makes the fences less effective in keeping dogs off the dunes. NPS recently installed new fencing, gates, and signs at the eastern boundary of the WPA at Crissy to better mark where dog walking restrictions start. Gates and signs were also installed at trail entry points to the WPA. Impacts occur from dogs digging in the sand, disturbing dunes, as well as nutrient addition to soil from dog waste; dune restoration areas at Crissy Field continue

to be at risk. Dogs walking or running through dune areas interrupt the natural dune building and accelerate the natural sand migration processes (NPS 2010b); disturbance of the dunes/foredunes destabilizes these areas, making it difficult for plants to establish. Digging and nutrient addition by dogs change the nature of the sand soil environment, making it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Dogs can also disturb the soils in Crissy marsh and the marsh inlet. Impacts on soils in these locations include soil compaction, soil erosion, and nutrient addition. Because of the high use of the site and dogs being off leash, impacts on soils would be readily apparent and would cause noticeable changes in soils or soil function. As a result, impacts would be long term, moderate, and adverse.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on soils. Commercial dog walkers with multiple dogs under voice control would impact the naturally functioning soils through soil compaction, soil erosion, and nutrient addition.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1-2).

Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Crissy Field. For example, due to the initiation of the Doyle Drive project, Crissy Field Center moved to a newly constructed facility at East Beach in late 2009 (GGNPC 2010b, 1). Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on soils from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the

Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative A, since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, and nutrient addition would occur at Crissy marsh and marsh inlet Dogs digging would disturb dunes; nutrient addition on beach would also occur	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking in all unfenced areas, including the promenade, air field, east and central beaches, paths to central beach, trails and grassy area near East Beach, and trail on Mason Street. Dogs would be prohibited in the WPA, and Crissy marsh is currently closed to dogs. Having dogs on leash throughout the site would restrict dogs from going into the fenced dunes habitat. Dogs would still disturb the soils through digging and nutrient addition. Digging and nutrient addition by dogs change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Impacts on soils from on-leash dog walking would be long term, minor, and adverse, due to the moderate to high dog walking use at the site. Impacts would be detectable but they would not be large enough to cause changes in soils or soil function. There would be no impact on soils in the WPA, since dogs would not be allowed.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts to soils from dogs at the site. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

The overall impact on soils from on-leash dog walking at Crissy Field would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative B resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no

longer be allowed at Crissy Field; therefore, indirect impacts on soils in adjacent lands from increased dog use would be negligible to long term, minor, and adverse. However, no indirect impacts on soils in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in all unfenced areas	Disturbance to the soils from dogs digging and from nutrient addition on beach	Negligible cumulative impacts Negligible impacts to long-term minor adverse indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
No impacts in WPA	Dogs would not be allowed in the site, so soil would not be disturbed		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function within fenced areas and in the WPA, but soil disturbance would occur in non-fenced areas, which make up a large portion of the entire site, including the trail margins.		

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, no dog walking would be allowed in the WPA; therefore, there would be no impact on soils in this area. On-leash dog walking would be allowed on the promenade, on the paths to Central Beach, on the trails and grassy areas near East Beach, and on the trail along Mason Street. Crissy marsh is currently closed to dogs. Two ROLAs would be established at the site: one on the Crissy Airfield and the second on Central Beach. Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Dogs would still disturb the soils through compaction, erosion, and nutrient addition. Soils in these areas still have natural function and support the growth of vegetation and microorganisms found in the soil. Impacts on soils in these leashed areas would be long term, minor, and adverse. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Long-term moderate adverse impacts on soils in the ROLA are expected. Dog walking is common at this site, so a high number of dogs would be concentrated in the ROLA areas. Impacts would include the disturbance of soil from dogs running at fast speeds and stopping abruptly; from digging, compaction, and erosion; and from nutrient addition. Digging and nutrient addition by dogs change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Soil compaction would impact the growth of vegetation and microorganisms that live in the soil. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts

to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, adverse impacts.

When including the long-term moderate adverse impacts on soils in the ROLAs and the long-term minor adverse impacts from on-leash dog walking, the overall impact on soils at Crissy Field would range from long term, minor, and adverse to long term, moderate, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on soils from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative C resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative C, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in on-leash areas (promenade, paths to Central Beach, trails and grassy areas near East Beach, and trail along Mason Street)	Soils would be compacted from dogs walking on the promenade, trails, and grassy areas; nutrient addition and erosion would also occur	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance
Long-term moderate adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly; from digging, compaction, and erosion; and from nutrient addition		
No impacts in WPA	Dogs would not be allowed in the site, so soil would not be disturbed		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function in the WPA; soil disturbance would occur on the promenade, trails and grassy areas; these impacts would occur within a large portion of the entire site.		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, no dog walking would be allowed in the WPA or on East or Central Beach; therefore, no impacts on soils would occur in these areas. Crissy marsh is currently closed to dogs. On-leash dog walking would be allowed along the promenade, on the eastern portion of the Crissy Airfield, on the trails and grassy areas near East Beach, and on the trail along Mason Street. A ROLA would be established on the western portion of the Crissy Airfield. Impacts on soils in the on-leash areas would include soil compaction, soil erosion, and nutrient addition. These areas contain soils that have not been previously disturbed and that support the growth of vegetation and microorganisms. Impacts on soils in on-leash areas would be long term, minor, and adverse, because impacts would be detectable but they would not be large enough to cause changes in soils or soil function. Impacts on soils in the ROLA would be long term, moderate, and adverse. Dog walking is common at this site, so a high number of dogs would be concentrated in the ROLA area. Impacts would include the disturbance of soil from dogs running at fast speeds and stopping abruptly, from soil compaction and erosion, and from nutrient addition. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function. Alternative D would have no impact on soils on the beach or foredunes, or on dune habitat.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Crissy Field, the long-term moderate adverse impacts on soils would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils at Crissy Field would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative D resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking and dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field. However, dogs under voice and sight control would be allowed on half of Crissy Airfield. Indirect impacts on soils in adjacent lands would be expected under alternative D, but only at a negligible level. However, no indirect impacts on soils in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in on-leash areas (promenade, eastern portion of the Crissy Airfield, trails and grassy areas near East Beach, and trail along Mason Street)	Soils would be compacted from dogs walking on the promenade, trails, and grassy areas; nutrient addition and erosion would also occur	Negligible cumulative impacts Negligible indirect impacts on adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term moderate adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, compaction, erosion, and nutrient addition		
No impacts in WPA and Central Beach	Dogs would not be allowed in the site so soil would not be disturbed		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function in the WPA and Central Beach; soil disturbance would occur on the promenade, eastern portion of the airfield, trails and grassy areas; these impacts would occur within a large portion of the entire site.		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the promenade, paths to the Central Beach, East Beach, trails and grassy areas near East Beach, and the multi-use trail along Mason Street. Crissy marsh is currently closed to dogs. Two ROLAs would be established at the site: one on the Crissy Airfield and one on Central Beach. Having dogs on leash in the designated areas would restrict dogs from running at fast speeds and from entering the fenced dune habitat. Dogs would still disturb the soils through compaction, digging, erosion, and nutrient addition. Soils in these areas still have natural function and support the growth of vegetation and microorganisms found in the soil. Impacts on soils in these leashed areas would be long term, minor, and adverse. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Long-term moderate adverse impacts on soils in the ROLAs are expected. Dog walking is common at this site, so a high number of dogs would be concentrated in the ROLA areas. Impacts would include the disturbance of soil from dogs running at fast speeds and stopping abruptly; from digging, compaction, and erosion; and from nutrient addition. Digging and nutrient addition by dogs change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Soil compaction would impact the growth of vegetation and microorganisms that live in the soil. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, adverse impacts.

When factoring in the long-term moderate adverse impacts on soils in the ROLAs and the long-term minor adverse impacts from on-leash dog walking, the overall impact on soils at Crissy Field would be long term, minor to moderate, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on soils from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative E, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in on-leash areas (promenade, paths to the Central Beach, East Beach, grassy areas near East Beach, and multi-use trail along Mason Street)	Soils would be compacted by dogs walking on the promenade and grassy areas; disturbance from digging, nutrient addition, and erosion would also occur	Negligible to long-term, minor adverse cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance
Long-term moderate adverse impacts in the ROLAs	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, digging, compaction, erosion, and nutrient addition		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function in fenced areas; soil disturbance would occur on the promenade, trails and grassy areas; these impacts would occur within a large portion of the entire site.		

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. No dog walking would be allowed in the WPA; therefore, there would be no impact on soils in this area. Crissy marsh is currently closed to dogs. On-leash dog walking would be allowed on the promenade, the paths to Central Beach, the trails and grassy areas near East Beach, and the trail along Mason Street. Two ROLAs would be established at the site: one on the Crissy Airfield and the second on Central Beach. Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Dogs would still disturb the soils through compaction, erosion, and nutrient addition. Soils in these areas still have natural function and support the growth of vegetation and microorganisms found in the soil. Impacts on soils in these leashed areas would be long term, minor, and adverse. Impacts would

be detectable but not large enough to determine changes in soils or natural soil function. Long-term moderate adverse impacts on soils in the ROLAs are expected. Dog walking is common at this site, so a high number of dogs would be concentrated in the ROLA areas. Impacts would include the disturbance of soil from dogs running at fast speeds and stopping abruptly; from digging, compaction, and erosion; and from nutrient addition. Digging and nutrient addition by dogs change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Soil compaction would impact the growth of vegetation and microorganisms that live in the soil. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, adverse impacts.

When including the long-term moderate adverse impacts on soils in the ROLAs and the long-term minor adverse impacts from on-leash dog walking, the overall impact on soils at Crissy Field would be long term, minor to moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1-2).

Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Crissy Field. For example, due to the initiation of the Doyle Drive project, Crissy Field Center moved to a newly constructed facility at East Beach in late 2009 (GGNPC 2010b, 1). Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on soils from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial

effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from the preferred alternative resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative C, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts in on-leash areas (promenade, paths to Central Beach, trails and grassy areas near East Beach, and trail along Mason Street)	Soils would be compacted by dogs walking on the promenade, trails, and grassy areas; nutrient addition and erosion would also occur	Negligible to long-term, minor adverse cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change
Long-term moderate adverse impacts in the ROLAs	Soils would be disturbed by dogs running at fast speeds and stopping abruptly; from digging, compaction, and erosion; and from nutrient addition		
No impacts in WPA	Dogs would not be allowed in the site, so soil would not be disturbed		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function in the WPA; impacts would occur from soil disturbance on the promenade, trails, and grassy areas		

Fort Point Promenade/Fort Point National Historic Site Trails

Alternative A: No Action. Dogs are required to be on leash at Ft. Point Promenade, Bay Trail, Andrews Road and Battery East Trail. This site experiences moderate to high visitor use and low to high use by dog walkers, and there were 38 leash law violations in 2007/2008 (table 9). Impacts on soils throughout the site would be long term, minor, and adverse. Even though most dogs are walked on leash, dogs would still have access to undisturbed areas that support the growth of vegetation, such as along the Bay Trail. Since compliance is an issue at this site, it is likely that some off-leash dogs go beyond the trails, resulting in additional impacts on soils. Soils in this area would be impacted through soil compaction, soil erosion, and nutrient addition. In addition, serpentine soils are located at this site on the hill above the fort, near

the Bay Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At Fort Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Fort Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Point. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Fort Point.

The long-term minor adverse impacts on soils from dogs at Fort Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Fort Point and 15 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Fort Point is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative A, since there would be no change in current conditions at the site.

FORT POINT ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, and nutrient addition would occur in areas off trail, which contain areas of undisturbed soil	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B, on-leash dog walking would be allowed along the promenade, Bay Trail, Andrews Road, and Battery East Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trails, dogs would have access to the adjacent land 6 feet in all directions, resulting in an LOD area for soils that would extend 6 feet out on both sides from the edges of the trails. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to

those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils would include soil compaction, soil erosion, and nutrient addition from dog waste and urine. In addition, serpentine soils are located on the hill above the fort, near the Bay Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not a common activity at Fort Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Fort Point, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Fort Point would be negligible, assuming compliance.

Cumulative Impacts. The negligible impacts on soils from dogs at Fort Point under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts from alternative B would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative B, since there would be no change in the areas where dogs are allowed at the site.

FORT POINT ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts on adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not a common activity at Fort Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

FORT POINT ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trail no longer have natural function; the LOD area is a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, only one trail (Bay Trail) would be open to on-leash dog walking. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to both sides of the trail. Soils along the trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. In addition, serpentine soils are located on the hill north of the fort, near the Bay Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts on soils would include soil compaction, soil erosion, and nutrient addition from dog waste and urine. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Fort Point, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Fort Point would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs at Fort Point under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts from alternative D would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative D, particularly Area B of the Presidio and Mountain Lake Park, because they are the closest dog use areas in the vicinity. However, since dog walking would still be allowed at this site, not all visitors with dogs would stop visiting this site and go to another. The Bay Trail would still be open for dog walking. Therefore, indirect impacts on soils in adjacent lands, including Area B of the Presidio, from increased dog use would be negligible.

FORT POINT ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along Bay Trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along Bay Trail no longer have natural function; the LOD area is a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not a common activity at Fort Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

FORT POINT ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trail no longer have natural function; the LOD area is a small portion of the entire site		

Preferred Alternative. Alternative B was selected as the preferred alternative for Fort Point. Under alternative B, on-leash dog walking would be allowed along the promenade, Bay Trail, Andrews Road, and Battery East Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trails, dogs would have access to the adjacent land 6 feet in all directions, resulting in an LOD area for soils that would extend 6 feet out on both sides from the edges of the trails. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils would include soil compaction, soil erosion, and nutrient addition from dog waste and urine. In addition, serpentine soils are located on the hill above the fort, near the Bay Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not a common activity at Fort Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Fort Point, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Therefore, the overall impact on soils from on-leash dog walking at Fort Point would be negligible, assuming compliance.

Cumulative Impacts. Projects and actions in and near Fort Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Point. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Fort Point.

The negligible impacts on soils from dogs at Fort Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects when added to the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Fort Point and 15 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Fort Point is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative, since there would be no change in the areas where dogs are allowed at the site.

FORT POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is a small portion of the entire site		

Baker Beach and Coastal Bluffs to Golden Gate Bridge

Alternative A: No Action. Alternative A would allow dogs under voice control on the beach north of Lobos Creek and on-leash dog walking on all trails except the Batteries to Bluffs Trail; however, social

trails exist at the site and traverse sensitive coastal scrub habitat. This site has documented low to high visitor use (varying due to weather, holidays, and weekend use), and dog walking use is considered low to moderate (table 9). Heavy off-leash dog use increases deterioration of native dune communities (USGS 2004). Although the dunes nearest the beach, which are actively planted and maintained by the park's resource stewardship programs, are fenced, dogs under voice control and on leash along the trails would have access to undisturbed areas that support the growth of vegetation and microorganisms. Dogs walking or running through dune areas interrupt the natural dune building and accelerate the natural sand migration processes (NPS 2010b); digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts on soils would be long term and adverse, would range from minor to moderate, and would include soil compaction, digging, nutrient addition, and soil erosion. These impacts would change the characteristics of the soil. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be indirectly impacted by the dogs digging in the sand. In addition, impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties.

Under alternative A, no permit system exists for dog walking. At Baker Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impact on soils.

Cumulative Impacts. Projects and actions in and near Baker Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Baker Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Baker Beach. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010, 1). The *Lobos Creek Valley Dune Restoration* near Baker Beach involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia plant (NPS 2010f).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on soils from dogs at Baker Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible to long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected under alternative A, since there would be no change in current conditions at the site.

BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor to moderate adverse impacts	Soil compaction, erosion, disturbance from digging, and nutrient addition would occur in areas adjacent to the trails; disturbance to dunes and nutrient addition on the beach would occur	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on all trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach and the entire beach within the GGNRA boundary. On-leash dog walking is based on an allowed 6-foot dog leash. No dog walking would be allowed on the Batteries to Bluffs Trail or trails leading to the Batteries to Bluffs Trail. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. On-leash dog walking on the beach would also create long-term minor adverse impacts on soils. Even if dogs are on leash they would still have the ability to dig in the sand and cause disturbance. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be indirectly impacted by the dogs digging in the sand. Dog waste and urine on the beach would also add nutrients to the soil, changing the characteristics of the sand.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog

walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Baker Beach, the long-term minor adverse impacts from dogs in the LOD area and on the beach would only affect a portion of the entire site; therefore, the overall impact on soils from on-leash dog walking at Baker Beach would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on soils in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach. No indirect impacts on soils in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

**BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION
TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term minor adverse impacts on soils on the beach	Impacts on soils from nutrient addition and disturbance from digging would change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and beach area are only a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on all trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach and the entire beach within the GGNRA boundary. On-leash dog walking is based on an allowed 6-foot dog leash. No dog walking would be allowed on the Batteries to Bluffs Trail or trails leading to the Batteries to Bluffs Trail. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. On-leash dog walking on the beach would also create long-term minor adverse impacts on soils. Even if dogs are on leash they would still have the ability to dig in the sand and cause disturbance. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be indirectly impacted by the dogs digging in the sand. Dog waste and urine on the beach would also add nutrients to the soil, changing the characteristics of the sand.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Baker Beach. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils at adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts on soils in adjacent lands.

**BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION
TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term minor adverse impacts on soils on the beach	Impacts on soils from nutrient addition and disturbance from digging would change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is only a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and the trails leading to the northern section of the beach. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. On-leash dog walking on the beach would also create long-term minor adverse impacts on soils. Even if dogs are on leash they would still have the ability to dig in the sand and cause disturbance. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be indirectly impacted by dogs digging in the sand. Dog waste and urine on the beach would also add nutrients to the soil, changing the characteristics of the sand.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Baker Beach, the long-term minor adverse impacts from dogs in the LOD area and on the beach would occur only in a portion of the entire site. Therefore, the overall impact on soils from on-leash dog walking at Baker Beach would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on soils in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach. However, no indirect impacts on soils in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

**BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION
TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term minor adverse impacts on soils on the beach	Impacts on soils from nutrient addition and disturbance from digging would change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and beach are only a portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the beach north of the northern parking lot and all trails, except the Batteries to Bluffs Trail, the trail leading to the Batteries to Bluffs trail in the vicinity of Baker Beach. A ROLA would be established on the southern portion of the beach, south of the north parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible

impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) and on the on-leash beach would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Long-term moderate adverse impacts would occur in the ROLA on the beach. Dogs would be able to run at fast speeds throughout the ROLA and make abrupt stops, which would disturb the soils and the organisms that live in the soil. Since dogs would be confined to a small area, nutrient addition and digging would be more concentrated. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be impacted indirectly from the dogs digging in the sand. Dog waste and urine on the beach would also add nutrients to the soil, changing the characteristics of the sand. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Baker Beach, the long-term moderate adverse impacts from dogs in the ROLA would occur in a relatively small area when compared to the site as a whole. In addition, the long-term minor adverse impacts from dogs in the LOD area and on the beach would occur only in a portion of the entire site. Therefore, the overall impact on soils from dog walking at Baker Beach would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative E, since voice and sight control dog walking would be allowed at Baker Beach. Therefore, no indirect impacts on soils in adjacent lands, including Area B of the Presidio, would be expected.

**BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION
TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term moderate adverse impacts on soils in the ROLA on the beach	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, as well as by erosion, disturbance from digging, and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and ROLA are only a portion of the entire site		

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach. The preferred alternative would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and the trails leading to the northern section of the beach. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would affect serpentine soils immediately adjacent to the Coastal Trail. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. On-leash dog walking on the beach would also create long-term minor adverse impacts on soils. Even if dogs are on leash they would still have the ability to dig in the sand and cause disturbance. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Shorebirds that feed on the invertebrates in the sand could also be indirectly impacted by dogs digging in

the sand. Dog waste and urine on the beach would also add nutrients to the soil, changing the characteristics of the sand.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Baker Beach. Impacts to soils from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Baker Beach, the long-term minor adverse impacts from dogs in the LOD area and on the beach would occur only in a portion of the entire site. Therefore, the overall impact on soils from on-leash dog walking at Baker Beach would be negligible.

Cumulative Impacts. Projects and actions in and near Baker Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Baker Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Baker Beach. Between August and November of 2007, 73,000 tons of landfill debris were unearthed by excavators at Baker Beach and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010, 1). The *Lobos Creek Valley Dune Restoration* near Baker Beach involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia plant (NPS 2010f).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. Some increase in visitation by dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking

on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on soils in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach. However, no indirect impacts on soils in Area B of the Presidio would be expected under the preferred alternative, since this area does not have beaches and does not allow off-leash dog walking.

**BAKER BEACH AND COASTAL BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE
CONCLUSION TABLE**

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term minor adverse impacts on soils on the beach	Impacts on soils from nutrient addition and disturbance from digging would change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and Beach are only a portion of the entire site		

Fort Miley

Alternative A: No Action. Dogs under voice control are currently allowed in both East and West Fort Miley; much of the West Fort Miley site is paved and the primary dog-accessible location at East Fort Miley is the open area north of NPS maintenance and picnic areas. This site has documented moderate to high visitor use (mostly picnickers), low numbers of dog walkers, and low numbers of citations and incident reports related to dog activities at the site (table 9). Since dogs would continue to be allowed off leash, it is likely that dogs would enter areas off the trail and picnic areas where soils have been undisturbed and support the growth of existing vegetation. Dogs would be allowed to run throughout the site, making abrupt stops that would displace soils and tear out the existing vegetation. Impacts from dogs off leash would include soil compaction, soil erosion, and the addition of nutrients. Impacts would be long term, moderate, and adverse, because they would be readily apparent and would cause noticeable changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At East and West Fort Miley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Fort Miley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide

restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Miley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Miley. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Fort Miley.

The long-term moderate adverse impacts on soils from dogs at East and West Fort Miley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of East and West Fort Miley and 13 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

FORT MILEY ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, digging, and nutrient addition would occur in areas off trail and outside picnic areas since dogs would be under voice control	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs at this site would occur because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed on the trails at Fort Miley, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative B.

Cumulative Impacts. Under alternative B, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on soils in adjacent lands from

increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site; therefore, no soil would be disturbed	Beneficial cumulative impacts Negligible indirect impacts on soils in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, on-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trail. Soils along the trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In Fort Miley, the long-term minor adverse impacts on soils adjacent to the trail corridor would occur in a relatively small area when compared to the site as a whole, and Fort Miley receives low use by dog walkers. Therefore, the overall impact on soils at Fort Mason would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs at Fort Miley under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on soils in adjacent lands from

increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail corridor	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail corridor (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trail corridor no longer have natural function; the LOD area is a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs at this site would occur, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed on the trails at Fort Miley, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and negligible impacts on soils in adjacent lands.

FORT MILEY ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site; therefore, no soil would be disturbed	Beneficial cumulative impacts Negligible indirect impacts on soils in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the road in West Fort Miley. A ROLA would be established in the eastside trail corridor in East Fort Miley. There would be no impact on soils on the road itself, since there are no existing soils. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing

vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Impacts in the ROLA would be long term, moderate, and adverse. Dogs off leash may run fast through the site and stop abruptly, causing disturbance to previously undisturbed soils. Impacts would include soil compaction, soil erosion, and nutrient addition. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function due to the concentrated numbers of dogs in a small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Fort Miley, the long-term moderate adverse impacts on soils in the ROLA would occur in a relatively small area when compared to the site as a whole. When this factor is considered with the fact in that Fort Miley receives low use by dog walkers and that impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, the overall impact on soils at Fort Miley would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Fort Miley under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on adjacent lands would be expected under alternative E, since dog walking under voice and sight control would be offered at the site. Visitors looking for this experience would not have to leave this park site to experience dog walking under voice and sight control.

FORT MILEY ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
No impact on the road in West Fort Miley	No soil exists on the road	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail corridor (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Long-term moderate adverse impacts on soils in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, as well as by compaction, erosion, digging, and nutrient addition		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Soil along trails no longer has natural function; the LOD area and ROLAs are a small portion of the entire site.		

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Miley. On-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to both sides of the trail. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Fort Miley, the long-term minor adverse impacts on soils adjacent to the trail corridor would occur in a relatively small area when compared to the site as a whole, and Fort Miley receives low use by dog walkers. Therefore, the overall impact on soils at Fort Mason would be negligible.

Cumulative Impacts. Projects and actions in and near Fort Miley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Miley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Miley. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Fort Miley.

The negligible impacts on soils from dogs at Fort Miley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail reha/bilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of East and West Fort Miley and 13 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands may experience increased visitation under the preferred alternative, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on soils in adjacent lands from increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail corridor	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail corridor (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trail corridor no longer have natural function; the LOD area is a small portion of the entire site		

Lands End

Alternative A: No Action. Alternative A would allow dogs under voice control at the Lands End Site, which includes the Coastal Trail and the El Camino del Mar Trail. Although this site has low to moderate visitor use and low numbers of citations and incident reports related to dog activities at the site, pet-related hazardous conditions/rescues have occurred at this site (table 9). Dog walking at this site is considered a low to moderate use. Off-leash dog activities would contribute to soil compaction, soil erosion, and nutrient addition in off-trail areas throughout the site. Nutrient addition from dog waste may also be occurring beyond the trails and off-trail areas throughout the site, as due to the nature of dogs they are not expected to stay on the trails. Since dogs would be allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on soils in the adjacent undisturbed areas located along the trails. Impacts in the undisturbed areas would include soil compaction, which would prevent the growth of vegetation; soil erosion from vegetation disturbance; and the addition of nutrients to the soil, which would change soil chemistry and impact vegetation and microorganisms. The Lands End area also contains rare serpentine soils. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Impacts on soils would continue to be long term, moderate, and adverse.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Lands End. The effort of Park Stewardship Programs at Lands End included resurfacing and stabilizing segments of the trail, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on soils from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, digging, and nutrient addition would occur in areas off trail since dogs would be under voice control; includes impacts on serpentine soil	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot

dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. The Lands End area also contains rare serpentine soils. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Lands End, the long-term minor adverse impacts on soils adjacent to the trails would occur in a relatively small area when compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Therefore, the overall impact on soils at Lands End would be negligible, assuming compliance.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central South Central Areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed to be under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Therefore, indirect impacts on soils in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail at Lands End, including on the steps to the El Camino del Mar Trail, and would allow dogs under voice and sight control in a ROLA along the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. The Lands End area also contains rare serpentine soils. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function. Impacts in the ROLA would be long term, moderate, and adverse. Off-leash dogs in the ROLA would have access to previously undisturbed areas, and dogs create soil compaction, soil erosion, and nutrient addition. Compared to dogs on leash, dogs in the ROLA could run at faster speeds and stop more abruptly, which would cause greater impacts on soils. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Lands End, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In Lands End, the long-term moderate adverse impacts on soils in the ROLA would occur in a relatively small area when compared to the site as a whole. Lands End receives low to moderate use by dog walkers and as a result impacts to areas adjacent to the trails (LOD area) are expected to would result in long-term minor adverse impacts on soils. In addition, because commercial dog walking is not frequent at Lands End, commercial dog walking would result in negligible impacts on soils. Therefore, the overall impact on soils at Lands End would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative C resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative C, since voice and sight control dog walking would be offered at Lands End under this alternative.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Negligible cumulative impacts No indirect impacts on adjacent soils	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term moderate adverse impacts on soils in the ROLA on the El Camino del Mar Trail	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, erosion, digging, and nutrient addition.		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and ROLA are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail and portions of the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. The Lands End area also contains rare serpentine soils. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to changes in soil properties. Nutrient

addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Lands End, the long-term minor adverse impacts on soils adjacent to the trails would occur in a relatively small area when compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Therefore, the overall impact on soils at Lands End would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned under alternative A cumulative impacts. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park—North Central South Central Areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed to be under voice control at Lands End, some visitors may visit these adjacent parks for an off-leash dog experience. Indirect impacts on soils in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts:	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is a small portion of the entire site		

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: long term, minor, and adverse, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Lands End, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts on soils in adjacent lands.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Negligible cumulative impacts No indirect impacts on adjacent soils	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Long-term moderate adverse impacts on soils in the ROLA on the El Camino del Mar Trail	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, erosion, digging, and nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area and ROLA are a small portion of the entire site		

Preferred Alternative. Alternative B was selected as the preferred alternative for Lands End. The preferred alternative would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. The Lands End area also contains rare serpentine soils. Serpentine soils and the unique vegetation they support include several threatened and endangered plants and are particularly sensitive to

changes in soil properties. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Impacts would be detectable but not large enough to determine changes in soils or natural soil function.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Lands End, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Lands End, the long-term minor adverse impacts on soils adjacent to the trails would occur in a relatively small area when compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Therefore, the overall impact on soils at Lands End would be negligible, assuming compliance.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Lands End. The efforts of Park Stewardship Programs at Lands End included resurfacing and stabilizing segments of the trail, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central South Central Areas, because they are the closest dog use areas and they allow dogs to be

off leash. Since dogs would no longer be allowed to be under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on soils in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking.

LANDS END PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would be detectable but would not change the natural function of the soil; includes impacts on serpentine soil		
Conclusion: Overall negligible impacts, assuming compliance	Soils along trails no longer have natural function; the LOD area is a small portion of the entire site		

Sutro Heights Park

Alternative A: No Action. Currently, on-leash dog walking is allowed throughout Sutro Heights Park. Although this site has moderate visitor use and low use by dog walkers, 31 leash law violations occurred in 2007/2008 (table 9). Under the no-action alternative, on- and off-leash dogs would access the undeveloped portions of Sutro Heights Park. The area south of the picnic area contains old dune formations that are highly eroded and sensitive to disturbance. However, there are no developed trails in this portion of the site. Impacts associated with dog walking on leash and dog walking under voice and sight control at Sutro Heights Park would be long term, moderate, and adverse. Impacts on soils would include soil compaction, soil erosion, digging, and nutrient addition. Since some dogs would be off leash, there would be a higher likelihood that dogs would enter areas with undisturbed soils that support the growth of vegetation and microorganisms. Impacts would be detectable and would be large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At Sutro Heights Park, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Sutro Heights Park were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Sutro Heights Park. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Sutro Heights Park. Restoration and dune

stabilization efforts at the Sutro Baths site involved the planting of native vegetation (San Francisco Examiner 2010, 1), which would reduce erosion. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Sutro Heights Park.

The long-term moderate adverse impacts on soils from dogs at Sutro Heights Park under alternative A were considered together with the effects of the projects mentioned above. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of Sutro Heights Park. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Sutro Heights Park and 10 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

SUTRO HEIGHTS PARK ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts	Soil compaction, erosion, digging, and nutrient addition would occur in areas off trail since dogs would be under voice control	Long-term, minor, adverse cumulative impacts No indirect impacts on soils in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B, on-leash dog walking would be allowed only on the paths and parapet at Sutro Heights Park. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the parapet/paths and the 6-foot corridors immediately adjacent to the parapet/paths. Soils along the parapet/paths have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the parapet/path (LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Sutro Heights Park, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Sutro Heights Park, the long-term minor adverse impacts on soils adjacent to the parapet/path would occur in a relatively small area when compared to the site as a whole, and Sutro Heights Park receives low use by dog walkers. Therefore, the overall impact on soils at Sutro Heights would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central and South Central Areas, because they are the closest dog use areas. However, indirect impacts on soils in adjacent lands from increased dog use would be negligible, since dog walking is a low use activity at Sutro Heights Park.

SUTRO HEIGHTS PARK ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the parapet and paths	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the parapet/path (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil; impacts would be detectable but would not change soils or soil function		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the parapet and paths no longer have natural function; the LOD area is a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Sutro Heights Park, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Sutro Heights Park, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and negligible indirect impacts on soils in adjacent lands.

SUTRO HEIGHTS PARK ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the parapet and paths	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the parapet/path (LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil; impacts would be detectable but would not change soils or soil function		
Conclusion: Overall negligible impact, assuming compliance	Soils along the parapet and paths no longer have natural function; the LOD area is a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at Sutro Heights Park, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park—North Central and South Central Areas, because they are the closest dog use areas. This increase would be a result of alternative D not allowing dogs at Sutro Heights Park. Indirect impacts on soils in adjacent lands from increased dog use would be negligible, since dog walking use is considered low at Sutro Heights Park.

SUTRO HEIGHTS PARK ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site; therefore, no soil would be disturbed	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the paths, parapet, and lawns. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the parapet, paths, and lawn and the 6-foot corridors immediately adjacent to the parapet and paths. Soils along the parapet and paths have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the parapet and path (LOD area) and on the lawn would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Sutro Heights Park, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Sutro Heights Park, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Sutro Heights Park, the long-term minor adverse impacts on soils adjacent to the parapet/path and lawn would occur in a relatively small area when compared to the site as a whole, and Sutro Heights Park receives low use by dog walkers. Therefore, the overall impact on soils at Sutro Heights Park would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs at Sutro Heights Park under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative E, since dogs would still be allowed on paths, parapet, and lawns and this is a low use site for dog walkers.

SUTRO HEIGHTS PARK ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the parapet and paths	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the parapet/path (LOD area) and on the lawns	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil; impacts would be detectable but would not change soils or soil function		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the parapet and paths no longer have natural function; the LOD area is a small portion of the entire site		

Preferred Alternative. Alternative E was selected as the preferred alternative for Sutro Heights Park. The preferred alternative would allow on-leash dog walking on the paths, parapet, and lawns. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the parapet, paths, and lawns and the 6-foot corridors immediately adjacent to the parapet and paths. Soils along the parapet and paths have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the parapet and path (LOD area) and on the lawns would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Sutro Heights Park, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Sutro Heights Park, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Sutro Heights Park, the long-term minor adverse impacts on soils adjacent to the parapet/path and lawns would occur in a relatively small area when compared to the site as a whole, and Sutro Heights Park receives low use by dog walkers. Therefore, the overall impact on soils at Sutro Heights Park would be negligible.

Cumulative Impacts. Projects and actions in and near Sutro Heights Park were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce

erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Sutro Heights Park. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Sutro Heights Park. Restoration and dune stabilization efforts at the Sutro Baths site involved the planting of native vegetation (San Francisco Examiner 2010, 1), which would reduce erosion. No actions have been identified that are currently having, or have the potential to have, adverse impacts on soils at or in the vicinity of Sutro Heights Park.

The negligible impacts on soils from dogs at Sutro Heights Park under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Sutro Heights Park and 10 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since dogs would still be allowed on paths, parapet, and lawns and this is a low use site for dog walkers.

SUTRO HEIGHTS PARK PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the parapet and paths	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the parapet/path (LOD area) and on the lawns	Impacts on soils from compaction, erosion, and nutrient addition would change the natural function of the soil; impacts would be detectable but would not change soils or soil function		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the parapet and paths no longer have natural function; the LOD area is a small portion of the entire site		

Ocean Beach

Alternative A: No Action. Dogs under voice control are currently allowed on Ocean Beach, except for a seasonal leash restriction in the Snowy Plover Protection Area (SPPA) (Stairwell 21 to Sloat Boulevard) that requires dogs to be on leash between July 1 and May 15. Dogs are allowed under voice control the remainder of the year, May 15 to July 1, in the SPPA. This site has documented moderate to high visitor use and high numbers of citations and incident reports related to dog activities (table 9). The NPS has observed that nearly 60 percent of dogs continue to be off-leash in the SPPA even after the seasonal leash

restriction was implemented in the SPPA as a result of 36 CFR 7.97(d) (Hatch et al. 2007, 3). There are no undisturbed areas at the site since the beach was built out from the natural shoreline. Dunes are located adjacent to the beaches; however, over 90 percent of the dune vegetation is non-native and was planted to stabilize blowing sand. Therefore, the non-native dune vegetation is not considered high quality habitat. However, there are some areas of sparsely vegetated foredune habitat with native species at the site as well. Dogs walking or running through dune areas interrupt the natural dune building and accelerate the natural sand migration processes (NPS 2010b); digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts from dogs would result from soil erosion, nutrient addition from dog waste, and digging. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Under the no-action alternative, impacts on soils from off-leash dogs would be readily apparent and would cause noticeable changes in soils or soil function continuing to affect soil resources due to nutrient addition, digging, and soil erosion. As a result, impacts would be long term moderate and adverse.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on soils from dogs at Ocean Beach under alternative A were considered together with the effects of the projects mentioned above. Overall, the actions identified above would result in beneficial cumulative impacts on soils at or in the vicinity of Ocean Beach. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in long-term, minor, and adverse cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

OCEAN BEACH ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term moderate adverse impacts at or in the vicinity of Ocean Beach	Soil compaction, digging, and nutrient addition would occur on the beach since dogs would be under voice control; even though there are no undisturbed areas at the site since the beach was built out from the natural shoreline; erosion of vegetated dunes could also occur	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on the adjacent NPS section of the trail along Great Highway, east of the dunes, as well as on the beach north of Stairwell 21 and south of Sloat Boulevard. Dogs would not be allowed in the SPPA. Because dogs would be physically restrained by leashes and not allowed in the SPPA, a long-term minor adverse impact on soils would occur as a result of alternative B. Nutrient addition from dog waste and some digging would occur at the site and cause disruption to soils on the beach. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Ocean Beach, the long-term minor adverse impacts on soils along the beach would not occur throughout the entire site. Therefore, the overall impact on soils at Ocean Beach would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils. The impacts resulting from the

past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dog walking. Under alternative B, dogs would no longer be allowed under voice control. Indirect impacts on soils in adjacent lands from increased dog use are expected to be long term, minor, and adverse, since dog walking at Ocean Beach is considered a moderate to high use activity.

OCEAN BEACH ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils at or in the vicinity of Ocean Beach	Soil disturbance from digging and nutrient addition would occur on the beach; changes in soils would be detectable but would not change soil function	Beneficial cumulative impacts Long-term minor adverse indirect impacts on soils in adjacent lands	Beneficial, assuming compliance
No impacts in SPPA	Dogs would not be allowed in the SPPA, so soil would not be disturbed		
Conclusion: Overall negligible impacts, assuming compliance	Prohibiting dogs in the SPPA would protect soil function in the SPPA; on-leash area is only a portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would not allow dogs on the beach in the SPPA or south of Sloat Boulevard, but would allow on-leash dog walking on the trail adjacent to the Great Highway, east of the dunes, and would allow dogs under voice and sight control in a ROLA on the beach north of Stairwell 21. Since dogs would not be allowed in the SPPA, there would be no impact on soils in this area. Areas available for on-leash dog walking would create long-term minor adverse impacts on soils. Even though dogs would be restrained, nutrient addition and digging would still occur and disturb naturally functioning soils supporting vegetation and invertebrates. A ROLA would be established along a portion of Ocean Beach. The ROLA makes up a quarter of the site, and will have a greater impact to the soils than the leash areas. Impacts on soils in this area would be long term, moderate, and adverse. Since dogs would be off leash, they would be able to run at faster speeds and make abrupt stops, which may cause more soil disturbance. Dogs would also continue to dig in the sand and change the characteristics of the soil through nutrient addition. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to

walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In Ocean Beach, the long-term moderate adverse impacts on soils in the ROLA would occur on only about a quarter of the entire beach. On-leash dog walking would result in long-term minor adverse impacts on soils with commercial dog walking contributing only negligible impacts on soils. Therefore, the overall impact on soils at Ocean Beach would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative C resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative C, since dogs would be allowed to be under voice and sight control in a ROLA on Ocean Beach. Therefore, indirect impacts on soils in adjacent lands from increased dog use are not expected.

OCEAN BEACH ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils at or in the vicinity of Ocean Beach	Soil disturbance from digging and nutrient addition would occur on the beach; changes in soils would be detectable but would not change soil function	Negligible cumulative impacts	Beneficial, assuming compliance
No impacts in SPPA	Dogs would not be allowed in the SPPA, so soil would not be disturbed		
Long-term moderate adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, by digging, and by nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function on the beach in leashed areas; prohibiting dogs in the SPPA would protect soil function in the SPPA on the beach; disturbance to soil function on the beach could affect habitat quality within the ROLA, but the ROLA makes up a quarter of site and will have a greater impact to soils compared to leash areas.		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be available on the Great Highway near the SPPA and on the beach north of Stairwell 21. Dogs would not be allowed on the beach south of Sloat Boulevard. On-leash walking would protect soil function in the leashed areas, while prohibiting dogs in the SPPA would protect soil function in the SPPA on the beach. The on-leash area only makes up about a quarter of the entire site. Some digging and nutrient addition would still occur at the site and cause disruption to soils on the beach. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be detectable, but they would not be large enough to cause changes in soils or soil function; therefore, impacts would be long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Ocean Beach, the long-term minor adverse impacts on soils along the beach would occur on only about a quarter of the entire beach, and commercial dog walking would have no impact on soils. Therefore, the overall impact on soils at Ocean Beach would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park—North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dog walking. Under alternative D, dogs would no longer be allowed under voice control, but dogs would still be allowed on the beach. Indirect impacts on soils in adjacent lands from increased dog use are expected to range from negligible to long term, minor, and adverse, since dog walking at Ocean Beach is considered a moderate to high use activity.

OCEAN BEACH ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils at or in the vicinity of Ocean Beach	Soil disturbance from digging and nutrient addition would occur on the beach; changes in soils would be detectable but would not change soil function	Beneficial cumulative impacts	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible impacts, assuming compliance	Physical restraint of dogs would protect soil function in leashed areas; prohibiting dogs in the SPPA would protect soil function in the SPPA on the beach; the on-leash area only makes up about a quarter of the entire site.	Negligible to long term, minor, and adverse indirect impacts to adjacent lands	

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking all year on the beach from Stairwell 21 to the southern boundary of Ocean Beach, which includes the SPPA. Voice and sight control dog walking would be allowed in a ROLA from Stairwell 21 to the north end of Ocean Beach. Areas available for on-leash dog walking would create long-term minor adverse impacts on soils. Even though dogs would be restrained, nutrient addition and digging would still occur and disturb naturally functioning soils supporting vegetation and invertebrates. A ROLA would be established along the northern end of Ocean Beach. Impacts on soils in this area would be long term, moderate, and adverse. Since dogs would be off leash, they would be able to run at faster speeds and make abrupt stops, which may cause more soil disturbance. Dogs could also dig in the sand and change the characteristics of the soil through nutrient addition. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no would be allocated at Ocean Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Ocean Beach, the long-term moderate adverse impacts on soils in the ROLA would occur in only a portion of the entire site. In addition, on-leash dog walking would create only long-term minor adverse impacts on soils on the beach, and commercial dog walking would have only a negligible impact on soils. Therefore, the overall impact on soils at Ocean Beach would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on soils from dogs at Ocean Beach under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative E resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative E, since dog walking would be allowed throughout the site and voice and sight control dog walking would be offered in a ROLA.

OCEAN BEACH ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils at or in the vicinity of Ocean Beach	Soil disturbance from digging and nutrient addition would occur on the beach; changes in soils would be detectable but would not change soil function	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts on soils in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, as well as by erosion, disturbance from digging, and nutrient addition		
Conclusion: Long-term minor adverse impacts on soils, assuming compliance	Physical restraint of dogs would protect soil function in leashed areas; disturbance to soil function on the beach could affect habitat quality within the ROLA; even though the ROLA area makes up a quarter of the entire site, the on-leash areas make up the remaining portion of the site.		

Preferred Alternative. Alternative C was selected as the preferred alternative for Ocean Beach. The preferred alternative would not allow dogs on the beach in the SPPA or south of Sloat Boulevard, but would allow on-leash dog walking on the trail adjacent to the Great Highway, east of the dunes, and would allow dogs under voice and sight control in a ROLA on the beach north of Stairwell 21. Since dogs would not be allowed in the SPPA, there would be no impact on soils in this area. Areas available for on-leash dog walking would create long-term minor adverse impacts on soils. Even though dogs would be restrained, nutrient addition and digging would still occur and disturb naturally functioning soils supporting vegetation and invertebrates. A ROLA would be established along a portion of Ocean Beach. Impacts on soils in this area would be long term, moderate, and adverse. Since dogs would be off leash, they would be able to run at faster speeds and make abrupt stops, which may cause more soil disturbance. Dogs would also continue to dig in the sand and change the characteristics of the soil through nutrient addition. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Western snowy plovers and high numbers of shorebirds use the beach and feed on invertebrates. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Ocean Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Ocean Beach, the long-term moderate adverse impacts on soils in the ROLA would occur on only about a quarter of the entire beach. On-leash dog walking would result in long-term minor adverse impacts on soils, and commercial dog walking would result in negligible impacts on soils. Therefore, the overall impact on soils at Ocean Beach would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from the preferred alternative resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands are not expected to experience increased visitation under alternative C, since dogs would be allowed to be under voice and sight control in a ROLA on Ocean Beach. Therefore, indirect impacts on soils in adjacent lands from increased dog use are not expected.

OCEAN BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils at or in the vicinity of Ocean Beach	Soil disturbance from digging and nutrient addition would occur on the beach; changes in soils would be detectable but would not change soil function	Negligible cumulative impacts	Beneficial, assuming compliance
No impacts in SPPA	Dogs would not be allowed in the SPPA, so soil would not be disturbed	No indirect impacts to adjacent lands	
Long-term moderate adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, by digging, and by nutrient addition		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Physical restraint of dogs would protect soil function on the beach; Dogs would not be allowed in the SPPA; on-leash area and ROLA are only a portion of the entire site		

Fort Funston

Alternative A: No Action. Dogs are currently allowed under voice control on the beach and throughout upper Fort Funston, with the exception of the 12-acre fenced Habitat Protection Area closure in upper Fort Funston, the voluntary seasonal closure for bank swallow protection (April 1–August 15) on a section of beach extending 50 feet from the base of the coastal bluff below the bank swallow habitat areas, and the north end of the Coastal Trail due to erosion. Fort Funston has documented high visitor use, and 35 hazardous conditions/pet rescues occurred in 2007/2008 (table 9). Commercial dog walking is also popular and considered a high use activity at this site. Current heavy use by recreationists affects the coastal bluff top and dune areas, and dogs and their owners/walkers have created a myriad of social trails in the coastal dunes north of the parking lots. NPS has implemented dune restoration in the northern section of this site and has enclosed the areas with fencing, but dogs have accessed these restoration areas despite the fencing, as observed by park staff. The 12-acre fenced Habitat Protection Area was closed to protect bank swallows, protect the geologic resource, protect visitor safety, and allow for habitat restoration (NPS 2010b). Under alternative A, impacts on soils and geologic formations would be long term, major, and adverse. Portions of Fort Funston have been so heavily impacted by intense dog use that the damage is irreversible, particularly where there is accelerated erosion of the geologic resources (Merced and Colma formations). Having a high number of dogs on the site running at fast speeds and stopping abruptly heavily disturbs the natural soils that support vegetation. Dogs would also continue to access the dune areas, which destabilizes the soils and makes it difficult for plants to establish and grow. Dogs walking or running through dune areas interrupt the natural dune building and accelerate the natural sand migration processes (NPS 2010b). Digging in the dunes and bluffs also would continue to disturb the soils and the Colma and Merced formations. Dogs would continue to contribute to soil compaction on social trails formed over the upland area, especially adjacent to the parking lot. Nutrient addition to soils is at high levels at this site due to the high number of dogs at the site. Major impacts on soil chemistry would be expected at this site due to the nutrient input from dog waste and urine. The increased changes

in soils or soil function, geologic features, or geologic processes at Fort Funston would be substantial, highly noticeable, and permanent.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term major adverse impacts on soils. Impacts would include soil compaction, soil erosion, and nutrient addition.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Funston. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Funston. The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1). Overall, these projects will benefit soils in and around Fort Funston.

Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Fort Funston. For example, NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on soils in the area (NPS 2010h, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect soils in the area of Fort Funston. Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term major adverse impacts on soils from dogs at Fort Funston under alternative A were considered together with the negligible effects of the projects mentioned above resulting in long-term major adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term major adverse impacts	Soil compaction and disturbance from digging and running would occur primarily on the main portion of the sensitive bluff tops and to a lesser degree on the beach since dogs would be under voice control; major impacts on soil chemistry are expected from nutrient input; area experiences high dog use	Long-term major adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on Fort Funston trails designated for dog use and on the beach with a seasonal closure (April 1–August 15) extending 50 feet from the foot of the northernmost bluffs during the bank swallow nesting season. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the trails and beach and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the beach and trails (LOD area) would be long term, moderate, and adverse, since this is a high use dog site and these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, digging, soil erosion, and nutrient addition. Nutrient inputs would contribute to changed soil properties in restored areas and potential restoration areas immediately adjacent to trails. On the beach, even though dogs would be restrained on leash they would still dig in the sand and cause soil disturbance. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Impacts would be moderate and adverse, since dog walking use is so high at this site. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at the park site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts to soils from dogs at the site. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

In Fort Funston, the long-term moderate adverse impacts on soils along the beach and trails would occur in only a portion of the entire site. Many areas of Fort Funston would not be impacted by dogs. Therefore, the overall impact on soils at Fort Funston would be long term, minor, and adverse, assuming compliance.

Cumulative Impacts. There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term minor adverse impacts on soils from dogs at Fort Funston under alternative B were considered together with the negligible effects of the projects mentioned above in alternative A resulting in long-term minor adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, since dog walking under voice control would no longer be allowed at Fort Funston. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on soils in adjacent lands from increased dog use would be long term, minor to moderate, and adverse, since Fort Funston is a high use site for dog walking.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Long-term, minor, adverse cumulative impacts Long-term minor to moderate indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts pm soils adjacent to the trails (LOD area) and beach	Impacts on soils from compaction, erosion, disturbance from digging, and nutrient addition would occur, as well as destabilization of the dunes from digging; area is high use site for dog walkers		
Conclusion: Overall long-term minor adverse impacts, assuming compliance	Soils along the trails have been previously disturbed; on-leash area, LOD area, and beach are only a portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on portions of the Coastal Trail and under voice and sight control in a ROLA on the beach south of the beach access trail and in a ROLA (upland) adjacent to the parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the trails and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, and nutrient addition. Nutrient inputs would contribute to changed soil

properties in restored areas and potential restoration areas immediately adjacent to trails. Impacts would be moderate, since dog walking use is so high at this site. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at the park site. Impacts on soils in the ROLAs would be long term, moderate to major, and adverse, due to the high number of dogs concentrated in the area. The ROLAs would be located in existing coastal dunes that have been fragmented by a myriad of social trails created by dogs and humans traversing the area. Since dogs would be off leash, they would run at faster speeds and stop abruptly, creating a greater impact on soils. In addition, dogs would be able to dig in the sand throughout the ROLAs. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Nutrient addition would also be high in the ROLAs due to the high number of dogs, changing the natural chemistry of the soils. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at Fort Funston. In some areas, changes to the soils or geologic processes would be highly noticeable and permanent.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, and adverse.

In Fort Funston, the long-term moderate to major adverse impacts on soils in the ROLAs would only occur in a portion of the entire site. As discussed above, impacts in areas adjacent to the trails (LOD area) would be long term, moderate, and adverse and there would be long-term minor adverse impacts from commercial dog walkers. Therefore, the overall impact on soils at Fort Funston would be long term, minor to moderate, and adverse.

Cumulative Impacts. There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term minor to moderate adverse impacts on soils from dogs at Fort Funston under alternative C were considered together with the negligible effects of the projects mentioned above in alternative A resulting in long-term minor to moderate adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative C, since dog walking under voice and sight control would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on soils in adjacent lands from increased dog use would be long term, minor, and adverse. Even though Fort Funston is high use site for dog walking, not all dog walkers would start visiting parks other than Fort Funston once the new regulation is implemented.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Long-term minor to moderate adverse cumulative impacts	Beneficial, assuming compliance
Long-term moderate adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, disturbance from digging, and nutrient addition would occur, as well as destabilization of the dunes from digging; site is high dog use area	Long-term minor adverse indirect impacts in adjacent lands	
Long-term moderate to major adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, digging, and nutrient addition; destabilization of the dunes from digging would occur Concentrated dog use would occur in ROLA; site is high dog use area		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Soils along the trails have been previously disturbed; on-leash area, LOD area, and ROLA are only a portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach south of the Beach Access trail, south of the main parking lot, the Coastal Trail from the main parking lot to the junction of the Horse Trail, the Beach Access Trail, the access trail to the John Muir parking lot, the Battery Davis Trail, the Chip Trail, and the Sunset Trail. A ROLA with fencing would be located in the disturbed area north of the main parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the trails, the beach, and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the beach and trails (LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, digging, and nutrient addition. Nutrient inputs would contribute to changed soil properties in restored areas and potential restoration areas immediately adjacent to trails. Impacts would be moderate, since dog walking use is so high at this site. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes. Impacts on soils in the ROLA would be long term, moderate to major, and adverse, due to the high number of dogs in the concentrated area. The ROLA would be located in existing coastal dunes that have been fragmented by a myriad of social trails created by dogs and humans traversing the area. Since dogs would be off leash, they would run at faster speeds and stop abruptly, creating a greater impact on soils. In addition, dogs would be able to dig in the sand, which changes the

nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Nutrient addition would also be high in the ROLA due to the high concentration of dogs, changing the natural chemistry of the soils. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at Fort Funston. In some areas, changes to the soils or geologic processes would be highly noticeable and permanent.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

In Fort Funston, the long-term moderate to major adverse impacts on soils in the ROLA would occur in a relatively small area when compared to the site as a whole. As discussed above, impacts in areas adjacent to the trails (LOD area) would be long term, moderate, and adverse and there would be no impacts from commercial dog walkers. Therefore, the overall impact on soils at Fort Funston would be long term, minor to moderate, and adverse.

Cumulative Impacts. There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term minor to moderate adverse impacts on soils from dogs at Fort Funston under alternative D were considered together with the negligible effects of the projects mentioned above in alternative A resulting in long-term minor to moderate adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D, since dog walking under voice and sight control would be limited to a ROLA at Fort Funston. In addition, some interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on soils in adjacent lands from increased dog use would be long term, minor, and adverse. Even though Fort Funston is a high use site for dog walking, not all dog walkers would start visiting parks other than Fort Funston once the new regulation is implemented.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Long-term minor to moderate adverse cumulative impacts Long-term minor adverse indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, disturbance from digging, and nutrient addition would occur		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term moderate to major adverse impacts in the ROLA	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, by digging, and by nutrient addition; site is high dog use area; concentrated dog use would occur in ROLA		
Conclusion: Overall long-term minor to moderate adverse impacts, assuming compliance	Soils along the trails have been previously disturbed; on-leash area, LOD area, and ROLA are only a portion of the entire site		

Alternative E: Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be available on the beach north of the Beach Access Trail, south of the main parking lot, the corridor between the cliffs and the western edge of the Chip Trail, the Coastal Trail, the Beach Access Trail, the access trail to John Muir parking lot, the Battery Davis Trail, and the Sunset Trail. Two ROLAs would be established: one on the beach south of the Beach Access Trail and a second in upper Fort Funston, extending north from the main parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the trails, the beach, and the 6-foot corridors immediately adjacent to both sides of the trails. Soils along the trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the beach and trails (LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, digging, and nutrient addition. Nutrient inputs would contribute to changed soil properties in restored areas and potential restoration areas immediately adjacent to trails. Impacts would be moderate, since dog walking use is so high at this site. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes. Impacts on soils in the ROLAs would be long term, moderate to major, and adverse, due to the high number of dogs concentrated in the area. The ROLAs would be located in existing coastal dunes that have been fragmented by a myriad of social trails created by dogs and humans traversing the area. Since dogs would be off leash, they would run at faster speeds and stop abruptly, creating a greater impact on soils. In addition, dogs would be able to dig in the sand throughout the ROLAs. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Nutrient addition would also be high in the ROLAs due to the concentration of dogs, changing the natural chemistry of the soils. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at Fort Funston. In some areas, changes to the soils or geologic processes would be highly noticeable and permanent.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-

leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, and adverse.

In Fort Funston, the moderate to major adverse impacts on soils in the ROLAs would occur in only a portion of the entire site. As discussed above, impacts in areas adjacent to the trails (LOD area) would be long term, moderate, and adverse, and commercial dog walkers would have long-term minor adverse impacts on soils. Therefore, the overall impact on soils at Fort Funston would be long term, moderate, and adverse.

Cumulative Impacts. There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term moderate adverse impacts on soils from dogs at Fort Funston under alternative E were considered together with the negligible effects of the projects mentioned above in alternative A resulting in long-term moderate adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A are not expected to experience increased visitation under alternative E, since dog walking under voice and sight control would be offered in two ROLAs at Fort Funston, which includes the interior portion of Fort Funston and more than half of the beach. Therefore, no indirect impacts on soils in adjacent lands from increased dog use would occur.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Long-term moderate adverse cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term moderate adverse impacts on soils adjacent to the trails (LOD area)	Impacts on soils from compaction, erosion, disturbance from digging, and nutrient addition would occur; site is high dog walking use area		
Long-term moderate to major adverse impacts in the ROLAs	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, by digging, and by nutrient addition; site is high dog walking use area		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall long-term moderate adverse impacts, assuming compliance	Soils along the trails have been previously disturbed; on-leash area, LOD area, and ROLA are only a portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Funston. The preferred alternative would allow on-leash dog walking on portions of the Coastal Trail and under voice and sight control in a ROLA on the beach south of the beach access trail and in a ROLA (upland) adjacent to the parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the trail and the 6-foot corridors immediately adjacent to both sides of the trail. Soils along the trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (LOD area) would be long term, moderate, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, and nutrient addition. Nutrient inputs would contribute to changed soil properties in restored areas and potential restoration areas immediately adjacent to trails. Impacts would be moderate, since dog walking use is so high at this site. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at the park site. Impacts on soils in the ROLAs would be long term, moderate to major, and adverse, due to the high number of dogs concentrated in the area. The ROLAs would be located in existing coastal dunes that have been fragmented by a myriad of social trails created by dogs and humans traversing the area. Since dogs would be off leash, they would run at faster speeds and stop abruptly, creating greater impacts on soils. In addition, dogs would be able to dig in the sand throughout the ROLAs. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties. Digging in dunes/foredunes destabilizes the dunes, making it difficult for plants to establish. Nutrient addition would also be high in the ROLAs due to the high number of dogs, changing the natural chemistry of the soils. Impacts would be long term and readily apparent, and would cause noticeable changes in soils or soil function, geologic features, or geologic processes at Fort Funston. In some areas, changes to the soils or geologic processes would be highly noticeable and permanent.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to soils from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to soils are expected from this user group. Impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers as summarized below in overall impacts, therefore impacts from commercial dog walking would be long-term, minor to moderate, and adverse.

In Fort Funston, the long-term moderate to major adverse impacts on soils in the ROLAs would occur in only a portion of the entire site. As discussed above, impacts in areas adjacent to the trail (LOD area) would be long term, moderate, and adverse and there would be long-term minor adverse impacts from commercial dog walkers. Therefore, the overall impact on soils at Fort Funston would be long term, minor to moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect soils at GGNRA park sites such as Fort Funston. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Fort Funston.

Additional actions have had, are currently having, or have the potential to have adverse impacts on soils at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on soils in the area (NPS 2010h, 1). The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect soils in the area of Fort Funston. Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

There is a combination of beneficial and adverse projects in and around Fort Funston, when combined together these projects would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term minor to moderate adverse impacts on soils from dogs at Fort Funston under the preferred alternative were considered together with the negligible effects of the projects mentioned above in alternative A resulting in long-term minor to moderate adverse impacts cumulative impacts to soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). The adjacent lands may experience increased visitation by individual and commercial dog walkers under alternative C, since dog walking under voice and sight control would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on soils in adjacent lands from increased dog use would be long term, minor, and adverse. Even though Fort Funston is a high use

site for dog walking, not all dog walkers would start visiting parks other than Fort Funston once the new regulation is implemented.

FORT FUNSTON PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Long-term minor to moderate adverse cumulative impacts	Beneficial, assuming compliance
Long-term moderate adverse impacts on soils adjacent to the trail (LOD area)	Impacts on soils from compaction, erosion, disturbance from digging, and nutrient addition would occur, as well as destabilization of the dunes from digging; site is a high dog walking use area	Long-term minor adverse indirect impacts in adjacent lands	
Long-term moderate to major adverse impacts in the ROLAs	Soils would be disturbed by dogs running at fast speeds and stopping abruptly, by digging, and by nutrient addition; destabilization of the dunes from digging would occur Concentrated dog use would occur in ROLAs; site is a high dog walking use area		
Conclusion:			
Overall long-term minor to moderate adverse impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash area, LOD area, and ROLAs are only a portion of the entire site		

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. For alternative A, on-leash dog walking would continue to be allowed on all trails and the portion of the beach owned by the NPS. This site has moderate visitor use by dog walkers, and over 50 leash law violations were recorded in 2007/2008 (table 9). Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. Dogs contribute to soil compaction, soil erosion, nutrient addition, and digging on the trails and beach. Beach sand provides habitat, and nutrient enrichment and changes in soil density could result in changes to habitat quality. Digging could change the nature of the sand soil environment and make it less desirable habitat for invertebrates that live in the sand. Soil compaction and nutrient addition can change the characteristics and chemistry of the soil and prevent the growth of natural vegetation.

Impacts in areas adjacent to the trail (LOD area) and on the on-leash beach would be long term, minor, and adverse. In addition, some of the dogs that are under voice control may go off trail and into previously undisturbed areas and impact soils in these areas. Therefore, impacts on soils as a result of alternative A would continue to be long term, minor, and adverse at this site because impacts would be detectable but not large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on soils from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, disturbance from digging, and nutrient addition would occur on the trails and beach; since some dogs would be off leash, previously undisturbed soils would also be impacted	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on the Coastal Trail and the portion of beach owned by NPS, but dogs would not be allowed on Old Mori Road or the Pollywog Trail, which is located adjacent to the ponds. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail, the beach, and the 6-foot corridors immediately adjacent to both sides of the trail. Soils along the trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (LOD area) and on the on-leash beach would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, nutrient addition, and digging. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Mori Point, the minor adverse impacts from dogs in the LOD area and on the beach would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Mori Point would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under alternative B, since the Old Mori Road and Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on soils in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils adjacent to the trail (LOD area) and on the on-leash beach	Impacts on soils from compaction, erosion, nutrient addition, and disturbance from digging would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of the beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail/road, the beach, and the 6-foot corridors immediately adjacent to both sides of the trail/road. Soils along the trail/road have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/road (LOD area) and on the on-leash beach would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, nutrient addition, and digging. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

In Mori Point, the minor adverse impacts from dogs in the LOD area and beach would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Mori Point would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under alternative C, since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on soils in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail and road	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail/road (LOD area) and on the on-leash beach	Impacts on soils from compaction, erosion, nutrient addition, and disturbance from digging would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail/road have been previously disturbed; on-leash area and LOD areas are only a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, since this alternative does not allow dogs. Indirect impacts on soils in adjacent lands from increased dog use are expected to range from negligible to long term, minor, and adverse, since dog walking is currently considered a moderate use activity at Mori Point.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor indirect impacts on soils in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trail and beach as alternative B, with the addition of the Pollywog Path. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail/path, the beach, and the 6-foot corridors immediately adjacent to the trail/path. Soils along the trail/path have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/path (LOD area) and on the on-leash beach would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, nutrient addition, and digging. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Mori Point, the minor adverse impacts from dogs in the LOD area and on the beach would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Mori Point would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E. Since visitors would be allowed to continue to walk dogs at this site, no indirect impacts on soils in adjacent lands are expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the Coastal Trail/Old Mori Road/Pollywog Path and beach within the NPS boundary	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail/path (LOD area) and on the on-leash beach within the NPS boundary	Impacts on soils from compaction, erosion, nutrient addition, and disturbance from digging would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail/path have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of the beach owned by the NPS, but dogs would not be allowed on the Pollywog Trail, which is located adjacent to the ponds. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail/road, the beach, and the 6-foot corridors immediately adjacent to both sides of the trail/road. Soils along the trail/road have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils have been previously compacted, soil compaction and nutrient addition from dogs would add a negligible impact to those already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail/road (LOD area) and on the on-leash beach would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts would result from soil compaction, soil erosion, nutrient addition, and digging. Nutrient addition from dog waste may also be occurring beyond the LOD area as a result of runoff. Digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand. Beach sand, particularly near the bay edge and beneath wave-cast debris, provides important habitat for invertebrates, which would be impacted by changes in soil/sand properties.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new

regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Mori Point, the minor adverse impacts from dogs in the LOD area and beach would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Mori Point would be negligible.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on sandy beaches at project sites within GGNRA. Typically, the impacts on soils from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils. The impacts resulting from the past oil spill would add little to the cumulative impacts on soils since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under the preferred alternative, since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on soils in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail/road	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term minor adverse impacts on soils adjacent to the trail/road (LOD area) and on the on-leash beach	Impacts on soils from compaction, erosion, nutrient addition, and disturbance from digging would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail/road have been previously disturbed; on-leash and LOD area areas are a small portion of the entire site		

Milagra Ridge

Alternative A: No Action. Under this alternative, on-leash dog walking would continue to be allowed on all trails and fire roads. This site has documented moderate visitor use by bicyclists, walkers, and hikers, and low to moderate visitor use by dog walkers. Although current GGNRA regulations require dogs to be leashed at Milagra Ridge, unleashed dogs have been observed at the site; 25 leash law violations were issued in 2007/2008 (table 9). Impacts in areas adjacent to the fire road and trails (LOD area) would be long term, minor, and adverse. Dogs contribute to soil compaction, soil erosion, and nutrient addition on and off trails. In addition, some of the off-leash dogs at the site may go off trail and into previously undisturbed areas and impact soils in these areas. Soil compaction and nutrient addition can prevent the continued growth of vegetation. Under the no-action alternative, impacts would continue to be long term, minor, and adverse because impacts would be detectable on the fire road and trails, but would not be large enough to cause changes in soils or natural soil function.

Under alternative A, no permit system exists for dog walking. At Milagra Ridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Milagra Ridge.

The long-term minor adverse impacts on soils from dogs at Milagra Ridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction, erosion, and nutrient addition would occur on the fire roads/trails; since some dogs would be off leash, previously undisturbed soils would also be impacted	Negligible cumulative impacts No indirect impacts on adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would also allow dogs on leash on the fire road and the trail to the westernmost overlook and World War II bunker, as well as on the future Milagra Battery Trail. However, the trail loop to the top of the hill would not be open to dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the fire road or trails. In general, impacts on soils would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Soils along the existing fire road/trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing fire road/trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire road (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation; impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking at Milagra Ridge is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Milagra Ridge, the minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Milagra Ridge would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative B, since the fire road would still be open for dog walking.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the fire road/trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the fire road/trails have been previously disturbed; on-leash and LOD area areas are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking in the same areas as alternative B, and impacts would be the same: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Milagra Ridge, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the fire road/trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible impacts, assuming compliance	Soils along the fire road/trails have been previously disturbed; on-leash area and LOD areas are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on soils from dogs would occur, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, since this alternative would not allow dogs. Indirect impacts on soils in adjacent lands from increased dog use are expected to range from negligible to long term, minor, and adverse, since dog walking is considered a high use activity at Milagra Ridge.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a loop to the top of the hill; even with that addition, impacts would be the same as alternative B: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sits any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Milagra Ridge, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely

that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils at adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the fire road/trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the fire road/trails have been previously disturbed; on-leash area and LOD areas are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Milagra Ridge. The preferred alternative would allow dogs on leash on the fire road and the trail to the westernmost overlook and WWII bunker, as well as on the future Milagra Battery Trail. However, the trail loop to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the fire road or trails. In general, impacts on soils would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Soils along the existing fire road/trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing fire road/trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails/fire road (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Milagra Ridge, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new

regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Milagra Ridge, the minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Milagra Ridge would be negligible.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Milagra Ridge.

The negligible impacts on soils from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since the fire road would still be open for dog walking.

MILAGRA RIDGE PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the fire road/trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails/fire road (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the fire road/trails have been previously disturbed; on-leash area and LOD area areas are a small portion of the entire site		

Sweeney Ridge/Cattle Hill

Alternative A: No Action. Alternative A would allow on-leash dog walking on all trails at Sweeney Ridge except the Notch Trail, which would be closed to dogs. This site has documented high visitor use

by dog walkers and 55 leash law violations were recorded in 2007/2008 (table 9); therefore, off-leash dog walking is currently occurring along the trails of Sweeney Ridge. Cattle Hill is not currently part of GGNRA, but unrestricted dog walking occurs at this site, and dogs have contributed to soil compaction along social trails off the main trails. Dogs would continue to contribute to soil compaction at both sites and contribute nutrients to soil along the trails from dog waste throughout the sites. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse due to on-leash dog walking. In addition, since off-leash dogs do occur at the site, it is likely that dogs walk or run through other undisturbed areas. Therefore, impacts on soil as a result of alternative A would continue to be long term, minor, and adverse at this site because impacts would be detectable but not large enough to cause changes in soils or soil function.

Under alternative A, no permit system exists for dog walking. Commercial dog walking is uncommon at Sweeney Ridge and Cattle Hill. Therefore, commercial dog walking would have negligible impacts on soils.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge and Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge and Cattle Hill. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Sweeney Ridge and Cattle Hill.

Under alternative A, the long-term minor adverse impacts on soils from dogs at Sweeney Ridge and Cattle Hill were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction and nutrient addition would occur on the trails and in the LOD area	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, no impacts on soils from dogs at this site would occur because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative B.

Cumulative Impacts. Under alternative B, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly the San Bruno Dog Park and Esplanade Beach, because they are the closest adjacent dog use areas. Indirect impacts on soils in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse, since dog walking is considered a high use activity at Sweeney Ridge/Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts on soils in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, no dog walking would be allowed at Sweeney Ridge. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the trails. In general, impacts on soils would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Soils along the existing trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at

Sweeney Ridge/Cattle Hill, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge commercial dog walking under alternative C would have no impact on soils. Since commercial dog walking is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils at Cattle Hill.

In Cattle Hill, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Cattle Hill would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” At Cattle Hill, the beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on soils. At Sweeney Ridge, the lack of impacts considered with the beneficial effects from the Park’s Stewardship Programs would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

At Cattle Hill, no indirect impacts on soils in adjacent lands would be expected under alternative C, since on-leash dog walking would be allowed. In lands adjacent to Sweeney Ridge, indirect impacts on soils from increased dog use would range from negligible to long term, minor, and adverse, since dog walking is considered a high use activity at Sweeney Ridge.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
No impacts at Sweeney Ridge	Dogs would not be allowed at the site	Beneficial cumulative impacts at both Sweeney Ridge and Cattle Hill	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (6-foot corridors, or LOD area) at Cattle Hill	Impacts on soils from compaction, erosion, and nutrient addition would occur	No indirect impacts in adjacent lands at Cattle Hill; negligible to long-term, minor, adverse indirect impacts to adjacent lands at Sweeney Ridge	
Conclusion: Overall negligible impacts, assuming compliance at Cattle Hill	Soils along the trails have been previously disturbed; on-leash area and LOD areas are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and negligible impacts to long-term minor adverse impacts on soils in adjacent lands.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Mori Ridge Trail, Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail, and Sneath Lane. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Cattle Hill Overlook Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the trails. In general, impacts on soils would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Soils along the existing trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Sweeney Ridge/Cattle Hill, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Sweeney Ridge and Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

In Sweeney Ridge and Cattle Hill, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Sweeney Ridge and Cattle Hill would be negligible.

Cumulative Impacts. The negligible impacts on soils from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative E, since on-leash dog walking would be allowed at both Sweeney Ridge and Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trails	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trails have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Sweeney Ridge and Cattle Hill. No dog walking would be allowed at Sweeney Ridge. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trails, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the trails. In general, impacts on soils would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Soils along the existing trails have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trails, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trails (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Sweeney Ridge/Cattle Hill, so individual or commercial dog walkers would only be allowed to walk one to three

dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge commercial dog walking under the preferred alternative would have no impact on soils. Since commercial dog walking is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

In Cattle Hill, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Cattle Hill would be negligible.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge and Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge and Cattle Hill. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Sweeney Ridge and Cattle Hill.

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” At Cattle Hill, the beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on soils. At Sweeney Ridge, the lack of impacts considered with the beneficial effects from the Park’s Stewardship Programs would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (map 27). At Cattle Hill, no indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed. In lands adjacent to Sweeney Ridge, indirect impacts on soils in from increased dog use would range from negligible to long term, minor, and adverse, since dog walking is considered a high use activity at Sweeney Ridge.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
No impact at Sweeney Ridge	Dogs would not be allowed at the site	Beneficial cumulative impacts at both Sweeney Ridge and Cattle Hill	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trails (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur	No indirect impacts in adjacent lands at Cattle Hill; negligible to long-term, minor, adverse indirect impacts at Sweeney Ridge	

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible impacts at Cattle Hill, assuming compliance	Soils along the trails have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Pedro Point Headlands

Alternative A: No Action. Although this site is currently not part of GGNRA, unrestricted dog walking occurs at this site, and dogs have contributed to soil compaction along social trails. This site has documented low to moderate visitor use, but the numbers of citations and incident reports related to dog activities at the site are unknown since the NPS does not currently own the property and it is not patrolled by park rangers (table 9). Dogs contribute to soil compaction and erosion at this site. Dogs also contribute nutrients to the soil along the trails via their dog waste. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse. These impacts on soils as a result of alternative A would be detectable but not large enough to cause changes in soils or soil function.

There are currently no commercial dog walking regulations at Pedro Point Headlands. It is unknown if commercial dog walkers contribute to soil impacts.

Cumulative Impacts. Projects and actions in and near Pedro Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Pedro Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Pedro Point. Pedro Point Headland Stewardship Project aims to maintain and improve the ecological status of Pedro Point Headlands, and habitat restoration and trail development efforts include minimizing erosion (City College of San Francisco 2008, 1; Coastsider 2010, 1).

The long-term minor adverse impacts on soils from dogs at the Pedro Point Headlands under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on soils from alternative A resulting in negligible cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of Pedro Point and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica (map 27). No indirect impacts on soils in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

PEDRO POINT HEADLANDS ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Soil compaction erosion and nutrient addition would occur throughout the site	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trail, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the trail. In general, impacts on soils would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Soils along the existing trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trail, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required and all dogs must be on a leash. Since commercial dog walking is not common at the Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on soils.

In Pedro Point, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Pedro Point would be negligible.

Cumulative Impacts: The negligible impacts on soils from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

No indirect impacts on soils in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at Pedro Point Headlands.

PEDRO POINT HEADLANDS ALTERNATIVE B CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Alternative C: Emphasis on Multiple Use, Balanced by County. Similar to alternative B, alternative C would allow on-leash dog walking on the Coastal Trail and impacts on soils would be the same: negligible, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Pedro Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on soils.

Cumulative Impacts. Under alternative C, the cumulative impacts on soils at this park site and indirect impacts on soils in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at the Pedro Point Headlands. Therefore, no impacts on soils from dogs would occur at this site, because dog use would be eliminated. Soil disturbance and compaction would no longer occur.

Since dogs would not be allowed at the Pedro Point Headlands, there would be no impact from commercial dog walkers to soils.

Overall, no impact on soils would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to soils. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Montara State Beach and Esplanade Beach, because they are the closest dog use areas. Indirect impacts on soils in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse, since dog walking is considered a low to moderate use activity at Pedro Point Headlands.

PEDRO POINT HEADLANDS ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall no impact, assuming compliance	Dogs would not be allowed in the site, so no soil would be disturbed	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts on soils in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Similar to alternative B, alternative E would allow on-leash dog walking on the Coastal Trail and impacts would be the same: negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Pedro Point Headlands, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on soils.

Cumulative Impacts. Under alternative E, the cumulative impacts on soils at this park site and indirect impacts on soils at adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on soils in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

Preferred Alternative. Alternative C was selected as the preferred alternative for Pedro Point Headlands. The preferred alternative would allow on-leash dog walking on the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the trail, dogs would then have access to the adjacent land 6 feet in both directions, resulting in an LOD area for soils that would extend 6 feet out from both edges of the trail. In general, impacts on soils would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Soils along the existing trail have been previously disturbed and compacted, resulting in a loss of natural soil function. Since soils are already compacted on the existing trail, soil compaction and nutrient addition from dogs would add a negligible impact to these already disturbed soils. These soils no longer support the growth of vegetation or microorganisms commonly found in soil. Impacts from dogs would be at such low levels of detection that there would be no discernible effect on soils or natural soil function. Impacts in areas adjacent to the trail (6-foot corridors, or LOD area) would be long term, minor, and adverse, since these areas have not been previously disturbed and have naturally functioning soils supporting the growth of existing vegetation. Impacts on soils could include soil compaction, erosion, and nutrient addition from dog waste and urine. Impacts would be detectable but not large enough to cause changes in soils or natural soil function.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Pedro Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on soils.

In Pedro Point, the long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on soils from on-leash dog walking at Pedro Point would be negligible.

Cumulative Impacts. Projects and actions in and near Pedro Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving

conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Pedro Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Pedro Point. Pedro Point Headland Stewardship Project aims to maintain and improve the ecological status of Pedro Point Headlands, and habitat restoration and trail development efforts include minimizing erosion (City College of San Francisco 2008, 1; Coastsider 2010, 1).

The negligible impacts on soils from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on soils.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of Pedro Point and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica, (map 27). No indirect impacts on soils in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at Pedro Point Headlands.

PEDRO POINT HEADLANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Negligible impacts on soils along the trail	Soils have been previously disturbed and no longer have natural function	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance
Long-term minor adverse impacts on soils adjacent to the trail (6-foot corridors, or LOD area)	Impacts on soils from compaction, erosion, and nutrient addition would occur		
Conclusion: Overall negligible impacts, assuming compliance	Soils along the trail have been previously disturbed; on-leash and LOD areas are a small portion of the entire site		

New Lands

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive soils and/or geologic resources exist at the site. Concentrated dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. In areas that have been converted to

urban uses or compacted by use such as parking lots, picnic areas, and trails, natural soil function has already been lost. In areas with soft, unstable soil, dog traffic can physically remove the soil; sandy coastal bluff faces and sand dunes are geologic resources that are very susceptible to disturbance. Soils could lose natural function as a result of impacts from dog activities at the site, including compaction, digging, and nutrient addition to soils.

At most new lands, the impacts from allowing on-leash dog walking would be negligible, assuming compliance and that the area affected would be relatively small compared to total park area and because there may be multiple other sources of compactions (e.g., human foot traffic, bicycles, horses). The physical restraint of dogs would protect soil function off-trail. Dogs digging on beaches may disturb the soil, but the impact is considered negligible because these actions would not affect soil function. At sites where natural habitat exists and humans and dogs have not previously affected the area, or at sites with serpentine soils, the impacts are considered to be minor and adverse because these soils are either rare and naturally nutrient-poor, or these lands are intact and preserved and more sensitive to new impacts from humans and/or dogs. Therefore, overall impacts to soils and geology as a result of alternative A would range from negligible to long-term minor, and adverse. It is also important to note that no impacts to soils are expected to occur at sites that are currently closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on soils. At sites where commercial dog walking is common, impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Adjacent lands could range from urban lands previously developed to preserved lands. Since on-leash dog walking would be allowed at new lands under this alternative the overall indirect impacts to soils at adjacent lands as a result of alternative A would range from no impact to long-term minor, and adverse.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	The physical restraint of dogs would protect soil function off-trail; compaction and digging from dogs would be in a relatively small area at most new lands; undisturbed natural areas or serpentine soils would be more sensitive to disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to long-term, minor, and adverse indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive soils and/or geologic resources exist at the site. Concentrated dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. In areas that have been converted to urban uses or compacted by use such as parking lots, picnic areas, and trails, natural soil function has already been lost. In areas with soft, unstable soil, dog traffic can physically remove the soil; sandy coastal bluff faces and sand dunes are geologic resources that are very susceptible to disturbance. Soils could lose natural function as a result of impacts from dog activities at the site, including compaction, digging, and nutrient addition to soils.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on soils. At sites where commercial dog walking is common, impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible assuming compliance and that the area affected would be relatively small compared to total park area and because there may be multiple other sources of compactions (e.g., human foot traffic, bicycles, horses). The physical restraint of dogs would protect soil function off-trail and when compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dogs digging on beaches may disturb the soil, but the impact is considered negligible because these actions would not affect soil function. At sites where natural habitat exists and humans and dogs have not previously affected the area, or at sites with serpentine soils, the impacts are considered to be minor and adverse because these soils are either rare and naturally nutrient-poor, or these lands are intact and preserved and more sensitive to new impacts from humans and/or dogs. Therefore, assuming compliance, impacts to soils and geology as a result of alternatives B and C would range from negligible to long-term minor, and adverse. It is also important to note that no impacts to soils or geology are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the

cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Since on-leash dog walking would be allowed at new lands under these alternatives the overall indirect impacts to soils at adjacent lands as a result of alternatives B and C would range from no impact to long-term minor, and adverse.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall Negligible to long-term, minor, adverse impact assuming compliance; No impact at sites that prohibit dogs	The physical restraint of dogs would protect soil function off-trail; compaction and digging from dogs would be in a relatively small area at most new lands; undisturbed natural areas or serpentine soils would be more sensitive to disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to long-term, minor, and adverse indirect impact at adjacent lands	N/A

N/A = not applicable.

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive soils and/or geologic resources exist at the site. Concentrated dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. In areas that have been converted to urban uses or compacted by use such as parking lots, picnic areas, and trails natural soil function has already been lost. In areas with soft, unstable soil, dog traffic can physically move the soil; sandy coastal bluff faces and sand dunes are geologic resources that are very susceptible to disturbance. Soils could lose

natural function as a result of impacts from dog activities at the site, including compaction, digging, and nutrient addition. However, if compliance is assumed at new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on soils.

At most new lands, the impacts from allowing on-leash dog walking would be negligible assuming compliance and that the area affected would be relatively small compared to total park area and because there may be multiple other sources of compactions (e.g., human foot traffic, bicycles, horses). The physical restraint of dogs would protect soil function off-trail and when compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dogs digging on beaches may disturb the soil, but the impact is considered negligible because these actions would not affect soil function. At sites where natural habitat exists and humans and dogs have not previously affected the area, or at sites with serpentine soils, the impacts are considered to be minor and adverse because these soils are either rare and naturally nutrient-poor, or these lands are intact and preserved and more sensitive to new impacts from humans and/or dogs. Therefore, assuming compliance, impacts to soils and geology as a result of alternative D would range from negligible to long-term minor, and adverse. It is also important to note that no impacts to soils or geology are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. On-leash dog walking may be allowed at new lands if opened under the GGNRA Compendium; therefore, the overall indirect impacts to soils at adjacent lands as a result of alternative D would range from no impact to long-term minor, and adverse.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible to long-term, minor, adverse impact assuming compliance; No impact at sites that prohibit dogs	The physical restraint of dogs would protect soil function off-trail; compaction and digging from dogs would be in a relatively small area at most new lands; undisturbed natural areas or serpentine soils would be more sensitive to disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to long-term, minor, and adverse indirect impact at adjacent lands	N/A

N/A = not applicable.

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

At new lands managed by GGNRA, changes to the rate of erosion, soil composition, and/or soil function could occur if on leash dog walking is allowed. Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. As stated above, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive soils and/or geologic resources exist at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers and would result in a negligible impact on soils. At sites where commercial dog walking is common, impacts to soils from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

Concentrated dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. In areas that have been converted to urban uses or compacted by use such as parking lots, picnic areas, and trails natural soil function has already been lost. In areas with soft, unstable soil, dog traffic can physically move the soil; sandy coastal bluff faces and sand dunes are geologic resources that are very susceptible to disturbance. Soils could lose natural function as a result of impacts from dog activities at the site, including compaction, digging, and nutrient addition. Within ROLAs, dogs would be able to run at fast speeds and make abrupt stops, which would disturb the soils and the organisms that live in the soil. Since dogs would be confined to a small area, nutrient addition and digging would be more concentrated. If a beach is present within a ROLA at the new lands, digging by dogs changes the nature of the sand soil environment and makes it less desirable habitat for invertebrates that live in the sand.

At most new lands, the impacts from allowing on leash dog walking or opening new lands to voice and sight control would be considered negligible or long-term, minor, and adverse assuming compliance and the area affected would be relatively small compared to total park area and because there may be multiple other sources of compaction (e.g., human foot traffic, bicycles, horses). Dogs digging on beaches may disturb the soil, but the impact is considered negligible because these actions would not affect soil function. At sites where natural habitat exists, or at sites with serpentine soils, the impacts are considered to be minor to moderate (depending on extent of these soils at the site) and adverse because these soils are both rare and naturally nutrient-poor or these lands are intact and preserved. It is assumed that voice and sight control areas would not be established in or adjacent to areas with sensitive geological and/or soil resources so the park's desired future conditions can be attained. However, voice and sight control areas would be more likely to be intensively used and the increased activity would cause compaction and disturbance to the soils within the voice and sight control areas. Therefore, assuming compliance, overall impacts to soils and geology as a result of alternative E (from on-leash dog walking) would be negligible to long-term, moderate, and adverse to encompass potential effects at newly acquired lands under management by GGNRA. It is also important to note that at sites that are currently closed to or proposed for closure to dogs, no impacts to soils and geology in these areas would occur.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. On-leash dog walking would be allowed at new lands under this alternative. In addition, voice and sight control may be allowed at new lands under this alternative; therefore, the overall indirect impacts to soils at adjacent lands as a result of alternative E would range from no impact to long-term minor to moderate, and adverse.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible to long-term, moderate, adverse impact assuming compliance; No impact at sites that prohibit dogs	Compaction and digging from dogs would be in a relatively small area at most new lands; dogs in ROLAs could cause increased soil compaction and disturbance; undisturbed natural areas or serpentine soils would be more sensitive to disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to long-term, minor to moderate, and adverse indirect impact at adjacent lands	N/A

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive soils and/or geologic resources exist at the site. Concentrated dog use can cause soil compaction or erosion, and dog waste may add nutrients to soil. In areas that have been converted to urban uses or compacted by use such as parking lots, picnic areas, and trails natural soil function has already been lost. In areas with soft, unstable soil, dog traffic can physically move the soil; sandy coastal bluff faces and sand dunes are geologic resources that are very susceptible to disturbance. Soils could lose natural function as a result of impacts from dog activities at the site, including compaction, digging, and nutrient addition. However, if compliance is assumed at new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on soils. At sites where commercial dog walking is common, impacts to soils under the preferred alternative from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to soils from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible assuming compliance and that the area affected would be relatively small compared to total park area and because there may be multiple other sources of compactions (e.g., human foot traffic, bicycles, horses). The physical restraint of dogs would protect soil function off-trail and when compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dogs digging on beaches may disturb the soil, but the impact is considered negligible because these actions would not affect soil function. At sites where natural habitat exists and humans and dogs have not previously affected the area, or at sites with serpentine soils, the impacts are considered to be minor and adverse because these soils are either rare and naturally nutrient-poor, or these lands are intact and preserved and more sensitive to new impacts from humans and/or dogs. Therefore, assuming compliance, impacts to soils and geology as a result of the preferred alternative would range from negligible to long-term minor, and adverse. It is also important to note that no impacts to soils or geology are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the

cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Adjacent lands could range from urban lands previously developed to preserved lands. Since on-leash dog walking would be allowed at new lands under this alternative the overall indirect impacts to soils at adjacent lands as a result of the preferred alternative would range from no impact to long-term minor, and adverse.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Soil Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible to long-term, minor, adverse impact assuming compliance; No impact at sites that dogs	The physical restraint of dogs would protect soil function off-trail; compaction and digging from dogs would be in a relatively small area at most new lands; undisturbed natural areas or serpentine soils would be more sensitive to disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to long-term, minor, and adverse indirect impact at adjacent lands	N/A

N/A = not applicable.

WATER QUALITY

GUIDING POLICIES AND REGULATIONS

Federal Laws and Regulations

The *Clean Water Act* requires the NPS to “comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution” (33 USC 1251 et seq., section 313).

NPS Management Policies 2006

The NPS has designated management policies related to water quality for park facilities. In supporting federal and state regulations, *NPS Management Policies 2006* states that the NPS will “take all necessary actions to maintain or restore the quality of surface waters and groundwaters within the parks consistent with the *Clean Water Act* and all other applicable federal, state, and local laws and regulations” (NPS 2006b, section 4.6.3).

STUDY AREA

The geographic study area for water quality includes the sites of GGNRA that have water resources (usually creeks and streams, but also lagoons, bays, and ocean waters) that would be affected differently under one or more of the alternatives under consideration for the dog management plan/EIS including new lands. Upland areas with no permanent water bodies or with small streams that are little affected by the presence of dogs are not discussed in this section. Ocean/bay/stream waters are affected by urban runoff; dogs are generally contributors to water quality conditions, but mostly at a negligible level. In addition, at times of low stream flow impacts from dogs may be more significant in streams, where small ponds may form. The following areas were analyzed for water quality:

- Marin County: Stinson Beach, Oakwood Valley, Muir Beach, Rodeo Beach/South Rodeo Beach, and Fort Baker.
- San Francisco County: Crissy Field, Baker Beach, Ocean Beach, and Fort Funston.
- San Mateo County: Mori Point.

The following sites (with no water resources or with water resources that are not affected by the plan alternatives) were not analyzed for water quality:

- Marin County: Homestead Valley; Alta Trail, Orchard Fire Road, and Pacheco Fire Road; and Marin Headlands Trails (except Rodeo Valley Trail Corridor, which is analyzed under Rodeo Beach/South Rodeo Beach). San Francisco County: Upper and Lower Fort Mason, Fort Point Promenade/Fort Point National Historic Site (NHS) Trails, Fort Miley, Lands End, Sutro Heights Park.
- San Mateo County: Milagra Ridge, Sweeney Ridge/Cattle Hill, and Pedro Point Headlands.

Seeps and springs do occur along the Coastal Trail at Lands End; however, seeps and springs are unlikely to be affected by dogs through digging or dog waste. Impacts at the most would be negligible; therefore, impacts to seeps and springs from dogs are not discussed further.

DURATION OF IMPACT

Impacts on water quality would be long term and are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the compliance-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on water quality would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on water quality would then become long term, as described below for each alternative. The potential for water quality degradation will persist for the life of the plan, but the impact will vary depending on the season, use intensity, and local conditions.

ASSESSMENT METHODOLOGY

The analysis of water quality impacts considered the effects of dogs on the water resources of the park, primarily from waste material and direct entry into the water. Impacts were analyzed qualitatively.

IMPACT THRESHOLDS

Water quality impacts were determined by examining the potential effects of dog walking activities on the various water bodies (i.e., streams, lagoons, ocean) within a park site. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. A beneficial impact would be a positive change in the condition or appearance of the resource. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. No impacts to water quality may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the effects to water quality under the various alternatives being considered:

- Beneficial* A beneficial impact is a beneficial change from the current condition and is a relative indicator of progress compared to the no action alternative. In general, a beneficial impact would be a decrease in nutrients and pathogens entering a water body, resulting in positive changes in water quality.
- Negligible* Water quality would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on water quality.
- Adverse*
 - Minor.** Effects on water quality would be detectable but would not be large enough to cause substantial local changes to water quality.
 - Moderate.** Effects would be readily apparent and they would result in substantial, noticeable effects on water quality on a local scale.
 - Major.** Effects would be readily apparent and long term, and they would result in substantial, noticeable effects on water quality on a regional scale.

WATER QUALITY IMPACTS COMMON TO ALL ALTERNATIVES

Turbidity

Dogs entering streams, ponds, and lagoons with fine bottom sediments may stir up the sediment and increase turbidity in the water. Excessive turbidity can reduce the ability of sight-feeding fish to capture prey, can smother aquatic eggs, can cause filter-feeding mussels to close up and stop feeding, and can impair the aesthetic value of the water resource (Dunlop et al. 2005, 44–45). The intensity of the impact on turbidity from dogs depends on the frequency of dogs entering the water body, the persistence of the turbidity, and the degree to which other sources (e.g., runoff from rain events and people wading in the same resources) contribute to the turbidity. All management alternatives other than existing voice-control restrictions (i.e., prohibition, leash control, ROLA) or conditions of noncompliance are expected to essentially eliminate turbidity impacts because dogs would be kept out of the park's water bodies.

Nutrients

Dog waste contains nitrogen and phosphorus, which are nutrients required by algae for growth. Excessive nutrients in water resources, especially ponds or lagoons with low flushing rates, can lead to excessive algae growth, known as an algal bloom. Algal blooms can be unsightly, and the eventual die-off of the algae can cause dissolved oxygen levels in the water body to drop below water quality standards, which can cause fish kills (MDNR n.d., 1). Where dogs are present near water bodies and the waste is not routinely removed by the dog owners, impacts on water quality may occur due to nutrients in dog waste in addition to multiple other sources of nutrients contained in stormwater runoff. Action alternatives that would prohibit dogs on beaches or in riparian areas would be expected to reduce dog waste and nutrient runoff. Action alternatives that include on-leash areas or ROLAs would be assumed to reduce dog waste in comparison to current voice-control restrictions because owners would be in closer contact with their dogs and would better comply with cleanup regulations.

Pathogens

Pet waste contains a large number of bacteria and may contain *Giardia*, roundworms, *Salmonella*, parvovirus, and many other microorganisms called pathogens that can be harmful to human health (CRCCD 2009, 1). If pet waste is left on the ground, runoff from rain events may transport these microorganisms to adjacent water bodies. Defecation from dogs can also occur directly in a water resource, such as a creek, stream, or pond. Fecal coliform bacteria are routinely measured across the nation at bathing beaches as an indicator of potential contamination from human or animal waste. The primary impact of dog waste on water quality relates to its potential impact on human health, which is discussed in the “Human Health and Safety” section. Specific examples of studies that relate dog waste to fecal coliform levels in water bodies are discussed below.

Dogs were determined to be a major contributor of fecal coliform bacteria in the Four Mile Run watershed in Northern Virginia; however, other studies in Long Beach, California, showed no effect from dog waste in areas where dogs are allowed as compared to the rest of the beach. About 50 percent of approximately 500 fecal coliform samples from Four Mile Run and its tributaries exceeded Virginia water quality standards for fecal coliform bacteria (NVPDC 1998b, 2). In a 1982 study of Baltimore, Maryland, catchments, dog waste was the single greatest contributor of fecal coliform and fecal strep bacteria (Lim and Olivieri 1982). Enforcement and education are necessary to raise resident awareness regarding the water quality impacts of dog waste (Stormwater Center 2009, 3).

A substudy of the San Francisco Sewage Master Plan determined that bacterial contamination of waters off Ocean Beach was significant due to dog waste deposited along the shoreline (NPS 1999, 21). Dogs

have been observed by park staff in the lagoon and ocean at Muir Beach, Redwood Creek, the ocean at Ocean Beach, the lagoon at Rodeo Beach, Crissy Field tidal marsh, Lobos Creek at Baker Beach, and the beach at Mori Point. The presence of dogs in the water at each of these sites has the potential to impact the turbidity and increase the nutrient load and fecal coliform levels in the water (CRCCD 2009, 1).

Pathogens in stormwater runoff from adjacent urban areas have a much larger impact on local water quality than pathogens from pet waste. Proposed action alternatives that would prohibit dogs on beaches and in water bodies, that would require on-leash dog walking, and that would designate ROLAs would be expected to reduce dog waste and associated pathogens in runoff in comparison to current voice-control restrictions, because owners would be in control of their dogs. In addition, owners would be required to comply with cleanup regulations in the ROLA, which would reduce the amount of dog waste that could result in pathogens and nutrients entering nearby water bodies.

Cumulative Impacts to Water Quality that are Common to All Alternatives

Influences on water quality in GGNRA could result in alterations to the water in the park, which could influence the vegetation and wildlife communities, as well as the health and safety in the park. Alterations to water quality can be caused by turbidity, nutrients, and pathogens, from a many different sources.

When sediment is stirred up in water, it increases the turbidity. This can happen due to activity in the water, such as a dog getting in to a body of water. Erosion or storm action can also increase the turbidity in a body of water. Increased turbidity can have negative consequences for native aquatic communities. Dog waste that contaminates water sources can introduce nitrogen and phosphorous, which can lead to algal blooms that lessen water quality. Nutrients can also enter aquatic ecosystems through storm runoff, and sewage leaks. Pet waste can also contaminate water with harmful pathogens. Harmful bacteria and microorganisms found in pet waste can contaminate water and lessen water quality, presenting a health concern to humans. A larger source of these pathogens is from urban runoff.

Current and reasonably foreseeable future actions positively affecting water quality in the park are activities that restore and enhance habitat and reduce erosion and sedimentation problems. These projects include habitat protections and closures, education and outreach, wetland restoration, as well as removal of non-native plants and reestablishment of native plant communities. These efforts have direct benefits to water quality.

Potentially adverse impacts could occur from sewage leaks and the deterioration of aging sewer systems. Many of the sewage systems within the area are known to have deteriorating pipes. Large leaks of sewage and runoff occurred into the Richardson Bay in 2008 and 2010, and could contribute additional nutrients and microorganisms into the area, potentially adversely impacting the water quality at some sites in the park. The Vista Grande stormwater collection system outfall discharges on a beach below Fort Funston, which could adversely impact water quality there. Lastly, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. However, efforts to identify mitigations would reduce the potential for impacts in all of these cases.

Completed, current, and future projects that will have a beneficial impact on water quality within the GGNRA sites are listed below and discussed under each alternative as applicable:

- Park Stewardship Programs that have worked with GGNRA since 2003 on trail rehabilitation and non-native plant removal programs that have resulted in reduced erosion and sedimentation, leading to increased water quality.
- GGNRA Natural Resources Stewardship Programs, which are focused on restoration and enhancement efforts that improve tributaries and watersheds.
- Many projects under the Marin Countywide Plan are providing benefits to improve water quality through improvement of tributaries and watersheds.
- The GGNRA Maintenance Division, which is responsible for many projects that include road, trail, and stormwater system maintenance.
- The Wildland/Urban Interface Initiative funds projects that benefit restoration and enhancement of natural areas, which can reduce erosion and the introduction of increased nutrients into aquatic systems.
- The restoration of native vegetation as a part of the Lower Easkoot Creek Restoration Plan has improved water quality by reducing sedimentation into the creek.
- The proposed Bolinas Lagoon Ecosystem Restoration Project would restore natural sediment transport and ecological function and control invasive species in the watershed.
- The Lower Redwood Creek Interim Flood Reduction Measures and Floodplain Channel Restoration Project improved hydrologic and geomorphic functions to reduce flooding, reconnected the creek to its floodplain, and expanded riparian vegetation.
- Trail segments are being realigned and degraded areas are being restored as part of the *Dias Ridge Restoration and Trail Improvement Project*. This reduces sediment transport into aquatic systems.
- The Muir Beach Wetland and Creek Restoration Project is restoring and enhancing ecological processes and contributing to the water quality, as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions.
- The Cavallo Point Lodge at Fort Baker has provided upgrades to infrastructure, the waterfront, and native habitats, providing benefits to water quality.
- The creation of tidal marsh and dune habitats at Crissy Field resulted in beneficial restoration and remediation of the area, improving water quality.
- 73,000 tons of landfill debris was unearthed and conveyed to the top of the cliffs at Baker Beach in 2007 as part of restoration and remediation efforts, which could benefit water quality.
- The Ocean Beach-Great Highway Erosion Control Project is working on long-term solutions for beach and bluff erosion over Highway 1 that will also enhance natural processes.
- The Vista Grande Drainage Basin Alternatives Analysis is providing alternatives that will reduce flooding and erosion while providing habitat enhancement and lake level augmentation.
- The Mori Point Restoration and Trail Plan is working to reduce threats to native plants and natural processes to preserve and restore habitat, as well as improving wetland and upland connectivity, and creating a sustainable trail system.

Conclusion. Overall, these past, current, and future projects, whether short-term or long-term, would have a beneficial impact on water quality. Dog management alternatives that prohibit dogs or restricts dog walking to on-leash or within a designated ROLA, together with the benefits derived to water quality by the various restoration and enhancement projects listed above would provide a cumulative benefit to

water quality in GGNRA. Sites and proposed actions within alternatives that may have a different cumulative impact to water quality are discussed below.

COMPLIANCE-BASED MANAGEMENT STRATEGY

In order to ensure protection of water resources from dog walking activities, the dog walking regulations defined in action alternatives B, C, D, and E would be regularly enforced by park law enforcement, and compliance monitored by park staff. A compliance-based management strategy would be implemented to address noncompliance and would apply to all action alternatives. Noncompliance would include dog walking within restricted areas, dog walking under voice and sight control in designated on-leash dog walking areas, and dog walking under voice and sight control outside of established ROLAs. If noncompliance occurs, impacts to water resources have the potential to increase and become short-term negligible to moderate adverse. Impacts to water resources would include increases in turbidity from dogs entering streams, ponds, and lagoons with fine bottom sediments. Noncompliant dog walking would also alter water quality through the addition of nutrients in the water bodies from dog waste. Unkempt pet waste could also lead to the transport of bacteria and pathogens into the water bodies. To prevent these impacts from increasing or occurring outside of the designated dog walking areas the NPS would regularly monitor all sites. When noncompliance is observed in an area, park staff would focus on enforcing the regulations, educating dog walkers, and establishing buffer zones, time and use restrictions, and SUP restrictions. If noncompliance continues and compliance falls below 75 percent (measured as the percentage of total dogs / dog walkers observed during the previous 12 months not in compliance with the regulations) the area's management would be changed to the next more restrictive level of dog management. In this case, ROLAs would be changed to on-leash dog walking areas and on-leash dog walking areas would be changed to no dog walking areas. Impacts from noncompliance could reach short-term negligible to moderate adverse, but the compliance-based management strategy is designed to return impacts to a level that assumes compliance, as described in the overall impacts analysis, or provide beneficial impacts where dog walking is reduced or eliminated.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. Under alternative A, at Stinson Beach dogs on leash would be allowed in the parking lots and picnic areas. Dogs are currently prohibited from the beach. Stinson Beach receives moderate to high visitor use; use is especially high on weekends. Visitation by visitors walking dogs is also moderate to high, though the site is not frequented by commercial dog walkers (table 9). Violations recorded between 2007 and 2008 were primarily for dog bites/attacks (17), though 8 pet excrement and 5 leash law violations were also documented (table 9). In addition, 334 reports of dogs in a closed area (the beach) were recorded in 2007/2008 (appendix G). Easkoot Creek is located adjacent to the Stinson Beach parking areas and, in general, is not easily accessible by dogs due to the dense vegetation; however, determined noncompliant dogs could access the creek or the adjacent riparian area, resulting in the release of pathogens and/or nutrients into the creek, and sediments would be temporarily suspended in the water column, increasing turbidity. Runoff to Easkoot Creek and the adjacent ocean would also be a source of pathogens and nutrients from dog waste in the parking areas. There would also be continued potential for nutrients and pathogens from dog waste to enter the adjacent ocean from noncompliant dogs on the beach, however pollutants are dispersed in high energy beach environment. Because the creek is difficult for dogs to access, and due to the dilution of ocean waters, impacts on water quality from noncompliant dogs at Stinson Beach would range from negligible to long term, minor, and adverse.

There would also be continued potential for nutrients and pathogens from dog waste to enter the lagoon, creek, or adjacent ocean. Water quality impacts from alternative A would therefore be considered long

term and adverse, but minor because of other contributing factors such as stormwater runoff. The effects on water quality as a result of dogs would be detectable but would not be large enough to cause substantial local changes to water quality.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the water quality of Easkoot Creek.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Stinson Beach.

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation growth and soil stabilization, and also provide improvements for water quality. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native riparian vegetation (NPS n.d.d, 1), which would benefit the water quality of Easkoot Creek by stabilizing soils and reducing the potential for erosion and sedimentation into the creek. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality of Easkoot Creek at Stinson Beach by improving conditions for tributaries and other waters in the same watershed. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also beneficially affect Easkoot Creek water quality by reducing the amount of erosion as well as the addition of nutrients and other pollutants upstream of Easkoot Creek. The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

Overall, the negligible to long-term minor adverse impacts on water quality from dogs at Stinson Beach under alternative A, in combination with the beneficial impacts on water quality from the projects listed above, would result in negligible cumulative impacts on water quality at or in the vicinity of Stinson Beach. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on water quality from alternative A. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mt. Tamalpais State Park, part of the Marin Municipal Water District (map 26). No indirect impacts on the water quality of water bodies associated with lands adjacent to Stinson Beach would be expected under alternative A, since current dog walking regulations would continue under this alternative.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts to long-term minor adverse impacts	Dogs could cause turbidity and release nutrients and pathogens into creek, however pollutants are dispersed in high energy beach environment; dog access to Easkoot Creek is difficult	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Under alternative B at Stinson Beach, on-leash dog walking would be allowed only in the picnic areas and parking lots. As stated in alternative A, visitation is moderate to high, including visitors walking dogs. Easkoot Creek is located adjacent to the Stinson Beach parking areas and since dogs will be on leash it is unlikely that dogs would enter the creek. However, if this occurs dogs could be a source of pathogens and/or nutrients from their waste, which could enter the creek. Sediments would also be temporarily suspended in the water column once dogs enter the creek, causing increased turbidity. Runoff into the creek from dog waste in the parking areas would also be a source of pathogens and nutrients. Therefore, impacts on water quality from the implementation of alternative B would be negligible, assuming compliance.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required; dogs must be leashed. Since dog walking activity at Stinson Beach is restricted to the picnic areas and parking lots and dogs would be leashed, negligible impacts would be expected on the water quality of Easkoot Creek at Stinson Beach as a result of commercial dog walking. It is unlikely that commercial dog walkers would seek out Stinson Beach to walk dogs under the restrictions proposed in alternative B.

Cumulative Impacts. The negligible impacts on the water quality of Easkoot Creek under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on the water quality of water bodies associated with lands adjacent to Stinson Beach would be expected under alternative B, since there would be no change in the current dog regulations at the site.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dogs could cause turbidity and release nutrients and pathogens into creek; dog access to Easkoot Creek is difficult	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on water quality would be the same: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity at Stinson Beach is restricted to the picnic areas and parking lots, negligible impacts would be expected on the water quality of Easkoot Creek at Stinson Beach as a result of commercial dog walking. It is unlikely that commercial dog walkers would seek out the parking or picnic areas at Stinson Beach to walk dogs.

Cumulative Impacts. Under alternative C, the cumulative impacts on water quality at this park site and indirect impacts on water quality in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on water quality in adjacent lands.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physical restraint would minimize dogs entering Easkoot Creek; dog access to creek is difficult	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D at Stinson Beach would prohibit dogs in the parking lots and picnic areas and would result in no impacts on the water quality of Easkoot Creek. Assuming compliance, the prohibition of dogs in the picnic areas and parking lots would eliminate the opportunity for dogs to access Easkoot Creek. Addition of pathogens, nutrients, or increased turbidity would not occur.

No dog walking would be allowed under alternative D; therefore, no impacts on the water quality of Easkoot Creek at Stinson Beach would occur from commercial dog walking.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to water quality. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Alternative D could result in an increase in use of adjacent parks, since dogs would be prohibited in the parking lots and picnic areas at Stinson Beach; however, indirect impacts on water quality in adjacent lands from increased dog use are expected to be negligible. Impacts on water quality from dogs are currently negligible, and impacts on water quality in adjacent lands are not expected to be higher than current conditions.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
No impacts, assuming compliance	Dogs would be prohibited in the areas (picnic areas and parking lots) adjacent to Easkoot Creek	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on water quality would be the same: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity at Stinson Beach would be restricted to the picnic areas and parking lots, negligible impacts would be expected on the water quality of Easkoot Creek at Stinson Beach as a result of commercial dog walking. It is unlikely that commercial dog walkers would seek out the parking or picnic areas at Stinson Beach to walk dogs.

Cumulative Impacts. Under alternative E, the cumulative impacts on water quality at this park site and indirect impacts on water quality in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and no indirect impacts on water quality in adjacent lands.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physical restraint would minimize dog access to water bodies	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Stinson Beach. Under the preferred alternative, on-leash dog walking would be allowed only in the picnic areas and parking lots. As stated in alternative A, visitation is moderate to high, including visitors walking dogs. Easkoot Creek is located adjacent to the Stinson Beach parking areas and since dogs would be on leash it is unlikely that they would enter the creek. However, if this occurs dogs could be a source of pathogens and/or nutrients from their waste, which could enter the creek. Sediments would also be temporarily suspended in the

water column once dogs enter the creek, causing increased turbidity. Runoff would also be a source of pathogens and nutrients into the creek from dog waste in the parking areas. Therefore, impacts on water quality from the implementation of the preferred alternative would be negligible, assuming compliance.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Stinson Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity at Stinson Beach is restricted to the picnic areas and parking lots, negligible impacts would be expected on the water quality of Easkoot Creek at Stinson Beach as a result of commercial dog walking. It is unlikely that commercial dog walkers would seek out the parking or picnic areas at Stinson Beach to walk dogs.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Program provide improvements and enhancements that reduce erosion, improving conditions for vegetation growth and soil stabilization, and also provide improvements for water quality. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native riparian vegetation (NPS n.d.d, 1), which would benefit the water quality of Easkoot Creek by stabilizing soils and reducing the potential for erosion and sedimentation into the creek. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality of Easkoot Creek at Stinson Beach by improving conditions for tributaries and other waters in the same watershed. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also beneficially affect Easkoot Creek water quality by reducing the amount of erosion as well as the addition of nutrients and other pollutants upstream of Easkoot Creek. The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on water quality in Easkoot Creek under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). No indirect impacts on the water quality of water bodies associated with lands adjacent to Stinson Beach would be expected under the preferred alternative, since there would be no change in the current dog regulations at the site.

STINSON BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physical restraint would minimize dogs entering Easkoot Creek; dog access to creek is difficult	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change

Oakwood Valley

Alternative A: No Action. Under alternative A, currently dogs are allowed under voice control or on leash on Oakwood Valley Fire Road and Oakwood Valley Trail from junction with Fire Road to junction with Alta Trail, and on leash on the Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road. A tributary to Nyhan Creek runs through Oakwood Valley. In general, Oakwood Valley receives high visitor use but only moderate use from dog walkers; there have been no recent pet-related violations (table 9). The tributary to Nyhan Creek is not easily accessible by dogs; however, determined off-leash dogs could access the tributary or the adjacent riparian area, resulting in the release of pathogens and/or nutrients into the tributary and the temporary suspension of sediments in the water column, increasing turbidity. Runoff would also be a source of pathogens and nutrients from dog waste along the fire road and trail. Because the tributary is difficult for dogs to access and there have been no recent leash law violations, impacts on water quality from dogs at Oakwood Valley would be considered negligible. This alternative would not result in a measurable or perceptible change in water quality.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog is uncommon at the site. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program provide improvements and enhancements that reduce erosion, decreasing runoff and contributing to water quality. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley. Additional actions have had, are currently having, or have the potential to have adverse impacts on water quality at or in the vicinity of Oakwood Valley. For example, October 2007 inspections by the U.S. Environmental Protection Agency (EPA) confirmed that the sewage collection systems at Almonte, Tamalpais, and Homestead Valley have deteriorating sewage pipes (USEPA 2008c).

The negligible impacts on water quality from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative A would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts	Infrequent access to the tributary would occur; nutrients and pathogens could enter the tributary directly or through runoff; dogs in tributary could cause turbidity	Beneficial cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. In Oakwood Valley, alternative B would allow on-leash dog walking on Oakwood Valley Fire Road and Oakwood Valley Trail to the junction of the trail and the fire road. Assuming compliance, alternative B would result in a negligible impact on water quality because this alternative would not result in a measurable or perceptible change in water quality. Impacts in the tributary to Nyhan Creek would mainly be from runoff that may contain pathogens and nutrients from dog waste located along the fire road and trail.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required; all dogs must be on leash. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and dogs would no longer be allowed under voice control at Oakwood Valley. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Therefore, indirect impacts on water quality in adjacent lands from alternative B would be expected, but not above a negligible level.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impact, assuming compliance	Dog access to the tributary would be limited by leash restraint; nutrients and pathogens could enter the tributary through runoff.	Beneficial cumulative impacts No indirect impacts on adjacent lands	No change, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. For alternative C, a ROLA is proposed for walking under voice control or on leash on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. The ROLA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at Alta Trail. This alternative would minimize dog access to the tributary in Oakwood Valley by restricting dogs to walking on leash on the Oakwood Valley Trail up to the beginning of the ROLA on Oakwood Valley Fire Road. The ROLA on Oakwood Valley Fire Road would have gates and fencing to protect sensitive habitat and dogs would be required to be under voice or leash control by their owners. As a result, dogs would not be able to access the tributary and would not affect water quality in the tributary, assuming compliance with the guidance in alternative C. Therefore, no measurable or perceptible change in water quality in the tributary is expected. Impacts in the tributary to Nyhan Creek would mainly be from runoff that may contain pathogens and nutrients from dog waste located along the fire road. Impacts on water quality in the tributary to Nyhan Creek from the implementation of alternative C would be negligible, as there would not be a measurable effect or perceptible change in water quality.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Lands

The adjacent lands identified under alternative A would not likely experience increased visitation under alternative C; a ROLA would be provided for walking dogs off leash at Oakwood Valley and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog walking in the ROLA or limited by leash restraint would occur in areas distant from the tributary; nutrients and pathogens could enter the tributary through runoff	Beneficial cumulative impacts No indirect impacts in adjacent lands	No change, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only on Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail; dogs would be prohibited on the Oakwood Valley Trail. Alternative D restricts dog walking to on leash and only along Oakwood Valley Fire Road, which is removed by distance from the tributary. Therefore, assuming compliance, alternative D would result in a negligible impact on the water quality of the tributary because dogs would be restricted to walking on leash and because of the distance from the trail to the tributary. Impacts in the tributary would mainly be from runoff that may contain pathogens and nutrients from dog waste located along the fire road.

No commercial dog walking would be allowed; therefore, no impacts would occur as a result of commercial dog walking.

Cumulative Impacts. The negligible impacts on water quality from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and dogs would no longer be allowed under voice control at Oakwood Valley. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Therefore, indirect impacts on water quality in adjacent lands from alternative B would be expected, but not above a negligible level.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physically restraining dogs and limiting the areas of on-leash dog walking would result in reducing potential dog access to the tributary; nutrients and pathogens could enter the tributary through runoff	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	No change, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would provide the same options as alternative C and would allow a ROLA on Oakwood Valley Fire Road to the junction of the fire road and the Oakwood Valley Trail. For the ROLA, double gates at both ends and non-continuous fencing would be used to protect sensitive habitat. On-leash dog walking would be allowed on the Oakwood Valley Trail from the junction of the trail with the fire road to a new gate at Alta Trail. As a result, potential effects of alternative E are the same as those for alternative C: no measurable or perceptible change in water quality in the tributary is expected. Impacts in the tributary to Nyhan Creek would mainly be from runoff that may contain pathogens and nutrients from dog waste located along the fire road. Impacts on water quality in the tributary to Nyhan Creek from the implementation of alternative E would be negligible, as there would not be a measurable effect or perceptible change in water quality.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs at Oakwood Valley under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Lands

The adjacent lands identified under alternative A would not likely experience increased visitation under alternative E; a ROLA would be provided for walking dogs off leash at Oakwood Valley and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog walking in the ROLA or limited by leash restraint would occur in areas distant from the tributary; nutrients and pathogens could enter the tributary through runoff	Beneficial cumulative impacts	No change, assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Oakwood Valley. The preferred alternative in Oakwood Valley would provide a ROLA on Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. For the ROLA, double gates at both ends and continuous fencing would be used to protect sensitive habitat. On-leash dog walking would be allowed on the Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at Alta Avenue. This alternative would minimize dog access to the tributary in Oakwood Valley by restricting dogs to walking on leash on the Oakwood Valley Trail to the beginning of the ROLA on Oakwood Valley Fire Road. The ROLA on the Valley Fire Road would have gates and fencing to protect sensitive habitat, and dogs would be required to be under voice or leash control by their owners. As a result, dogs would not be able to

access the tributary and would not affect water quality in the tributary, assuming compliance with the guidance in the preferred alternative. Therefore, no measurable or perceptible change in water quality in the tributary is expected. Impacts in the tributary to Nyhan Creek would mainly be from runoff that may contain pathogens and nutrients from dog waste located along the fire road. Impacts on water quality in the tributary to Nyhan Creek from the implementation of alternative C would be negligible, as there would not be a measurable effect or perceptible change in water quality.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program provide improvements and enhancements that reduce erosion, decreasing runoff and contributing to water quality. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley. Additional actions have had, are currently having, or have the potential to have adverse impacts on water quality at or in the vicinity of Oakwood Valley. For example, October 2007 inspections by the EPA confirmed that the sewage collection systems at Almonte, Tamalpais, and Homestead Valley have deteriorating sewage pipes (USEPA 2008c, 1).

The negligible impacts on water quality from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality.

Indirect Impacts on Adjacent Lands

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands would not likely experience increased visitation under the preferred alternative; a ROLA would be provided for walking dogs off leash at Oakwood Valley and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog walking in the ROLA or limited by leash restraint would occur in areas distant from the tributary; nutrients and pathogens could enter the tributary through runoff	Beneficial cumulative impacts No indirect impacts in adjacent lands	No change, assuming compliance

Muir Beach

Alternative A: No Action. At Muir Beach, the beach and the boardwalk/path to the beach would be open to dogs under voice control. There are two water bodies at this site, the lagoon and Redwood Creek, as well as the ocean. The tidal lagoon and Redwood Creek are currently closed to dogs, but there is no physical barrier to prevent dogs from accessing Redwood Creek, and fencing at the lagoon is ineffective against noncompliant dogs. Visitor use is moderate to high at this site and it has been observed that dogs frequently access Redwood Creek. One warning, one citation, and one report were taken for dogs in areas closed to pets in 2007/2008 (appendix G). The voice-control area of Muir Beach encompasses the entrance channel of Redwood Creek and is located immediately adjacent to the shoreline of the lagoon, which has recently been restored. Additionally, the community of Muir Beach is located adjacent to the NPS beach, which adds to the moderate to high visitation at the site. Park staff members have observed that some local residents let their dogs run freely on the beach and do not dispose of dog waste properly. Dogs may cause turbidity by running in the lagoon and Redwood Creek and stirring up sediment. There would also be continued potential for nutrients and pathogens from dog waste to enter the lagoon, creek, or adjacent ocean. However, pollutants are dispersed in high energy beach environment. Water quality impacts from alternative A would therefore be considered long term and adverse, but minor because of other contributing factors such as stormwater runoff. The effects on water quality as a result of dogs would be detectable but would not be large enough to cause substantial local changes to water quality.

Under alternative A, no permit system exists for dog walking. Commercial dog walking is uncommon at the site. Therefore negligible impacts on water quality in the lagoon, Redwood Creek, and the adjacent ocean waters at Muir Beach would result from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Muir Beach.

Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program projects provide improvements and enhancements that reduce erosion and decrease runoff to water bodies. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on the ridge above Muir Beach, reducing soil erosion and sediment delivery into Redwood Creek (NPS 2009q, 1). The *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain Channel*

Restoration Project improved hydrologic and geomorphic functions at Pacific Way, reconnected the lower Redwood Creek to its floodplain, and expanded riparian vegetation at the Banducci site, and as a result has improved habitat for salmonids. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek and includes wetland and creek restoration at the tidal lagoon. The project is re-creating habitat for special-status species, reducing flooding on Pacific Way, and contributing beneficially to water quality, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on water quality from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation and restoration projects should reduce some of the adverse impacts on water quality from alternative A resulting in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). No indirect impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Localized increase in turbidity from dogs accessing surface waters including the ocean; increased potential for nutrients and pathogens from dog waste to enter water bodies; however, pollutants from dog waste are dispersed in high energy beach environment	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. At Muir Beach, alternative B would require on-leash dog walking in the parking area and on the Pacific Way Trail, the boardwalk/path to the beach, and the beach. The tidal lagoon and Redwood Creek are currently closed to dogs. If dogs are physically restrained by walking on leash at this site, they should not gain access to the creek or lagoon. These factors would result in reducing dog incursions in the tidal lagoon and creek and improved cleanup of dog waste since owners would be in closer contact with their dogs. There would be a potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable because dilution from the large volume of ocean water. Therefore, assuming compliance, alternative B would result in a negligible impact on the water quality of water bodies associated with Muir Beach because this alternative would not result in a measurable or perceptible change in water quality.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation with the implementation of alternative B at Muir Beach, particularly Mt. Tamalpais State Park, the closest dog use area, since dogs under voice control would no longer be allowed at the Muir Beach site. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs; however, indirect impacts on water quality from increased dog use are only expected at a negligible level.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physical restraint would minimize dog access to water bodies	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on water quality would be the same as those of alternative B: negligible, assuming compliance. There would also be a potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a maximum limit of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs

on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. Under alternative C, the cumulative impacts and indirect impacts on water quality in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts to water quality in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physical restraint would minimize dog access to water bodies	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on the Pacific Way Trail and in the parking lot at Muir Beach. The lagoon and creek are currently closed to dogs. Dogs would no longer be allowed at the beach, which would eliminate dog incursions into the lagoon and creek and dog waste on the beach. Therefore, assuming compliance, alternative D would result in no impact on water quality from dogs because water quality would not be affected by turbidity or the potential for pathogens or nutrients from dog waste entering the waters of Redwood Creek, the lagoon, or the adjacent ocean waters.

No commercial dog walking would be allowed under this alternative; therefore, no impacts from commercial dog walking would occur.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to water quality. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation with the implementation of alternative D at Muir Beach, particularly Mt. Tamalpais State Park, the closest dog use area, since dogs under voice control would no longer be allowed. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs; however, indirect impacts on water quality in adjacent lands from increased dog use are only expected at a negligible level.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: No impact on water quality in the lagoon and Redwood Creek and no impact in ocean waters, assuming compliance	Dogs would not be allowed on the beach; there would be no access to lagoon or creek	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Under alternative E, voice and sight control dog walking would be allowed in an established ROLA located on the beach south of the existing access path from the parking lot; dogs would not be allowed on the beach north of the access path. In addition to the ROLA, the Pacific Way Trail and the boardwalk/path to the beach would allow on-leash dog walking. The lagoon and creek are currently closed to dogs. At Muir Beach, dog walkers with multiple dogs would have the potential to increase nutrients and pathogens on the beach in the ROLA because of concentrated use. Tidal actions could move waste into the adjacent ocean waters; however, the dilution factor of the volume of ocean water adjacent to the beach would minimize water quality impacts from multiple dogs in the ROLA. Assuming compliance, negligible to long-term, minor, adverse impacts on water quality would result under alternative E because dogs would no longer be allowed near the lagoon or creek and opportunities for dog waste deposition would be restricted to a much smaller beach area. However dogs could still access the ocean through the beach at the ROLA. Proper waste removal would be enforced and impacts on water quality would be negligible. In addition, turbidity in the lagoon or creek would be eliminated, assuming compliance, since dogs would not be allowed near the lagoon or creek.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs per person on leash, or off leash in the ROLA. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands would be expected under alternative E, since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Assuming compliance dogs would not have access to the creek or lagoon, but dogs could access the ocean from the beach ROLA.	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. Under the preferred alternative, on-leash dog walking would only be allowed on Pacific Way Trail and in the parking lot at Muir Beach. The lagoon and creek are currently closed to dogs. Dogs would no longer be allowed at the beach, which would eliminate dog incursions into the lagoon and creek and dog waste on the beach. Therefore, assuming compliance, the preferred alternative would result in no impact on water quality from dogs because water quality would not be affected by turbidity or the potential for pathogens or nutrients from dog waste entering the waters of Redwood Creek, the lagoon, or the adjacent ocean waters.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a maximum limit of six dogs. However, no permits would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have no impact on water quality.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Muir Beach.

Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program projects provide improvements and enhancements that reduce erosion and decrease runoff to water bodies. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on the ridge above Muir Beach, reducing soil erosion and sediment delivery into Redwood Creek (NPS 2009q, 1). The *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain Channel Restoration Project* improved hydrologic and geomorphic functions at Pacific Way, reconnected the lower Redwood Creek to its floodplain, and expanded riparian vegetation at the Banducci site, and as a result has improved habitat for salmonids. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek and includes wetland and creek restoration at the tidal lagoon. The project is re-creating habitat for special-status species, reducing flooding on Pacific Way and contributing beneficially to water quality, particularly as a result of

restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

Under the preferred alternative, it was determined that there would be no impacts to water quality. No impacts along with the benefits of the restoration and trail rehabilitation projects would result in beneficial cumulative impacts. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mt. Tamalpais State Park (map 26). The adjacent lands may experience increased visitation with the implementation of the preferred alternative at Muir Beach, particularly Mt. Tamalpais State Park, the closest dog use area, since dogs under voice control would no longer be allowed. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs; however, indirect impacts on water quality in adjacent lands from increased dog use are only expected at a negligible level.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: No impact on water quality in the lagoon and Redwood Creek and no impact in ocean waters, assuming compliance	Dogs would not be allowed on the beach; there would be no access to lagoon or creek	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Rodeo Beach/South Rodeo Beach

Alternative A: No Action. In the vicinity of Rodeo Lagoon, alternative A would allow dog walking under voice control or on leash on Rodeo Beach/South Rodeo Beach, the pedestrian bridge over the lagoon, and all designated trails that access beach areas. In addition to the ocean at Rodeo Beach/South Rodeo Beach, there are two water bodies in this area, Rodeo Lake and Rodeo Lagoon, which are both currently closed to dogs. However, there would be no physical barrier to prevent dogs or visitors from accessing the lagoon, which is directly adjacent to the beach where dogs could be walked under voice control. Visitor use is moderate to high at this site and citations and warnings for dogs accessing Rodeo Lagoon and a pet waste removal violation at this site have been issued (table 9 and appendix G); additionally, park staff members with offices nearby have stated that they frequently observe dogs in the lagoon (Merkle 2010c, 1). Currently, noncompliant dogs that enter the lagoon cause turbidity by stirring

up sediment. There would also be the potential for nutrients and pathogens from dog waste to enter the ocean from the beach, the lagoon, or the lake. However, pollutants are dispersed in high energy beach environment. Water quality impacts from the no-action alternative would therefore be considered long term and adverse, but minor because of other contributing factors, including river otters and the large number of birds found in the lagoon and shoreline that could deposit waste in the water and along the shoreline of the lagoon. The effects on water quality as a result of dogs would be detectable but would not be large enough to cause substantial local changes in water quality.

Rodeo Creek parallels Bunker Road and the Rodeo Valley Trail, ultimately draining into Rodeo Lagoon, and has been described as receiving sediment and erosion from runoff and areas of bare soils. Under the no-action alternative, dogs would continue to be prohibited on both Bunker Road and Rodeo Valley Trail; however, noncompliant dogs that enter the creek could cause localized episodes of turbidity by stirring up existing sediment in the creek, and sediment could be transported by flow farther downstream and potentially into Rodeo Lagoon, depending on the proximity of the suspension to Rodeo Lagoon and flow conditions in the creek. Water quality impacts from alternative A would be long term and adverse, but minor because of other factors that contribute to water quality concerns in Rodeo Creek.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Rodeo Beach/South Rodeo Beach.

Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program provide improvements and enhancements that reduce erosion, decreasing runoff and contributing benefits to water quality. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also beneficially impact water bodies at Rodeo Beach/South Rodeo Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks, except for Rodeo Beach where the impacts lasted 8-9 months. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA including Rodeo Beach should be reduced to a negligible level.

The long-term minor adverse impacts on water quality from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the beneficial projects mentioned above. The beneficial effects from the rehabilitation and restoration projects should reduce some of the adverse impacts on water quality from alternative A resulting in negligible cumulative impact on water quality.

The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Localized increase in turbidity from dogs accessing surface waters; increased potential for nutrients and pathogens from dog waste to enter water bodies, and dogs can access ocean from beach; however pollutants are dispersed in high energy beach environment,	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. In the vicinity of Rodeo Lagoon, alternative B would allow on-leash dog walking on Rodeo Beach/South Rodeo Beach, the pedestrian bridge over the lagoon, and the South Rodeo Beach access trail; Rodeo Lagoon and Rodeo Lake are currently closed to dogs. For the Rodeo Valley Trail Corridor, in alternative B dogs would be prohibited on both Bunker Road and the Rodeo Valley Trail Corridor. If dogs are physically restrained by walking on leash at this site, they should not gain access to the creek, lake, lagoon, or ocean. Assuming compliance, these factors would result in reducing dog incursions in the lagoon and lake, which would reduce turbidity from dogs, as well as improving cleanup of dog waste since owners would have better control of their dogs. There would still be the potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable. Therefore, assuming compliance, alternative B would result in a negligible to long-term, minor, adverse impact on water quality because this alternative would not result in a measurable or perceptible change in water quality.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation and restoration projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from

the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and this park is the closest dog use area that allows dogs off leash. Indirect impacts on water quality in adjacent lands from potential increased dog use could occur, depending on the presence of water bodies and their accessibility to dogs. Indirect impacts could occur and may range from negligible to long term, minor, and adverse, since Rodeo Beach/South Rodeo Beach is considered a low to moderate use site for dog walkers.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Dog access to water bodies would be limited and assuming compliance, opportunities for increased turbidity and entry of pathogens and/or nutrients into water bodies would be minimized.	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. In the vicinity of Rodeo Lagoon, alternative C would allow on-leash dog walking on the pedestrian bridge over the lagoon leading to the beach and on trails adjacent to both Rodeo Lagoon and Rodeo Lake, which would be currently closed to dogs. Dogs would also be allowed under voice and sight control in a ROLA on Rodeo Beach that would extend from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach, but would be prohibited at South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon, proposed as part of a concurrent project, would discourage visitors from accessing the lagoon but would not physically exclude dogs or visitors from this area. With the addition of a fence as a deterrent, and with dog walkers' compliance with regulations, dogs would not access the lagoon or lake under this alternative, although this alternative would not require the owners/walkers to physically restrain their dogs on Rodeo Beach. Impacts on water quality in the lagoon would be negligible because turbidity from dogs would be eliminated and nutrient and pathogen loadings would be reduced due to improved cleanup of dog waste. Physical restraint of dogs would prevent dog access to Rodeo Creek, eliminating events of increased turbidity and suspension of sediments in the creek. As a result, impacts on water quality in Rodeo Creek from the implementation of alternative C would be negligible to long-term, minor, adverse, as there would not be a measurable effect or perceptible change in water quality. Dogs could access the ocean from the beach ROLA. There is also the potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable. This alternative would not result in a measurable or perceptible change in water quality.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this

alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation and restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would not likely experience increased visitation under alternative C, as a ROLA would be provided for walking dogs off leash at Rodeo Beach and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking. Therefore, no indirect impacts on water quality in adjacent lands would be expected.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Dog access to water bodies would be limited and assuming compliance, opportunities for increased turbidity and entry of pathogens and/or nutrients into water bodies would be minimized, but dogs could access ocean from beach ROLA.	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only on the pedestrian bridge leading to Rodeo Beach and the section of beach north of the footbridge. The Rodeo lagoon and lake are currently closed to dogs. Dogs would also be prohibited on trails near Rodeo Lagoon and Rodeo Lake as well as on Bunker Road, the Rodeo Valley Trail, and South Rodeo Beach. Physically restraining dogs and limiting the areas of on-leash dog walking would result in reducing dog incursions into the creek, lagoon, and lake as well as the potential for dog waste on the beach. There would still be the potential for nutrients and pathogens from dog waste to enter the ocean where dogs are allowed on the beach, but at a level that would not be detectable. Therefore, assuming compliance, alternative D would result in a negligible impact on water quality from dogs because water quality would not be affected, or the effects would be at low levels of detection.

No commercial dog walking would be allowed under alternative D; therefore, no impacts would occur.

Cumulative Impacts. The negligible impacts on water quality under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation and restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality. The impacts resulting from

the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use areas. Dog walking under voice control would no longer be allowed on Rodeo Beach/South Rodeo Beach. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. These impacts would be expected to range from negligible to long term, minor, and adverse, since Rodeo Beach/South Rodeo Beach is a low to moderate use site for dog walking.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access to water bodies would be limited and assuming compliance, opportunities for increased turbidity and entry of pathogens and/or nutrients into water bodies would be minimized.	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. This alternative would include a ROLA on Rodeo Beach that would extend from the crest of the beach to the ocean shoreline, instead of the full width of the beach to Rodeo Lagoon. Only on-leash dog walking would be allowed from the crest of the beach to the proposed fence along the west end of Rodeo Lagoon, on the pedestrian bridge and trails leading to the beach, and on South Rodeo Beach. The Rodeo lagoon and lake are currently closed to dogs. Installation of a fence, planned as part of a previously approved project, along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon but would not physically exclude dogs from this area. Although this alternative includes a ROLA, the addition of a fence as deterrent and compliance with regulations would decrease or eliminate dog incursions into the lagoon and lake, which would reduce turbidity; improved cleanup of dog waste would reduce nutrient and pathogen loadings. In addition, physical restraint of dogs would prevent dog access to Rodeo Creek, eliminating events of increased turbidity and suspension of sediments in the creek. As a result, impacts on water quality in Rodeo Creek from the implementation of alternative E would be negligible, as there would not be a measurable effect or perceptible change in water quality. The potential for increasing nutrients and pathogens on the beach exists because of concentrated use in the ROLA. Dogs could access the ocean from the ROLA and tidal actions could move waste into the adjacent ocean waters; however, the dilution factor of the volume of ocean water adjacent to the beach would minimize water quality impacts from dogs in the ROLA. There is also a potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable; therefore, impacts would be considered negligible to long-term, minor, and adverse. Therefore, assuming compliance, alternative E would result in a negligible impact on water quality from dogs because water quality would not be affected or the effects would be at low levels of detection.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more

than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation and restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would not likely experience increased visitation under alternative E, as a ROLA would be provided for walking dogs off leash at Rodeo Beach and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking. Therefore, no indirect impacts on water quality in adjacent lands would be expected.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Dog access to water bodies would be limited and assuming compliance opportunities for increased turbidity, and entry of pathogens and/or nutrients into water bodies would be minimized, but dogs could access ocean from beach ROLA and/or nutrients into water bodies, but dogs could access the ocean from the beach ROLA	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach/South Rodeo Beach. In the vicinity of Rodeo Lagoon, the preferred alternative would allow on-leash dog walking on the pedestrian bridge over the lagoon leading to the beach and on trails adjacent to both Rodeo Lagoon and Rodeo Lake, which are both currently closed to dogs. Dogs would also be allowed under voice and sight control in a ROLA on Rodeo Beach that extends from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach, but would be prohibited at South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon, proposed as part of a concurrent project, would discourage visitors from accessing the lagoon but would not physically exclude dogs or visitors from this area. With the addition of a fence as a deterrent, and with dog walkers’ compliance with regulations, dogs would not access the lagoon or lake under this alternative, although this alternative would not require the owners/walkers to physically restrain their dogs on Rodeo Beach. Impacts on water quality in the lagoon would be negligible because turbidity from

dogs would be eliminated and nutrient and pathogen loadings would be reduced due to improved cleanup of dog waste. Physical restraint of dogs would prevent dog access to Rodeo Creek, eliminating events of increased turbidity and suspension of sediments in the creek. As a result, impacts on water quality in Rodeo Creek from the implementation of the preferred alternative would be negligible to long-term, minor, and adverse, as there would not be a measurable effect or perceptible change in water quality. There would also be the potential for nutrients and pathogens from dog waste to enter the ocean, but at a level that would not be detectable. This alternative would not result in a measurable or perceptible change in water quality.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Rodeo Beach/South Rodeo Beach.

Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Program provide improvements and enhancements that reduce erosion, decreasing runoff and contributing benefits to water quality. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the Marin Countywide Plan (County of Marin 2007), could also beneficially affect water quality at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also beneficially impact water bodies at Rodeo Beach/South Rodeo Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks, except for Rodeo Beach where the impacts lasted 8-9 months. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA including Rodeo Beach should be reduced to a negligible level.

The negligible impacts on water quality under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands would not likely experience increased visitation under the preferred alternative, as a ROLA would be provided for walking dogs off leash at Rodeo Beach and there would be little incentive for dog walkers to alter visitation patterns by going to a new area for dog walking. Therefore, no indirect impacts on water quality in adjacent lands would be expected.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Physically restraining dogs would limit dog access to water bodies and opportunities for increased turbidity would be minimized; improved clean-up of dog waste would reduce entry of pathogens and/or nutrients into water bodies, but dogs could access the ocean from the beach ROLA	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Fort Baker

Alternative A: No Action. At Fort Baker, alternative A would allow on-leash dog walking on trails (Drown Fire Road, East Road, Bay Trail), paths in Battery Yates, and the Parade Ground. Fort Baker receives moderate visitor use and low use from visitors walking dogs; however, despite relatively low use by visitors walking dogs, 57 leash law violations (33 in 2007; 24 in 2008) and two pet excrement violations have been recorded (table 9). Considering the level of violations and accessibility of Horseshoe Cove from the Bay Trail, impacts on the water quality of Horseshoe Cove under the no-action alternative would be considered long term, minor, and adverse. Noncompliant dogs could access Horseshoe Cove from the Bay Trail and Battery Yates, providing the potential for nutrients and pathogens from dog waste to enter the bay. However, pollutants are dispersed in a high energy beach environment. Dogs could also cause localized areas of turbidity in the bay.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have adverse effects on water quality at or in the vicinity of Fort Baker. In 2008, more than 5 million gallons of partially treated sewage and stormwater were released into Richardson Bay (located north of Fort Baker) from the Mill Valley treatment plant (USEPA 2008a, 1), and October 2007 inspections by the EPA confirmed that the sewage collection systems at Almonte, Tamalpais, Homestead Valley, and Richardson Bay districts have deteriorating sewage pipes (USEPA 2008c, 1). A spill of about 40,000 gallons of diluted raw sewage into Richardson Bay in January 2010 is being investigated by the state Water Quality Control Board (Contra Costa Times 2010, 1). These actions could contribute additional nutrients and microorganisms to the surface waters of San Francisco Bay in

the vicinity of Horseshoe Cove. Lastly, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

A project that has had, and is currently having, the potential to have beneficial effects on water quality at or in the vicinity of Fort Baker is the infrastructure upgrades, waterfront improvements, and native habitat restoration at Fort Baker for the newly constructed lodge, Cavallo Point: The Lodge at the Golden Gate, which also houses the Institute at the Golden Gate (NPS 2008f, 1).

There are a combination of beneficial and adverse projects in and around Fort Baker, when combined together these project would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The long-term minor adverse impacts on water quality from dogs at Fort Baker under alternative A were considered together with the negligible effects of the projects mentioned above resulting in long-term minor adverse impacts cumulative impacts to water quality.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor adverse impacts	Frequency of violations and accessibility of Horseshoe Cove to dogs would increase; dogs would contribute to localized increases in turbidity in the bay; nutrients and pathogens from dog waste would enter the bay; however pollutants are dispersed in high energy beach environment,	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking on the Bay Trail except Battery Yates Loop, where dogs would be prohibited; Drown Fire Road; Lodge/Conference Center Grounds; and Parade Ground. Assuming compliance, alternative B would result in a negligible impact on water quality in Horseshoe Cove because this alternative would not result in a measurable or perceptible change in water quality. Some nutrients and pathogens from dog waste would be expected to enter the bay from runoff.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required; all dogs must be on leash. Assuming compliance, all dogs would be restricted to walking on leash and impacts on the water quality of Horseshoe Cove would be negligible.

Cumulative Impacts: There are a combination of beneficial and adverse projects in and around Fort Baker, when combined together these project would balance out resulting in negligible cumulative impacts. The negligible impacts on water quality from dogs at Fort Baker under alternative B were considered together with the negligible effects of the projects mentioned above in alternative A resulting in negligible cumulative impacts to water quality.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access to Horseshoe Cove would be limited by leash restraint; some nutrients and pathogens from dog waste would be expected to enter the bay from runoff	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on the Drown Fire Road, the Bay Trail including Battery Yates Loop Road, the Lodge/Conference Center Grounds, and Parade Ground. Assuming compliance, alternative C would result in a negligible impact on water quality in Horseshoe Cove because this alternative would not result in a measurable or perceptible change in water quality. Some nutrients and pathogens from dog waste would be expected to enter the bay from runoff.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to water quality from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts: There are a combination of beneficial and adverse projects in and around Fort Baker, when combined together these project would balance out resulting in negligible cumulative impacts. The negligible impacts on water quality from dogs at Fort Baker under alternative C were considered together with the negligible effects of the projects mentioned above in alternative A resulting in negligible cumulative impacts to water quality.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands would be expected under alternative C, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access to Horseshoe Cove would be limited by leash restraint; some nutrients and pathogens from dog waste would be expected to enter the bay from runoff	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only on the trails above and adjacent to the Lodge/Conference Center and the Bay Trail (except the Battery Yates Loop). Dogs would be prohibited on the Parade Ground and Drown Fire Road. Alternative D would restrict dog walking to on leash and only along limited trails, including the Bay Trail adjacent to Horseshoe Cove. Some nutrients and pathogens from dog waste would be expected to enter the bay from runoff. Assuming compliance, alternative D would result in a negligible impact on the water quality of Horseshoe Cove.

No commercial dog walking would be allowed under alternative D; therefore, no impacts would occur from commercial dog walking.

Cumulative Impacts. There are a combination of beneficial and adverse projects in and around Fort Baker, when combined together these project would balance out resulting in negligible cumulative impacts. The negligible impacts on water quality from dogs at Fort Baker under alternative D were considered together with the negligible effects of the projects mentioned above in alternative A resulting in negligible cumulative impacts to water quality.

Indirect Impacts on Adjacent Parks

Negligible indirect impacts on water quality in adjacent lands may occur under alternative D, since on-leash dog walking would not be allowed in the Parade Ground. Visitors with dogs may choose to go to another park site that has a large area for walking dogs.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physically restraining dogs and limiting the areas of on-leash dog walking would result in reducing potential dog access to Horseshoe Cove; some nutrients and pathogens from dog waste would be expected to enter the bay from runoff	Negligible cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same: negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to water quality from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. Under alternative E, the cumulative impacts on water quality at Fort Baker and the indirect impacts in adjacent lands would be the same as those under alternative C; negligible cumulative impacts and no indirect impacts on water quality in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog walking would be limited by leash restraint and assuming compliance, dogs would not be able to access Horseshoe Cove; some nutrients and pathogens from dog waste would be expected to enter the bay from runoff	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail including Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. Assuming compliance, the preferred alternative would result in a negligible impact on water quality in Horseshoe Cove because this alternative would not result in a measurable or perceptible change in water quality. Some nutrients and pathogens from dog waste would be expected to enter the bay from runoff.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Fort Baker. Impacts to water quality from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have adverse effects on water quality at or in the vicinity of Fort Baker. In 2008, more than 5 million gallons of partially treated sewage and stormwater were released into

Richardson Bay (located north of Fort Baker) from the Mill Valley treatment plant (USEPA 2008a, 1), and October 2007 inspections by the EPA confirmed that the sewage collection systems at Almonte, Tamalpais, Homestead Valley, and Richardson Bay districts have deteriorating sewage pipes (USEPA 2008c, 1). A spill of about 40,000 gallons of diluted raw sewage into Richardson Bay in January 2010 is being investigated by the state Water Quality Control Board (Contra Costa Times 2010, 1). These actions could contribute additional nutrients and microorganisms to the surface waters of San Francisco Bay in the vicinity of Horseshoe Cove. Lastly, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

A project that has had, and is currently having, the potential to have beneficial effects on water quality at or in the vicinity of Fort Baker is the infrastructure upgrades, waterfront improvements, and native habitat restoration at Fort Baker for the newly constructed lodge, Cavallo Point: The Lodge at the Golden Gate, which also houses the Institute at the Golden Gate (NPS 2008f, 1).

There are a combination of beneficial and adverse projects in and around Fort Baker, when combined together these project would balance out resulting in negligible cumulative impacts. Therefore, the cumulative analysis for this park site will basically focus on the results of the impact analysis for each alternative. The negligible impacts on water quality from dogs at Fort Baker under the preferred alternative were considered together with the negligible effects of the projects mentioned above resulting in negligible cumulative impacts to water quality.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on water quality in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access to Horseshoe Cove would be limited by leash restraint; some nutrients and pathogens from dog waste would be expected to enter the bay from runoff	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA, the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E, would be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts described in the paragraphs that follow at Crissy Field. More explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Dogs are currently prohibited in the tidal marsh at Crissy Field. Despite protection of the restored tidal marsh by installed fencing, dogs under voice control have been documented as gaining access to the tidal marsh through the tidal inlet that allows exchange of water between the tidal marsh and San Francisco Bay (appendix G). Dog incursions into the tidal marsh create intermittent and localized turbidity in the tidal marsh. In addition, dogs access the tidal inlet and San Francisco Bay waters adjacent to Crissy Field, and there are brief periods of intense use by dogs in these areas. During episodes when dogs are in the tidal inlet and adjacent bay waters are high, turbidity increases significantly and the addition of nutrients and pathogens from dog waste increases. Dogs would be allowed under voice control on Crissy Airfield, and the eastern one-third of Crissy Airfield drains into Crissy Field. Nutrients and pathogens originating from dog waste could be delivered to the tidal marsh from Crissy Airfield. As a result, conditions under alternative A would result in long-term minor to moderate adverse water quality impacts. The effects on water quality in the tidal marsh as a result of dogs would be detectable but would not be large enough to cause substantial local changes to water quality, due to the large extent of marsh and the flushing action from tidal influences when the tidal inlet is open (the tidal inlet closes naturally from sand bar formation, and is either breached by the tide or is mechanically opened by the NPS). Tidal flushing actions and the volume of water associated with the bay waters adjacent to Crissy Field also ameliorate the adverse effects of dogs on water quality in the bay as pollutants are dispersed in a high energy beach environment.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking occurs regularly at Crissy Field. Commercial dog walking would continue to contribute to the long-term minor to moderate adverse impacts on water quality. Commercial dog walkers with multiple dogs under voice control would impact water quality through increases in turbidity and the addition of nutrients and pathogens from dog waste.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Crissy Field. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Crissy Field. The Crissy Field Restoration Project, which began in 1998, restored the Crissy Field tidal marsh and dune habitat and also incorporated a fully accessible shoreline promenade, trails, boardwalks, overlooks, picnic areas, seating areas, and bike and inline skate paths.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately

58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on water quality from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects should reduce some of the adverse impacts on water quality from alternative A resulting in negligible to long-term, minor, and adverse cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No impacts on water quality in adjacent lands, including Area B of the Presidio, would be expected under alternative A, since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor to moderate adverse impacts	Increased turbidity in tidal inlet, marsh, and localized adjacent areas of San Francisco Bay would occur, as well as addition of nutrients and pathogens from dog waste; however pollutants are dispersed in high energy beach environment,	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Crissy marsh is currently closed to dogs. Dogs would be and would be prevented from gaining access because they would be restricted by walking on leash under alternative B. Assuming compliance, this would result in reducing dog incursions in the tidal marsh and reducing nutrient and pathogen loadings because of increasing cleanup of dog waste. In addition, assuming compliance, dogs would not gain access to the tidal inlet and San Francisco Bay waters adjacent to Crissy Field. As a result, conditions under alternative B would result in negligible water quality impacts. Some nutrients and pathogens from dog waste may enter the tidal marsh and bay from runoff; however, the effects on water quality as a result of dogs would not be detectable in the large extent of tidal marsh and bay waters and as a result of flushing action from tidal influences.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is

considered high at Crissy Field, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts to water quality from dogs at the site. Overall impacts to water quality from dogs walked by both commercial and private individuals are summarized below.

The ROLA proposed for Crissy Airfield could result in some nutrients and pathogens from dog waste entering the tidal marsh from runoff and groundwater infiltration. However, the effects of runoff on water quality as a result of dogs would not be detectable in the large extent of the tidal marsh and bay waters and as a result of flushing action from tidal influences. Additionally, proper waste removal would be required and enforceable.

Cumulative Impacts. The negligible impacts on water quality under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the restoration projects along with the negligible impacts from alternative A would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Crissy Field. Visitors who currently walk dogs under voice control at Crissy Field could seek out new opportunities for walking dogs off leash at other locations especially parks with beaches. Water quality in these adjacent lands could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Therefore, indirect impacts on water quality in adjacent lands from increased dog use would be long term, minor, and adverse since Crissy Field is considered a moderate to high use site for dog walking. However, no indirect impacts on the water quality of Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Leash restraint would minimize the opportunity for dogs to gain entry to water bodies; some nutrients and pathogens from dog waste may enter the tidal marsh and bay from runoff Dilution factor from volume of tidal waters adjacent to Crissy Field would reduce pathogens/nutrients in the bay;	Beneficial cumulative impacts Long-term minor adverse impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. The addition of a ROLA on Central Beach and a ROLA on Crissy Airfield in alternative C would allow dog walking under voice and sight control. On-leash dog walking would be required for the remainder of the site except the WPA, which would be closed to dogs. Crissy marsh is currently closed to dogs. Therefore, assuming compliance with

the dog management conditions in alternative C, a negligible to long-term, minor, adverse impact on water quality in the tidal marsh, tidal inlet, and San Francisco Bay waters adjacent to Central Beach would be expected. Water quality would not be affected, or the effects would be at low levels of detection because of leash restraints, but dogs could still access the ocean from the beach ROLA. Impacts on ocean water quality adjacent to the Central Beach ROLA would be negligible to long-term, minor, adverse due to a dilution factor that would reduce any effect of deposited waste. Concentrated use of the ROLA proposed for Crissy Airfield could result in some nutrients and pathogens from dog waste entering the tidal marsh from runoff and groundwater infiltration. However, the effects on water quality as a result of dogs would not be detectable because of the large extent of tidal marsh and flushing action from tidal influences.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the previous paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the restoration projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands, including Area B of the Presidio, would be expected under alternative C, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	ROLA along Central Beach would allow access to water; tidal flushing and marsh/bay volume would result in no measurable or perceptible changes in water quality; some nutrients and pathogens from dog waste may enter the tidal marsh from runoff. Dogs could access the ocean from the beach ROLA	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D would prohibit dogs on all beaches of Crissy Field, but would establish a ROLA on the western section of Crissy Airfield. Dogs would be physically restrained by walking on leash in all other areas of Crissy Field. Crissy marsh is currently closed to dogs. As a result of on leash walking, dogs would be unable to access the tidal marsh. Therefore, assuming compliance, alternative D would result in a negligible impact on water quality because water quality would not be affected, or the effects would be at low levels of detection. Impacts on ocean water quality would be negligible due to a dilution factor that would reduce any effect of deposited waste. Some nutrients and pathogens from dog waste may enter the tidal marsh from runoff; however, the effects on water quality as a result of dogs would not be detectable in the large extent of tidal marsh and as a result of flushing action from tidal influences.

No commercial dog walking would be allowed; therefore, no impacts from commercial dog walking would occur.

Cumulative Impacts. The negligible impacts on water quality from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

Some increase in visitation by both individual and commercial dog walkers is expected in adjacent lands, especially at parks that allow off-leash dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field. However, dogs under voice and sight control would be allowed on half of Crissy Airfield. Indirect impacts on water quality in adjacent lands would be expected under alternative D, but only at a negligible level. However, no indirect impacts on the water quality in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Leash requirements and regulated ROLA would prevent dog access to tidal inlet, marsh, and adjacent areas of San Francisco Bay; tidal flushing and dilution of waste would occur	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would establish two ROLAs at Crissy Field: one on Crissy Airfield and one at Central Beach. All other areas of Crissy Field, including the WPA, would require on-leash dog walking. Crissy marsh is currently closed to dogs. Therefore, assuming compliance with the dog management conditions in alternative E, a negligible to long-term, minor, adverse impact on water quality in the tidal marsh, tidal inlet, and San Francisco Bay waters adjacent to Central Beach would be expected, because water quality would not be affected, or the effects would be at low levels of detection, as dogs would be on leash restraint, but could still reach the ocean from the ROLA. Impacts on ocean water quality would be negligible to long-term, minor, adverse

due to a dilution factor that would reduce any effect of deposited waste. Due to concentrated use of the ROLA on the Crissy Airfield, some nutrients and pathogens from dog waste may enter the tidal marsh from runoff and infiltration; however, the effects on water quality as a result of dogs would not be detectable in the large extent of tidal marsh and as a result of flushing action from tidal influences.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the above paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands, including Area B of the Presidio, would be expected under alternative E, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Leash requirements and regulated ROLAs would minimize dog access to tidal inlet, marsh, and adjacent areas of San Francisco Bay, but dogs could still access the ocean from the ROLA; tidal flushing and dilution of waste would occur	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. The addition of a ROLA on Central Beach and a ROLA on Crissy Airfield in alternative C would allow dog walking under voice and sight control. On-leash dog walking would be required for the remainder of the site except the WPA, which would be closed to dogs. Crissy marsh is currently closed to dogs. Therefore, assuming compliance with the dog management conditions in the preferred alternative, a negligible to long-term, minor, adverse impact on water quality in the tidal marsh, tidal inlet, and San Francisco Bay waters adjacent to Central Beach would be expected. Although dogs would be on leash restraints, dogs in the ROLA could still access the ocean. Water quality would not be affected, or the effects would be at low levels of detection. Ocean water quality adjacent to the Central Beach ROLA would be negligible to

long-term, minor, adverse due to a dilution factor that would reduce any effect of deposited waste. Due to the concentrated use of the ROLAs, some nutrients and pathogens from dog waste may enter the tidal marsh and bay from runoff; however, the effects on water quality as a result of dogs would not be detectable in the large extent of tidal marsh and bay waters and as a result of flushing action from tidal influences.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the previous paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Crissy Field. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Crissy Field. The Crissy Field Restoration Project, which began in 1998, restored the Crissy Field tidal marsh and dune habitat and also incorporated a fully accessible shoreline promenade, trails, boardwalks, overlooks, picnic areas, seating areas, and bike and inline skate paths.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible to long-term, minor, adverse impacts on water quality under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts

on water quality in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative, since ROLAs would be provided on Crissy Airfield and on Central Beach.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	ROLA along Central Beach would allow access to water; tidal flushing and marsh/bay volume would result in no measurable or perceptible changes in water quality; some nutrients and pathogens from dog waste may enter the tidal marsh from runoff	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial, assuming compliance

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Under alternative A, dogs would be allowed under voice control on the beach north of Lobos Creek and restricted to on leash along the trails except the Batteries to Bluffs Trail, where dogs would not be allowed. Dogs would be able to access the mouth of Lobos Creek where it exits a culvert and flows across the beach and the adjacent surface waters of the Pacific Ocean. If dogs enter the water exiting the culvert, they may stir up sediments and contribute pathogens and/or nutrients into the water from dog waste, which then could drain to the adjacent ocean waters if there is adequate flow from the culvert. Dog waste resulting from walking dogs on other areas of the beach may also enter the ocean from tidal and wave actions. This site has documented low to high visitor use (varies on weekends and holidays) and low to moderate use by dog walkers (table 9). Impacts from the no-action alternative would therefore be considered long term and adverse, and minor to moderate as a result of the dilution factor of the large volume of adjacent ocean water receiving any dog waste and other contributing factors; however pollutants are dispersed in a high energy beach environment. At times of low flow volume, dog waste would not reach the ocean and could potentially increase pathogens or nutrient addition to water remaining in the flow or pooling of Lobos Creek. The effects on water quality as a result of dogs would be detectable but would not be large enough to cause substantial local changes in water quality.

Under alternative A, no permit system exists for dog walking. At Baker Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Baker Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Baker Beach. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Baker Beach. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and conveyed to the top of the cliffs as part of a restoration effort (Presidio Trust 2010, 1),

which could beneficially impact water quality at this site. Additionally, in 2008 the Park Stewardship Program completed improvements on the Batteries to Bluffs Trail on the bluffs just north of Baker Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on water quality at this park site under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects should reduce some of the adverse impacts on water quality from alternative A resulting in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No impacts on adjacent lands, including Area B of the Presidio, would be expected under alternative A, since there would be no change in current conditions at the site.

BAKER BEACH ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term minor to moderate adverse impacts	Dogs could cause increased turbidity and increased nutrients and pathogens entering water bodies including Lobos Creek and the ocean; however pollutants are dispersed in high energy beach environment,	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B restricts dogs to on leash except on the Batteries to Bluffs Trail and the trail that leads to the Batteries to Bluffs trail, where no dogs are allowed. On-leash dog walking requirements in alternative B would restrict dog movements along the adjacent trail or beach and prohibit dogs from accessing the exiting flow of Lobos Creek from the culvert onto the beach. Potential turbidity incidences where the creek joins the surface waters of the bay would be reduced or eliminated, and nutrient and pathogen loadings would be minimized because visitors would be required to remove and properly dispose of dog waste and because the large volume of adjacent ocean water would provide a dilution factor sufficient to reduce impacts to a negligible level. Dog waste resulting from

walking dogs on the beach may also enter the ocean from tidal and wave actions; however, the dilution factor of the large volume of adjacent ocean water receiving any dog waste, along with other contributing factors, would reduce the impact to negligible. Assuming compliance, impacts on water quality would be negligible because water quality would not be affected, or the effects would be at low levels of detection.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required; all dogs must be on leash. Since commercial dog walking activity is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality at this park site under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B. Visitors who currently walk dogs off-leash at Baker Beach could seek out new opportunities for walking dogs off leash elsewhere, especially sites with beaches. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Indirect impacts on water quality in adjacent lands from increased dog use would be expected, but impacts would not rise above a negligible level. However, no indirect impacts on the water quality in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dogs would be restricted by area closures and by leash; potential for waste to enter Lobos Creek flow at the beach would be minimized; dilution factor of adjacent ocean waters would minimize waste products that create water quality impacts	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C restricts dogs to on leash except on the Batteries to Bluffs Trail and the trail that leads to the Batteries to Bluffs trail, where no dogs are allowed. On-leash dog walking requirements in alternative C would restrict dog movements along the adjacent trail or beach and prohibit dogs from accessing the exiting flow of Lobos Creek from the culvert onto the beach. Potential turbidity incidences where the creek joins the surface waters of the bay would be reduced or eliminated, and nutrient and pathogen loadings would be minimized because visitors would be required to remove and properly dispose of dog waste and because the large volume of

adjacent ocean water would provide a dilution factor sufficient to reduce impacts to a negligible level. Dog waste resulting from walking dogs on the beach may also enter the ocean from tidal and wave actions; however, the dilution factor of the large volume of adjacent ocean water receiving any dog waste, along with other contributing factors, would reduce the impact to negligible. Assuming compliance, impacts on water quality would be negligible because water quality would not be affected, or the effects would be at low levels of detection.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Baker Beach. Impacts to water quality from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. Under alternative C, the cumulative impacts on water quality at this park site and indirect impacts on water quality in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts on water quality in adjacent lands.

BAKER BEACH ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible, assuming compliance	Dogs would be restricted by area closures and by leash; potential for waste to enter Lobos Creek flow at the beach would be minimized; dilution factor of adjacent ocean waters would minimize waste products that create water quality impacts	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B in the vicinity of the creek, and impacts on water quality in the creek would be the same: negligible, assuming compliance, because water quality would not be affected, or the effects would be at low levels of detection. No dog walking would be allowed on the remaining area of the beach. Potential turbidity incidences where the creek joins the surface waters of the bay would be reduced or eliminated, and nutrient and pathogen loadings would be minimized because visitors would be required to remove and properly dispose of dog waste and because the large volume of adjacent ocean water would provide a dilution factor sufficient to reduce impacts to negligible.

No commercial dog walking would be allowed under alternative D; therefore, no impacts from commercial dog walking would occur.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality. The

impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D. Visitors who currently walk dogs off-leash at Baker Beach could seek out new opportunities for walking dogs off leash elsewhere, especially sites with beaches. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Indirect impacts on water quality in adjacent lands from increased dog use would be expected, but impacts would not rise above a negligible level. However, no indirect impacts on the water quality in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Entry of nutrients/pathogens into water bodies and incidents of turbidity would be minimized; the dilution factor of the adjacent Pacific Ocean waters would minimize water quality impacts	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Most Dog Walking Access/Most Management Intensive. Impacts on water quality would be similar to those described above for alternative B (on leash), even though alternative E proposes a ROLA on the southern portion of the beach adjacent to Lobos Creek and the Pacific Ocean. On-leash dog walking would be allowed on the northern portion of the beach. Assuming compliance, impacts on water quality would be long-term, minor, and adverse for on-leash dog walking because water quality would not be affected, or the effects would be at low levels of detection. In addition, visitors with dogs would be required to remove and properly dispose of pet waste. The ROLA would be adjacent to the outflow of Lobos Creek at the beach interface and because there is the potential for many dogs to be in the ROLA simultaneously, there is a greater opportunity for urine and waste products to drain into the creek flow and affect water quality, even with compliance. On the beach, dogs would have the potential to increase nutrients and pathogens on the beach in the ROLA because of concentrated use. Tidal actions could move waste into the adjacent ocean waters; however, the dilution factor of the volume of ocean water adjacent to the beach would minimize water quality impacts from multiple dogs in the ROLA. Proper waste removal would be enforced. Impacts would be long-term, minor, adverse for ocean waters and for the Lobos Creek outlet flow because of concentrated use. Even though alternative E would provide a ROLA at the site, the difference in dog impacts between this alternative and alternatives B–D is not considered large enough to cause a change in the intensity of the impact for ocean waters, because the waters of the adjacent Pacific Ocean offer a dilution factor sufficient to keep impacts at a negligible level for nutrients and pathogens that may enter from dog waste.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach. Impacts

to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The long-term, minor, adverse impacts on water quality from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative E, since the ROLA offered at Baker Beach would continue to provide an off-leash experience. Therefore, no indirect impacts on water quality in adjacent lands, including Area B of the Presidio, would be expected.

BAKER BEACH ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term, minor, adverse impacts, assuming compliance	The ROLA is located at the south end of the beach and at Lobos Creek, where there is potential for direct contact with Lobos Creek including nutrients and pathogens entering the creek and incidents of turbidity; dogs could also gain access to the ocean in the beach ROLA	Beneficial cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach. The preferred alternative restricts dogs to on leash except on the Batteries to Bluffs Trail and the trail that leads to the Batteries to Bluffs Trail, where no dogs are allowed. On-leash dog walking would also be allowed on the beach south of the north parking lot. No dog walking would be allowed on the remaining portion of the beach. Potential turbidity incidences where the creek joins the surface waters of the bay would be reduced or eliminated, and nutrient and pathogen loadings would be minimized because visitors would be required to remove and properly dispose of dog waste and because the large volume of adjacent ocean water would provide a dilution factor sufficient to reduce impacts to negligible. Dog waste resulting from walking dogs on the beach may also enter the ocean from tidal and wave actions; however, the dilution factor of the large volume of adjacent ocean water receiving any dog waste, as well as other contributing factors, would reduce the impact to negligible. Assuming compliance, impacts on water quality would be negligible because water quality would not be affected, or the effects would be at low levels of detection.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to

walk more than three dogs with a limit of six dogs on leash and permits would restrict use by time and area. Permits would be allowed at Baker Beach. Impacts to water quality from permit holders with six dogs are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Baker Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Baker Beach. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Baker Beach. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and conveyed to the top of the cliffs as part of a restoration effort (Presidio Trust 2010, 1), which could beneficially impact water quality at this site. Additionally, in 2008, the Park Stewardship Program completed improvements on the Batteries to Bluffs Trail on the bluffs just north of Baker Beach.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on water quality from dogs under the preferred alternative were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust’s regulations on dog walking, which do not allow dogs to be off-leash. The adjacent lands identified under alternative A may experience increased visitation under the preferred alternative. Visitors who currently walk dogs off-leash at Baker Beach could seek out new opportunities for walking dogs off leash elsewhere, especially sites with beaches. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Indirect impacts on water quality in adjacent lands from increased dog use would be expected, but impacts would not rise above a negligible level. However, no indirect impacts on the water quality in Area B of the Presidio would be expected under the preferred alternative, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Entry of nutrients/pathogens into water bodies and incidents of turbidity would be minimized; the dilution factor of the adjacent Pacific Ocean waters would minimize water quality impacts	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Ocean Beach

Alternative A: No Action. Dogs under voice control are currently allowed on Ocean Beach, except for a seasonal leash restriction in the SPPA (Stairwell 21 to Sloat Boulevard) that requires dogs to be on leash between July 1 and May 15. Ocean Beach receives moderate to high visitor use, with moderate to high use by visitors with dogs. In 2007 and 2008 a combined total of 866 pet-related violations were recorded, the majority of them for leash law violations (4 were given for pet waste). Considering the moderate/high visitor use and the number of leash law violations, noncompliant dogs could access the Pacific Ocean along the beach for its entire length at the site. Pet waste containing pathogens and nutrients would potentially be deposited along the shoreline below the high tide line and in the ocean water directly; however pollutants are dispersed in a high energy beach environment. Tidal flushing and the sheer volume of water along Ocean Beach would dilute the effects of dog waste on water quality, resulting in a long-term, minor, adverse impact.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Ocean Beach. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The long-term, minor, adverse impacts on water quality at this park site under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the long-term, minor, adverse impacts from alternative A would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

OCEAN BEACH ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Long-term, minor, adverse impacts	Localized increase in turbidity from dogs accessing surface waters including the ocean; increased potential for nutrients and pathogens from dog waste to enter water bodies; however, volume of ocean water and other dilution factors would minimize water quality impacts and pollutants from dog waste would be dispersed in high energy beach environment	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B would allow on-leash dog walking along the beach north of Stairwell 21 and south of Sloat Boulevard at Ocean Beach. In the SPPA, on-leash dog walking would only occur on the adjacent trail along the Great Highway. Tidal flushing and the sheer volume of water along Ocean Beach would dilute the effects of dog waste on water quality, resulting in a negligible impact. Therefore, no measurable or perceptible change in the water quality of the ocean waters along Ocean Beach would be expected.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. All dogs must be on a leash. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the

negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park North Central and South Central Areas, because these are the closest dog use areas. Visitors who currently walk dogs off leash at Ocean Beach would possibly seek out alternative sites for continuing an off-leash experience for their dogs. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs; however, indirect impacts on water quality in adjacent lands from increased dog use would not be expected above a negligible level.

OCEAN BEACH ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access would be limited by restraint; flushing and dilution abilities of the adjacent ocean would minimize potential effects	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C at Ocean Beach would provide a ROLA on the beach north of Stairwell 21 and would prohibit dogs on the beach south of Sloat Boulevard. In the SPPA, south of Stairwell 21 and north of Sloat Boulevard, on-leash dog walking would only occur on the adjacent trail along the Great Highway. Assuming compliance, alternative C would result in negligible to long-term, minor, adverse effects on water quality. Even the concentrated dog use in the ROLA on the beach north of Stairwell 21 would result in negligible impacts on water quality since the ocean's volume and the flushing action of tides and waves would ensure that pathogens and nutrients entering the ocean are diluted. Therefore, no measurable or perceptible change in the water quality of the ocean waters along Ocean Beach would be expected.

Alternative C would allow all dog walkers, including commercial dog walkers, to walk one to three dogs with no permit required. At some sites any dog walker, private or commercial, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Ocean Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A "Cumulative Impacts." The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from alternative C would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would not likely experience increased visitation under alternative C, because visitors who wish to walk dogs off leash at Ocean Beach would be provided a designated ROLA. Therefore, indirect impacts on water quality in adjacent lands from increased dog use would not be expected.

OCEAN BEACH ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Physically restraining dogs would limit dog access to water bodies and opportunities for increased turbidity would be minimized; improved clean-up of dog waste would reduce entry of pathogens and/or nutrients into water bodies, but dogs could access the ocean from the beach ROLA	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only north of Stairwell 21 and along the trail adjacent to the Great Highway; dogs would be prohibited on the remainder of Ocean Beach. Alternative D restricts dog walking only to on leash and assuming compliance, alternative D would result in a negligible impact on the water quality of ocean waters adjacent to Ocean Beach since the ocean's volume and the flushing action of tides and waves are such that pathogens and nutrients entering the ocean would be diluted. Therefore, no measurable or perceptible change in the water quality of the ocean waters along Ocean Beach would be expected.

No commercial dog walking would be allowed under alternative D; therefore, no impacts on water quality from commercial dog walkers would occur.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative D were considered together with the effects of the projects mentioned above under alternative A "Cumulative Impacts." The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park – North Central and South Central Areas, because these are the closest dog use areas. Visitors who currently walk dogs off leash at Ocean Beach would possibly seek out alternative sites for continuing an off-leash experience for their dogs. Water quality in these sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs; however, impacts would not be expected to rise above a negligible level.

OCEAN BEACH ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physically restraining dogs and limiting the areas of on-leash dog walking would result in reducing potential dog access to ocean waters; dilution capabilities of the Pacific Ocean adjacent to Ocean Beach would result in no perceptible water quality changes	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the length of Ocean Beach (including the SPPA) from Sloat Boulevard north to Stairwell 21 and along the trail adjacent to the Great Highway. A ROLA would be designated north of Stairwell 21. Dogs would be restricted to walking on leash for most of the area of Ocean Beach, and while in the ROLA would be under voice and sight control. Negligible to long-term, minor, adverse effects are expected as a result of the implementation of alternative E. Even the concentrated dog use in the ROLA on the beach north of Stairwell 21 would result in negligible impacts on water quality since the volume of the ocean and the flushing action of tides and waves would ensure that pathogens and nutrients entering the ocean are diluted. Therefore, assuming compliance, alternative E would result in no measurable or perceptible change in the water quality of the ocean waters adjacent to Ocean Beach.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Ocean Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from alternative E would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

No indirect impacts on water quality in adjacent lands would be expected under alternative E, since dog walking would be allowed throughout the site and voice and sight control dog walking would be offered in a ROLA.

OCEAN BEACH ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor adverse impacts, assuming compliance	Physically restraining dogs would limit dog access to water bodies and opportunities for increased turbidity would be minimized; improved clean-up of dog waste would reduce entry of pathogens and/or nutrients into water bodies, but dogs could access the ocean from the beach ROLA	Negligible cumulative impacts No indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Ocean Beach. The preferred alternative at Ocean Beach would provide a ROLA on the beach north of Stairwell 21 and would prohibit dogs on the beach south of Sloat Boulevard. In the SPPA, on-leash dog walking would occur only on the adjacent trail along the Great Highway. Assuming compliance, the preferred alternative would result in negligible to long-term, minor, adverse effects on water quality. Even the concentrated dog use in the ROLA on the beach north of Stairwell 21 would result in negligible impacts on water quality, since the ocean would provide a volume of water and flushing action of tides and waves such that any pathogens and nutrients entering the ocean would be diluted. Therefore, no measurable or perceptible change in the water quality of the ocean waters along Ocean Beach would be expected.

The preferred alternative would allow all dog walkers, including commercial dog walkers, to walk one to three dogs with no permit required. At some sites any dog walker, private or commercial, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Ocean Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on water quality at or in the vicinity of Ocean Beach. Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. Restoration projects and watershed plans in San Francisco County have had, are currently having, or have the potential to have beneficial impacts on water quality at GGNRA sites in this region, such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a

short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible to long-term, minor, adverse impacts on water quality from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from the preferred alternative would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands would not likely experience increased visitation under the preferred alternative, because visitors who wish to walk dogs off leash at Ocean Beach would be provided a designated ROLA. Therefore, indirect impacts on water quality in adjacent lands from increased dog use would not be expected.

OCEAN BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Physically restraining dogs would limit dog access to water bodies and opportunities for increased turbidity would be minimized; improved clean-up of dog waste would reduce entry of pathogens and/or nutrients into water bodies, but dogs could access the ocean from the beach ROLA	Beneficial cumulative impacts No indirect impacts in adjacent lands	No change, assuming compliance

Fort Funston

Alternative A: No Action. Alternative A at Fort Funston would allow dog walking under voice control on the beach, excluding areas closed or fenced by signs. Fort Funston has high visitor use and high use by visitors with dogs, including commercial dog walkers, though the data do not distinguish between beach users (table 9). Pet waste from dogs would potentially be deposited along the shoreline below the high tide line and in the ocean water directly. Tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects of nutrients and pathogens originating from dog waste. As a result, alternative A impacts would be considered negligible to long-term, minor, and adverse because there would be no measurable or perceptible change in the water quality of the ocean waters adjacent to Fort Funston.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the negligible to long-term, minor, and adverse impacts on water quality. Impacts would include the addition of pathogens and nutrients into the ocean water.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1). Overall, most of these projects will benefit the water quality at Fort Funston.

The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect water quality in the area of Fort Funston. In addition, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible to long-term, minor, adverse impacts on water quality at this park site under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from alternative A would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term minor adverse impacts	Adjacent Pacific Ocean would be capable of diluting nutrients and pathogens due to volume of water and tidal flushing; Pollutants from dog waste are dispersed in high energy beach environment	Negligible cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. At Fort Funston, alternative B would allow on-leash dog walking on the beach. Currently a voluntary seasonal closure is in effect at the foot of the northernmost bluffs when bank swallows are nesting (April 1–August 15). Assuming compliance, alternative B would result in no measurable or perceptible change in the water quality of the ocean waters adjacent to the beach at Fort Funston. Dogs would be restricted to walking on leash for the full length of the beach. Tidal flushing and the sheer volume of water along the Fort Funston beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. As a result, alternative B impacts would be considered negligible because there would be no measurable or perceptible change in the water quality of the ocean waters adjacent to Fort Funston.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts to water quality from dogs at the site. Overall impacts to water quality from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on water quality at this park site under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Lake Merced, because it is the closest dog use area. Visitors who currently walk dogs off leash at Fort Funston would possibly seek out alternative sites for continuing an off-leash experience for their dogs. Water quality in these sites could be affected as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs, resulting in indirect impacts that could range from negligible to long term, minor, and adverse, since it is unknown what type of water bodies would be encountered by dogs in adjacent lands.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog access would be restricted by leash; flushing tidal action and volume of ocean water would dilute any potential effects from pet waste	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C at Fort Funston would provide a ROLA adjacent to the parking lot and a ROLA along the beach south of the beach access trail. Currently, a voluntary seasonal closure is in effect at the northernmost bluffs during the bank swallow nesting season (April 1–August 15). Only the ROLA along the beach south of the beach access trail has the potential to affect water quality. Assuming compliance, this alternative would require dogs to be under voice and sight control in the ROLAs, and owners would be required to properly remove and dispose of waste. Pet waste from dogs would potentially be deposited along the shoreline below the high tide line and in the ocean water directly. Tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. The beach ROLA is expected to have heavy use, resulting in water quality that could be adversely affected in a localized area; but again, tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects in these areas. Therefore, alternative C impacts would be considered negligible to long-term, minor, and adverse because there would be no measurable or perceptible change in the water quality of the ocean waters adjacent to Fort Funston.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the previous paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality from dogs at Fort Funston under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from alternative C would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by both individual and commercial dog walkers under alternative C, since off-leash dog walking would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Indirect impacts on water quality in

adjacent lands from increased dog use would range from negligible to long term, minor, and adverse, since it is unknown what type of water bodies dogs would encounter in adjacent lands.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Dog access would be restricted by leash; flushing tidal action and volume of ocean water would dilute any potential effects from pet waste	Negligible cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	No change, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach south of the beach access trail at Fort Funston as well as in the main parking lot and interior trails; a ROLA with fencing would be located in the existing disturbed area north of the main parking lot between the Coastal Trail and the Horse Trail, north of Battery Davis. Alternative D would result in a negligible impact on the water quality of ocean waters adjacent to the beach at Fort Funston. Tidal flushing and the sheer volume of water along the Fort Funston beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste.

No commercial dog walking would be allowed under alternative D; therefore, no impacts on water quality from commercial dog walkers would occur.

Cumulative Impacts. The negligible impacts on water quality from dogs at Fort Funston under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative D would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by both individual and commercial dog walkers under alternative D, particularly Lake Merced, because it is the closest dog use area. Visitors who currently walk dogs off leash at Fort Funston would possibly seek out alternative sites for continuing an off-leash experience for their dogs, since a ROLA would only be offered at one interior site at Fort Funston. Water quality in these adjacent sites could receive indirect impacts as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs. Therefore, water quality impacts in adjacent lands would range from negligible to long term, minor, and adverse.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Physically restraining dogs and limiting the areas of on-leash dog walking would result in reducing dog access to the ocean waters adjacent to the beach at Fort Funston	Beneficial cumulative impacts Negligible impacts to long-term minor adverse impacts in adjacent lands	Beneficial to no change assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would provide a ROLA in upper Fort Funston, extending north from the main parking lot and a ROLA on the beach at Fort Funston south of the beach access trail; would allow on-leash dog walking north of the beach access trail, in the main parking lot, and on interior trails. Currently a voluntary seasonal closure of the northernmost bluffs when bank swallows are nesting (April 1–August 15) is in effect. Only the ROLA proposed to be located on the beach at Fort Funston has the potential to affect water quality. Assuming compliance, on-leash dog walking would restrict dog access to some of the ocean waters adjacent to the beach at Fort Funston. In addition, assuming compliance, owners would properly remove and dispose of pet waste. Lastly, tidal flushing and the sheer volume of water along the Fort Funston beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. The beach ROLA is expected to have heavy use, resulting in water quality that could be adversely affected in a localized area; but again, tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects in these areas. As a result, potential effects of alternative E would be negligible to long-term, minor, and adverse, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Fort Funston.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the above paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible to long-term, minor, adverse impacts on water quality from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from alternative E would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would not likely experience increased visitation at other park sites under alternative E. Visitors who currently walk dogs off leash at Fort Funston would have access to two designated ROLAs and would not need to seek out alternative sites for continuing an off-

leash experience for their dogs. Therefore, no indirect impacts on water quality in adjacent lands from increased dog use would occur.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Flushing tidal action and volume of ocean water adjacent to the beach would dilute any potential effects from pet waste	Negligible cumulative impacts No indirect impacts in adjacent lands	No change, assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Funston. The preferred alternative would provide a ROLA adjacent to the parking lot and a ROLA along the beach south of the beach access trail. Currently a seasonal closure of the northernmost bluffs during the bank swallow nesting season (April 1–August 15) is in effect. Only the ROLA proposed along the beach would have the potential to affect water quality. Assuming compliance, this alternative would require dogs to be under voice and sight control in the ROLAs, and owners would be required properly remove and dispose of waste. Pet waste from dogs would potentially be deposited along the shoreline below the high tide line and in the ocean water directly. Tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. The beach ROLA is expected to have heavy use, resulting in water quality that could be adversely affected in a localized area; but again, tidal flushing and the volume of ocean water along the Fort Funston beach would dilute the adverse effects in these areas. Therefore, impacts from the preferred alternative would be considered negligible to long-term, minor, and adverse because there would be no measurable or perceptible change in the water quality of the ocean waters adjacent to Fort Funston.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. Any dog walker, commercial or private, can obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may have up to six dogs off-leash and the permit may restrict use by time and area. Permits would be allowed at Fort Funston. Impacts to water quality from permit holders with six dogs off-leash are expected to increase under this alternative; however, impacts are not expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts to water quality are expected from this user group. Impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers as summarized in the previous paragraph, therefore impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1).

The Vista Grande portion of Daly City’s stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall

structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect water quality in the area of Fort Funston. In addition, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible to long-term, minor, adverse impacts on water quality from dogs at Fort Funston under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible to long-term, minor, adverse impacts from the preferred alternative would result in negligible cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). The adjacent lands may experience increased visitation by both individual and commercial dog walkers under the preferred alternative, since off-leash dog walking would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Indirect impacts on water quality in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse, since it is unknown what type of water bodies dogs would encounter in adjacent lands.

FORT FUNSTON PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impacts, assuming compliance	Dog access would be restricted by leash; flushing tidal action and volume of ocean water would dilute any potential effects from pet waste	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	No change, assuming compliance

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Alternative A would allow on-leash dog walking on all trails at Mori Point and on the portion of beach owned by the NPS. In Mori Point, ponds restored as habitat for special-status species are located adjacent to the Coastal Trail but behind constructed fencing. Mori Point receives moderate use by visitors walking dogs, and in 2007 and 2008 had a combined level of 51 pet violations recorded for infractions of leash regulations (table 9). Impacts on the water quality of the ocean waters adjacent to the beach at Mori Point under the no-action alternative would be considered negligible.

Impacts would result from dog waste on the beach; however, tidal flushing and the sheer volume of water along the Mori Point beach should dilute any nutrients and pathogens originating from dog waste. As a result, potential effects of alternative A would be negligible, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on water quality.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. NPS recently completed the *Mori Point Restoration and Trail Plan*, which includes development of a safe and sustainable trail system to improve recreational experiences and guide visitors away from disturbed areas, restoration areas, and endangered species habitat areas (NPS 2010j, 1); this plan would decrease runoff and beneficially impact water quality.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on water quality at this park site under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative A would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No impacts on water quality in adjacent lands would be expected under alternative A, since there would be no change in current conditions at the site.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog waste would occur on beach; adjacent Pacific Ocean would be capable of diluting nutrients and pathogens due to volume of water and tidal flushing	Beneficial cumulative impacts No indirect impacts in adjacent lands	N/A

N/A = not applicable.

Alternative B: NPS Leash Regulations. Alternative B at Mori Point would provide on-leash dog walking on the Coastal Trail and the NPS-owned portion of beach. Old Mori Road would be closed to dogs. Dogs would be restricted to being walked on leash on the beach, and owners would be required to properly remove and dispose of waste. In addition, tidal flushing along with the volume of ocean water along the Mori Point beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. As a result, potential effects of alternative B would be negligible, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

Alternative B would allow all dog walkers, including commercial dog walkers, to walk one to three dogs per person with no permit required. All dogs would be required to be on leash. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative B would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Esplanade Beach and the San Bruno Dog Park, because they are the closest dog use areas. These parks may experience some increased visitation under alternative B because the Pollywog Path and Old Mori Road will be closed to dogs. Some visitors with dogs may choose to visit a different park due to this closure. Water quality in these adjacent sites could be affected as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs, resulting in negligible indirect impacts on water quality in adjacent lands.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog waste would occur on beach; dogs would be restricted by leash restraint and the adjacent ocean would provide flushing and dilution actions; exclusionary fencing protects ponds	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	No change, assuming compliance

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C at Mori Point would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the NPS-owned portion of beach. Assuming compliance, alternative C would result in a negligible impact on water quality because this alternative would not result in a measurable or perceptible change in water quality. Dogs would be restricted to being walked on leash on the beach, and owners would be required to properly remove and dispose of pet waste. In addition, tidal flushing along with sheer volume of ocean water along the Mori

Point beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. As a result, potential effects of alternative C would be negligible, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative C would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Esplanade Beach in Pacifica and the San Bruno Dog Park, because they are the closest dog use areas. These parks may experience some increased visitation under alternative C because the Pollywog Path will be closed to dogs. Some visitors with dogs may choose to visit a different park due to this closure. Water quality in these adjacent sites could be affected as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs, resulting in negligible indirect impacts on water quality in adjacent lands.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog waste would occur on beach; dogs would be restricted by leash restraint and the adjacent ocean would provide flushing and dilution actions; exclusionary fences protect ponds	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	No change, assuming compliance

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would be prohibited in all portions of Mori Point. Therefore, assuming compliance, alternative D would result in no impact on water quality, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers to water quality.

Cumulative Impacts. Under alternative D, it was determined that there would be no impacts to water quality. No impacts along with the benefits of the restoration and rehabilitation projects would result in beneficial cumulative impacts. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would likely experience increased visitation under alternative D, particularly Esplanade Beach in Pacifica and the San Bruno Dog Park, because they are the closest dog use areas. Visitors who currently walk dogs at Mori Point would seek out alternative sites for continuing to walk their dogs. Indirect impacts on water quality in adjacent lands from increased dog use are expected to range from negligible to long term, minor, and adverse, since dog walking is currently considered a moderate use at Mori Point and it is unknown what type of water bodies these dogs will encounter in adjacent lands.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial cumulative impacts Negligible impacts to long-term minor adverse indirect impacts in adjacent lands	Beneficial, assuming compliance

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the Coastal Trail and the NPS-owned portion of beach, and would also allow on-leash dog walking on the Pollywog Path. Dogs would be restricted to being on leash on the beach, and owners would be required to properly remove and dispose of waste. In addition, tidal flushing along with the volume of ocean water along the Mori Point beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. As a result, potential effects of alternative E would be negligible, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

For alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on water quality.

Cumulative Impacts. The negligible impacts on water quality from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the improvement and enhancement projects along with the negligible impacts from alternative E would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E. Since visitors would be allowed to continue to walk dogs at this site, no indirect impacts on water quality in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog waste would occur on beach; dogs would be restricted by leash restraint and the adjacent ocean would provide flushing and dilution actions; exclusionary fences protect ponds	Beneficial cumulative impacts No indirect impacts in adjacent lands	No change, assuming compliance

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the NPS-owned portion of beach. Assuming compliance, the preferred alternative would result in a negligible impact on water quality because this alternative would not result in a measurable or perceptible change in water quality. Dogs would be restricted to being walked on leash on the beach, and owners would be required to properly remove and dispose of pet waste. In addition, tidal flushing along with the sheer volume of ocean water along the Mori Point beach should dilute the adverse effects on water quality from nutrients and pathogens originating from dog waste. As a result, potential effects of the preferred alternative would be negligible, as there would not be a measurable effect or perceptible change in the water quality of the ocean waters adjacent to the beach at Mori Point.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, to a maximum of six dogs. However, no permits would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on water quality.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Ongoing long-term projects such as stormwater system maintenance and improvements and the Park Stewardship Program provide improvement and enhancement projects that reduce erosion and sedimentation into local creeks and streams, improving aquatic habitat and water quality. NPS recently completed the *Mori Point Restoration and Trail Plan*, which includes development of a safe and sustainable trail system to improve recreational experiences and guide visitors away from disturbed areas, restoration areas, and endangered species habitat areas (NPS 2010j, 1); this plan would decrease runoff and beneficially impact water quality.

Oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact the water quality off of the sandy beaches of the park. On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in

the San Francisco Bay since the Cape Mohican incident in 1996. The November 7, 2007, oil spill had a short-term, minor to moderate, adverse effect on the water quality of the sandy beaches at project sites within GGNRA. Typically, the impacts on water quality from this spill lasted only a few weeks. In the long-term and by the time this dog plan/EIS is implemented impacts to the water quality off of the sandy beaches at project sites within GGNRA should be reduced to a negligible level.

The negligible impacts on water quality from dogs under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the improvement and enhancement projects along with the negligible impacts from the preferred alternative would result in beneficial cumulative impact on water quality. The impacts resulting from the past oil spill would add little to the cumulative impacts on water quality since those impacts were found to be negligible.

Indirect Impacts on Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). The adjacent lands may experience increased visitation under the preferred alternative, particularly Esplanade Beach in Pacifica and the San Bruno Dog Park, because they are the closest dog use areas and because the Pollywog Path would be closed to dogs. Some visitors with dogs may choose to visit a different park due to this closure. Water quality in these adjacent sites could be affected as a result of increased visitation from visitors with dogs, depending on the presence of water bodies and their accessibility to dogs, resulting in negligible indirect impacts on water quality in adjacent lands.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impacts, assuming compliance	Dog waste would occur on beach; dogs would be restricted by leash restraint and the adjacent ocean would provide flushing and dilution actions; exclusionary fences protect ponds	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands	No change, assuming compliance

New Lands

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive water resources exist at the site. Concentrated dog use can affect water quality from the physical disturbance of bottom sediments and unvegetated shoreline soils by dogs actively

moving within or adjacent to a water body. Soils and sediments can be washed into water bodies through runoff or waves and tidal actions. Benthic sediments can be re-suspended in the water column. As a result of soil and sediment disturbance, the turbidity of a stream or other water body affects water quality by reducing light penetration and affecting the ability of fish, amphibians and other aquatic organisms to breathe. In addition, waste from dogs can add nutrients and pathogens to water resources and can also affect water quality.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be allowed access water bodies and visitors would be expected to remove waste. Therefore, impacts to water quality as a result of alternative A would be negligible. It is also important to note that no impacts to water quality are expected to occur at sites that are currently closed to dogs and that if applicable, impacts in ocean waters due to would be negligible because the level of nutrients and/or other pollutants would be undetectable due to the dilution effect of the volume of water associated with the ocean along the beach.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on water quality. At sites where commercial dog walking is common, impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers and would negligible.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Adjacent lands could range from urban lands previously developed to preserved lands. Since on-leash dog walking would be allowed at new lands under this alternative the overall indirect impacts to water quality at adjacent lands as a result of alternative A would range from no impact to negligible.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Dogs would not be allowed access water bodies and visitors would be expected to remove waste; if applicable, negligible impacts in ocean waters because of dilution of pollutants from dog waste by ocean tidal action	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

N/A = not applicable.

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow dog on-leash walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive water resources exist at the site. Concentrated dog use can affect water quality from the physical disturbance of bottom sediments and unvegetated shoreline soils by dogs actively moving within or adjacent to a water body. As a result of soil and sediment disturbance, the turbidity of a stream or other water body affects water quality by reducing light penetration and affecting the ability of fish, amphibians and other aquatic organisms to breathe. In addition, waste from dogs can add nutrients and pathogens to water resources and can also affect water quality.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on water quality. At sites where commercial dog walking is common, impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to water quality from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because it is assumed that, due to compliance, dog waste would not have an effect on the water quality of newly acquired sites because dogs would not be allowed access water bodies and visitors would be expected to remove waste. Therefore, assuming compliance, impacts to water quality as a result of alternatives B and C would be negligible. It is also important to note that no impacts to water quality are expected to occur at sites that are currently closed to or that would be proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Since on-leash dog walking would be allowed at new lands under

these alternatives the overall indirect impacts to water quality at adjacent lands as a result of alternatives B and C would range from no impact to negligible.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible impact, assuming compliance; no impact at sites that prohibit dogs	Dogs would not be allowed access water bodies and visitors would be expected to remove waste; if applicable, negligible impacts in ocean waters because of dilution of pollutants from dog waste by ocean tidal action	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

N/A = not applicable.

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive water resources exist at the site.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on water quality.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because it is assumed that, due to compliance, dog waste would not have an effect on the water quality of newly acquired sites because dogs would not be allowed access water bodies and visitors would be expected to remove waste. Therefore, assuming compliance, impacts to water quality as a result of alternative D would be negligible. It is also important to note that no impacts to water quality are expected to occur at sites that are currently closed to or would not be open to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the

cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. On-leash dog walking may be allowed at new lands if opened under the GGNRA Compendium; therefore, the overall indirect impacts to water quality at adjacent lands as a result of alternative D would range from no impact to negligible.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall, negligible impact, assuming compliance; no impact at sites that prohibit dogs	Dogs would not be allowed access water bodies and visitors would be expected to remove waste; if applicable, negligible impacts in ocean waters because of dilution of pollutants from dog waste by ocean tidal action	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

N/A = not applicable.

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (Primary or Secondary Management Response).

Alternative E would allow on leash dog walking and, possibly, ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. As stated above, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive water bodies exist at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on water quality. At sites where commercial dog walking is common, impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to water quality from dogs walked by both commercial and private individuals are summarized below.

As part of alternative E, if dogs are physically restrained by a leash or are allowed in a designated ROLA at new sites under GGNRA management, they should not gain access to any water bodies that may be present such as creeks, streams, ponds, lakes, or lagoons. ROLAs could possibly be established near or adjacent to water bodies or on a beach; however, compliance with proposed regulations would be expected. It is assumed that ROLAs would not be established in or adjacent to areas with sensitive water bodies or aquatic resources, which would be contrary with the park's desired future conditions. Management activities could include either on leash dog walking or dogs under voice and sight control and prohibiting dogs from entering water bodies; removal of dog waste would also be required. As a result, turbidity impacts to water quality and the amount of dog waste, nutrients, and pathogens that could enter the water would be expected to be eliminated. Therefore, assuming compliance, alternative E would result in a negligible to long-term, minor, adverse impact to water quality. It is also important to note that at sites that are currently closed to or proposed for closure to dogs, no impacts to water quality in these areas would occur.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

As stated under alternative A, it is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. On-leash dog walking would be allowed at new lands under this alternative. In addition, voice and sight control may be allowed at new lands under this alternative; therefore, the overall indirect impacts to water quality at adjacent lands as a result of alternative E would range from no impact to long-term, minor, and adverse.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall negligible to long-term, minor, adverse impact assuming compliance; No impact at sites that prohibit dogs	Dogs would not be allowed access water bodies and visitors would be expected to remove waste; if applicable, negligible impacts in ocean waters because of dilution of pollutants from dog waste by ocean tidal action; dogs in ROLAs could increase impacts in water bodies in and adjacent to the ROLAs	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to long-term, minor, and adverse indirect impact at adjacent lands	N/A

N/A = not applicable.

Preferred Alternative. Alternative D was chosen as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive water resources exist at the site.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on water quality. At sites where commercial dog walking is common, impacts to water quality from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to water quality from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because it is assumed that, due to compliance, dog waste would not have an effect on the water quality of newly acquired sites because dogs would not be allowed access water bodies and visitors would be expected to remove waste. Therefore, assuming compliance, impacts to water quality as a result of the preferred alternative would be negligible. It is also important to note that no impacts to water quality are expected to occur at sites that are currently closed to or would not be open to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Therefore, a range of indirect impacts was developed to encompass the range of impact possibilities that could occur at lands located adjacent to these new lands that have not yet been acquired. Adjacent lands could range from urban lands previously developed to preserved lands. Since on-leash dog walking would be allowed at new lands under this alternative the overall indirect impacts to water quality at adjacent lands as a result of the preferred alternative would range from no impact to negligible.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Water Quality Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Overall, negligible impact, assuming compliance; no impact at sites that prohibit dogs	Dogs would not be allowed access water bodies and visitors would be expected to remove waste; if applicable, negligible impacts in ocean waters because of dilution of pollutants from dog waste by ocean tidal action	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

N/A = not applicable.

VEGETATION

As stated previously in chapter 3, GGNRA supports a rich assemblage of plants in the parks' grasslands, coastal scrub, wetlands, and forests that compose the coastal ecosystem. Approximately 80 vegetation alliances (or plant communities) have been documented at GGNRA. These alliances were then grouped into general vegetation communities at GGNRA for the purposes of analysis. In this section, impacts on these identified natural vegetation communities are analyzed for each alternative presented. The impact analysis described in this section also includes plant species of interest or management concern. Species of interest include plants that are not federally or state listed, but have status or ranking through the California Native Plant Society (CNPS). The NPS conducts its actions in a manner consistent with relevant state laws and regulations. As a result, this section analyzes impacts on plant species included on lists produced by the CNPS. Impacts on plant species that are federally or state listed as threatened, endangered, or candidate species are described in the section "Special-status Species."

This "Vegetation" section also provides an overview of the guiding policies and regulations, describes the study area, includes a definition of duration, details the assessment methodology, and defines the impact thresholds for vegetation.

GUIDING POLICIES AND REGULATIONS

NPS Natural Resource Policies and Guidelines

The NPS has developed specific guidelines for the management of natural resources (NPS 2006b). The guidelines provide for the management of native and non-native plant (and animal) species. They are designed to assist parks in developing resource management plans and action plans for specific park programs in all park management zones: natural, cultural, park development, and special use zones as described in the *NPS Management Policies 2006* (NPS 2006b) and articulated in each park's general management plan (GMP).

The *NPS Management Policies 2006* state that the NPS "will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term "plants and animals" refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals." The NPS will achieve this by:

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006b, section 4.1).

Management Policies 2006 also states that the NPS "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 "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" (NPS 2006b, section 4.4.2.3).

Additionally, the *Organic Act* of 1916 (16 USC 1) directs national parks to conserve wildlife unimpaired for future generations and is interpreted to mean that native animal life is to be protected and perpetuated as part of a park unit's natural ecosystem. Parks rely on natural processes to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

Species Designations

As described in chapter 3, other species of interest at GGNRA include plants that are not federally or state listed but have status or ranking through either the Department of Fish and Game (DFG) or the CNPS. The impact analysis for these plant species considered as other species of interest is included in this "Vegetation" section. Federally and state-listed plant species are discussed in detail in the "Special-status Species" section. These species all require consideration by the NPS when management actions are taken to ensure that actions do not harm the species or their habitats.

California Native Plant Society. The CNPS maintains a list of species in California that are considered rare or endangered according to CNPS criteria. The list contains plants of special concern in California, including species, subspecies, or varieties that are considered to be extinct (list 1A); species that are rare, threatened, or endangered in California and elsewhere (list 1B); species that are rare, threatened, or endangered in California but are more common elsewhere (list 2); species that are potentially endangered but additional information on rarity and endangerment is needed (list 3); and species that have a limited distribution, but are not currently endangered (list 4).

California Department of Fish and Game. The DFG maintains an informal list of native plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. The DFG considers all plants listed by the CNPS as "special plants" and recommends that impacts on plants on lists 1 and 2 be considered during project analysis. Legal protection is afforded to plant species listed under the California *Endangered Species Act* (ESA) by the Fish and Game Commission of the DFG.

STUDY AREA

The geographic study area for vegetation includes the individual sites of GGNRA under consideration for the dog management plan/EIS that could be impacted by dog management activities including new lands. There are 21 individual sites relevant to this project, which have been previously described in detail in chapter 3. Not all communities present at GGNRA will be affected by this project; therefore, this section only analyzes impacts on the vegetation and plant communities at GGNRA affected by dog management activities.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long term impacts to vegetation are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the compliance-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on vegetation would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on vegetation would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

Maps showing vegetation cover in GGNRA and consultations with NPS staff were used to identify baseline conditions in the study area, along with available information on the condition and composition of the vegetation in the park. The analysis of vegetation considered that changes in the plant community size, integrity, or continuity could occur as a result of the implementation of various management activities.

Overall, impacts on vegetation were analyzed qualitatively, and as a result, acreages of impacts on specific types of vegetation were not completed as part of this project. The information in this analysis was obtained through best professional judgment of park staff and experts in the field, as well as supporting literature (as cited in the text). Data on frequency of disturbance of closed areas (specific habitat types, such as creeks, lagoons, and cliffs) in a particular park site, if available, have been incorporated with relevant scientific literature to predict the impact of dog management activities on vegetation. Where data on the frequency of disturbance are not available, information from park staff and visitors on the relative intensity of use by visitors and the relative number of dogs both on and off leash has been used to predict impacts.

IMPACT THRESHOLDS

Vegetation impacts were determined by examining the potential effects of dog walking activities on the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. Negligible impacts are neither adverse or beneficial, nor long term or short term. A beneficial impact would be a positive change in the condition or appearance of the resource. No impact on vegetation may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the effects on vegetation under the various alternatives being considered.

- Beneficial* A beneficial impact is a beneficial change from the current conditions and is a relative indicator of progress compared to the no-action alternative. In general, a beneficial impact would include an increase in the abundance as well as distribution, quality, and quantity of the vegetation.
- Negligible* Impacts would result in no measurable or perceptible changes in the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site.
- Adverse*
 - Minor.** Effects would be measurable and perceptible, but would be localized in a relatively small area. The overall integrity of the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat in a park site, would not be affected and, if left alone, would recover.
 - Moderate.** Effects would be measurable and perceptible over a relatively large area, and would affect the overall integrity of a plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat.

Major. Effects would be readily apparent over the majority of the study area and would affect the integrity of the plant community, including plant structure and abundance as well as distribution, quality, and quantity of the habitat.

Detailed Description of Impact Analysis

At GGNRA, the management of vegetation is primarily focused on research, monitoring, and actively restoring habitat for threatened, endangered, and unique plant species. Restoration efforts at GGNRA have included decompacting soils, removing non-native and invasive plant species, and planting listed and unique plant species. At GGNRA, for new and/or pending properties recently acquired by the park (Cattle Hill and Pedro Point Headlands), inventorying of vegetation is currently ongoing. Therefore, potential habitat is identified at these sites because site-specific information at these locations is relatively unknown at the time of publication.

COMMON TO ALL ALTERNATIVES

General Vegetation Impacts

While it is generally accepted and well documented that the presence of dogs in natural areas can result in disturbance to wildlife (as described in detail in the “Wildlife” section), specific studies regarding impacts on vegetation as a result of dogs are not as widely available as studies documenting impacts on wildlife as a result of dogs. A detailed literature review was conducted to describe impacts on natural resources as a result of dogs and the results of this literature review are summarized below to provide a basis for discussing impacts on vegetation.

It has been suggested that dogs, “particularly while off leash, increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog” (Sime 1999, 8.4; Miller et al. 2001; Lafferty 2001a, 318). Andrusiak (2003, 3.2) suggests that dogs traveling quietly along a trail with screening vegetation on both sides are unlikely to disturb or even encounter wildlife. Off-leash dogs and their handlers were studied in Boulder, Colorado by Bekoff and Meaney (1997). They found that off-leash dogs generally did not travel far off-trail and rarely were observed to chase other dogs, disturb people, chase wildlife, destroy vegetation or enter bodies of water (Bekoff and Meaney 1997). They further noted that dogs traveling farther off trail were often lured there by the people responsible for them (throwing sticks, balls, or Frisbees, or going off trail and calling their dogs to follow) (Bekoff and Meaney 1997). When dogs chase or pursue wildlife while off leash, they may be lured off a trail or road to follow wildlife and disturb vegetation along the way (Bekoff and Meaney 1997). Vegetation can be both directly affected by dogs through physical disturbance and indirectly affected by dogs through defecation and urination. Physical disturbance to vegetation can include trampling or digging that may reduce the viability of the plant(s). As cited in Andrusiak (2003, 3.2), the Greater Vancouver Regional District collected observational data on dog walkers and dogs in individual regional parks and observed dogs in the water and uprooting beach and dune vegetation by digging. Both dog and human traffic compact the soil and crush vegetation and dogs enjoy digging; this is unlikely to have significant effects on the unvegetated areas but could contribute to degradation of vegetated areas (Andrusiak 2003, 3.2). “High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation” (Andrusiak 2003, 5).

In addition to the potential direct, physical disturbance to vegetation by dogs, “marking” (scent marking with urine) or defecation by dogs could also affect vegetation by concentrating nutrients in particular areas. As cited in Lenth et al. (2008, 223), the City of Boulder Open Space and Mountain Parks has noted that dogs often defecate very soon after arriving at a trail, and many visitors do not walk dogs much

beyond the trailhead. Uncollected dog waste can negatively affect park aesthetics as well as public health and safety and can also damage turf and other vegetation (LEES + Associates n.d., 2). In natural parks or along the edge of water bodies, accumulating dog waste can adversely impact sensitive habitat areas (LEES + Associates n.d., 2). Dogs (as well as horses and hikers) may also alter dispersal of both native and non-native plants along trail corridors, as seeds that adhere to their paws and fur are then transported to other locations, possibly resulting in the spread and establishment of new populations of invasive non-native plants. Creation of social trails by dogs and dog walkers also increases erosion, damages root systems, further fragments habitat, and can alter reproductive success by isolating plants, thus reducing the opportunities for cross-pollination and effective seed dispersal. Therefore, Lenth et al. (2008, 225) has suggested that trails that are kept dog-free or with dogs closely restricted to trails could protect against the demonstrated ecological impacts that dogs have on wildlife communities.

Other Coniferous Communities

Within the study area East Fort Miley is the only site containing Monterey cypress. East Fort Miley is primarily Monterey cypress with some wetland/riparian vegetation around the fringes; the area is dominated by older stands of cypress, which were densely planted (NPS 2006i). East and West Fort Miley has low numbers of dog walkers, and low numbers of citations and incident reports related to dog activities at the site (table 9). A large portion of the site is developed and only a small portion of the site supports mature, coniferous vegetation (including primarily Monterey cypress, which is not naturally occurring in San Francisco County) in areas that are open to dogs. The stands of mature Monterey cypress are unlikely to be affected by dogs through trampling, digging, or dog waste due to their already established nature at the site and the development that has previously occurred at Fort Miley. Therefore, impacts from dogs on other coniferous communities (Monterey Cypress) at Fort Miley would be negligible and are not discussed further in this “Vegetation” section.

CUMULATIVE IMPACTS COMMON TO ALL ALTERNATIVES

Urban development and loss of habitat continuity, as well as the establishment and overall dominance of areas by non-native and/or invasive plant species, are the primary past actions that have influenced vegetation at the sites in GGNRA in this study area. In addition, fire suppression efforts beginning in 1870 and extending into recent years has resulted in a twofold increase in oak pollen and oak density, perhaps facilitating the spread and effect of the non-native sudden oak death (SOD) pathogen (NPS 2005a, 321) and allowing the unnatural buildup of both dead and live fuels. The use of fire may help manage both the forest structure and potentially stall or inhibit the effects of SOD; recent studies suggest fire can be used to manage the spread of SOD, and may kill off fungal spores (NPS 2005a, 197).

Urban development prior to the park’s establishment and immediately adjacent to park boundaries has contributed to changes in composition and density of key species. For example, coastal redwood forest is estimated to have covered 1.98 acres across its range 200 years ago. Today, approximately 85,000 acres (4 percent) is left. Monterey pine, Monterey cypress, and eucalyptus have all been imported by European-American settlers for lumber or other purposes and, as non-native species, have competed with and replaced native species, resulting in altered vegetation communities inside and outside GGNRA. Conversion of land to impervious surfaces has increased soil erosion, and overuse of areas has increased soil compaction; both erosion and compaction have resulted in further loss of native vegetation communities from altered soil characteristics and direct loss of soils. Disturbed areas provide opportunities for colonization by non-native invasive plant species. Coastal scrub habitat is present over about 15 percent of its former range in California, primarily because of land conversion to agricultural, industrial, and residential development. Grasslands in California have been invaded by non-native species in part because non-native plant species are better adapted to areas grazed by the livestock that have displaced the native tule elk, as well as areas disturbed by clearing and plowing for agriculture. Highly

invasive species that occur in grasslands and coastal scrub in the park, such as Scotch and French broom, are escaped ornamental shrubs brought from Europe, and most of the park's non-native grasses are imported from Eurasia. All are adapted to the area's Mediterranean climate (NPS 2005a).

Urban development outside and adjacent to GGNRA sites, as well as actions such as the establishment of "social trails" made by dogs and humans traversing park sites off official trails, can result in GGNRA sites becoming fragmented into islands of intact habitat surrounded by infrastructure and associated non-native species. Populations of plants have become isolated from each other, which decreases opportunities for cross-pollination or seed movement. This gradually causes a reduction in the overall adaptability or elasticity of populations to respond to changing environmental conditions, resulting in long-term adverse impacts on population sizes and overall species survival. It then becomes imperative for the NPS to provide protection to remaining habitat and ensure that the quality of habitats in GGNRA is maintained.

Throughout GGNRA, the NPS and groups such as the Golden Gate National Parks Conservancy are attempting to reduce the impacts of prior and adjacent development, fire suppression, erosion, and soil damage through a variety of management projects that will benefit native vegetation communities and special-status plant species. Restored and revitalized vegetation communities in GGNRA will, in turn, provide additional improved habitat for wildlife. Completed, current, and future project activities that will have a beneficial cumulative impact on vegetation in the GGNRA sites discussed in this plan/EIS include the following:

- The GGNRA GMP, which provides for resource protection in the park.
- The GGNRA *Fire Management Plan*, which provides guidance for the protection of natural resources through the use of prescribed burns, fire protection measures, and the reduction of fuel hazards.
- Native plant habitat restoration projects that occur throughout the park and are conducted through park stewardship programs led by GGNRA Natural Resources staff (Habitat Restoration Team), the Presidio Park Stewards, and the Golden Gate National Parks Conservancy site stewardship programs. These projects include invasive species removal and/or native plant restoration projects to restore and enhance natural terrestrial plant communities in GGNRA and will beneficially affect coastal vegetation communities at GGNRA. Since 2003, the Conservancy site stewardship programs have worked with the NPS to control invasive plant species and restore natural plant species throughout the park, resulting in the restoration or enhancement of over 1,000 acres of trailside habitat in sites such as the Marin Headlands Trails and Lands End.
- The NPS inventory and monitoring program, which aims to improve park management through greater reliance on scientific knowledge, including collecting, organizing, and making available natural resource data, such as invasive plant species. Specifically, the inventory and monitoring program includes early detection of invasive plant species, described as a protocol to help find and map the most invasive plant species as they enter sensitive areas of the park to protect the most critical places.
- The *Mori Point Restoration and Trail Plan*, which will restore the ecological integrity of existing habitats and restore native plant communities.
- Restoration of native vegetation as part of the *Lower Easkoot Creek Restoration Plan*.
- The *Muir Beach Wetland and Creek Restoration Project*, which will restore riparian habitat; proposed fencing will protect wetland plant communities.

- Fencing installed at Rodeo Beach / South Rodeo Beach as part of the *Marin Headlands Trails / Fort Baker Improvement and Transportation Management Plan/EIS*, which will protect sensitive coastal dune and wetland communities.

Adverse impacts could occur as a result of development projects both in the park and adjacent to park boundaries, including the various transportation plans and trails plans, including the *Marin Headlands Trails/Fort Baker Improvement and Transportation Management Plan/EIS*. These efforts will involve ground-disturbance activities that could add to or exacerbate existing non-native plant problems along road and trail corridors. However, ongoing efforts to identify mitigation measures for these projects, such as pre-project weed control, post-project planting and weeding, and use of weed-free products (soils, fill material, and equipment), would reduce the potential for these types of impacts. These projects would have a beneficial impact on vegetation as a whole (NPS 2005a). Projects would also focus on the elimination of excess or unofficial social trails, reducing habitat fragmentation and associated infiltration of weed species into intact habitat areas.

The paragraphs after the compliance-based management strategies discussion describe impacts on vegetation by habitat type, alternative, and applicable site.

COMPLIANCE-BASED MANAGEMENT STRATEGY

In order to ensure protection of vegetation from dog walking activities, the dog walking regulations defined in action alternatives B, C, D, and E would be regularly enforced by park law enforcement, and compliance monitored by park staff. A compliance-based management strategy would be implemented to address noncompliance and would apply to all action alternatives. Noncompliance would include dog walking within restricted areas, dog walking under voice and sight control in designated on-leash dog walking areas, and dog walking under voice and sight control outside of established ROLAs. If noncompliance occurs, impacts to vegetation have the potential to increase and become short-term minor to major adverse. Vegetation can be both directly affected by dogs through physical disturbance and indirectly affected by dogs through defecation and urination. Physical disturbance to vegetation can include trampling or digging that may reduce the viability of the plant(s). Defecation by dogs could also affect vegetation by concentrating nutrients in particular areas. Noncompliant dog walkers could also create social trails that would increase erosion, damage root systems, further fragment habitat, and alter reproductive success by isolating plants, thus reducing the opportunities for cross-pollination and effective seed dispersal. To prevent these impacts from increasing or occurring outside of the designated dog walking areas the NPS would regularly monitor all sites. When noncompliance is observed in an area, park staff would focus on enforcing the regulations, educating dog walkers, and establishing buffer zones, time and use restrictions, and SUP restrictions. If noncompliance continues and compliance falls below 75 percent (measured as the percentage of total dogs / dog walkers observed during the previous 12 months not in compliance with the regulations) the area's management would be changed to the next more restrictive level of dog management. In this case, ROLAs would be changed to on-leash dog walking areas and on-leash dog walking areas would be changed to no dog walking areas. Impacts from noncompliance could reach short-term minor to major adverse, but the compliance-based management strategy is designed to return impacts to a level that assumes compliance, as described in the overall impacts analysis, or provide beneficial impacts where dog walking is reduced or eliminated.

COASTAL COMMUNITIES

The coastal communities at GGNRA include habitats such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas, of which only the coastal dune habitat supports terrestrial plant communities that could be affected by dog activities. Coastal dunes are therefore analyzed in this section, as are beaches and rocky intertidal habitat (even though little vegetation is supported by these last two

communities). In the study area at GGNRA, coastal dune habitat is found at Stinson Beach, Muir Beach, Rodeo Beach/South Rodeo Beach, Crissy Field, Baker Beach and Bluffs to Golden Gate Bridge, Ocean Beach, and Fort Funston. Coastal dune plant species are very sensitive and easily disturbed by trampling, digging, and other activities, and may not recover due to their sensitive nature or may create opportunities for the establishment of non-native and/or invasive plant species. CNPS-listed plant species at GGNRA that occur in coastal dune habitat are included in the impacts analysis of this section as applicable. The following areas in the dog management planning areas at GGNRA have beach habitat: Muir Beach, Rodeo Beach/South Rodeo Beach, Crissy Field, Baker Beach and Bluffs to Golden Gate Bridge, Ocean Beach, Fort Funston, and Mori Point; dogs are currently allowed access to these beaches or portions of these beaches. As applicable, these beach areas are discussed in more detail in the following paragraphs. Many of the coastal sites in GGNRA have accessible intertidal areas and rocky cliffs, including Muir Beach, Rodeo Beach/South Rodeo Beach, Fort Baker, Lands End, Fort Funston, and Mori Point. Additionally, there are rocky intertidal areas at Upper and Lower Fort Mason and Pedro Point Headlands, but these areas are generally not accessible to visitors and are not discussed further in this plan/EIS.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. Under current conditions at Stinson Beach, dogs and dog owners are restricted to having dogs on leash in the parking lot and picnic areas since dogs are not allowed on the beach because it is a swimming beach. Currently, there is low compliance with the no-dog walking restriction on the beach; there were 334 recorded incidents of dogs in a closed area in 2007/2008 (appendix G). In addition, dogs have been recorded disturbing wildlife at this site; four recorded incidents took place in 2007/2008 (appendix G). The integrity of the plant community is already affected by human use, and it is unlikely that dogs could affect dunes through trampling, digging, and dog waste.

Dune communities are generally not in areas where dogs would be allowed on leash under alternative A, and the majority of vegetation that could be affected by dogs on dunes (at the north parking lot) is non-native vegetation. Therefore, alternative A would result in continued negligible impacts on the coastal foredune plant community.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on the coastal foredune plant community.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on coastal dune vegetation at or in the vicinity of this site.

The Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect habitat at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native

vegetation (NPS n.d.d). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Stinson Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts from dogs at Stinson Beach on coastal dune vegetation under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts on coastal dune vegetation from alternative A would result in negligible cumulative impacts on coastal dune vegetation.

Indirect Impacts in Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). No indirect impacts on coastal dune plant communities in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	Dune communities are generally not in areas where dogs would be allowed on leash and the majority of vegetation on the dunes is non-native species where dogs can affect dunes; however, it is unlikely that dogs could affect dunes through trampling, digging, and dog waste because dogs would be restricted to being walked on leash in the parking lot and picnic areas	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. As in alternative A, on-leash dog walking would be allowed only in the parking lot and picnic areas of Stinson Beach. Dogs would not be allowed on the beach itself, because it is a designated swimming beach. Assuming compliance, alternative B would produce no impact on coastal dunes at Stinson Beach because dune communities are not in areas where dogs would be allowed.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. The lack of impacts on coastal dune vegetation from dogs at Stinson Beach under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the lack of impacts from alternative B would result in beneficial cumulative impacts on coastal dune vegetation.

Indirect Impacts in Adjacent Parks

No indirect impacts on vegetation at adjacent lands would be expected under alternative B since there would be no change in dog management conditions at the site.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C dog walking restrictions for Stinson Beach would be the same as alternative B; therefore, there would be no impact on coastal dune communities under alternative C, assuming compliance.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Under alternative C, the cumulative impacts and indirect impacts in adjacent parks would be the same as those under alternative B: beneficial cumulative impacts on coastal dunes at this park site and no indirect impacts in adjacent lands.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Assuming compliance, no impact on vegetation from dogs would occur at this site because dog walking would be eliminated from the site.

Since dogs would not be allowed at Stinson Beach, there would be no impact from commercial dog walkers on the coastal community vegetation.

Cumulative Impacts. The lack of impacts on coastal dune vegetation from dogs at Stinson Beach under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the lack of impacts on coastal dune vegetation from alternative D would result in beneficial cumulative impacts on coastal dune vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs; however, there would be no indirect impacts on coastal dune vegetation in adjacent lands from increased dog use because there are no adjacent beach dog parks that could support coastal dune vegetation.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on vegetation would be the same, assuming compliance: no impact.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Under alternative E, the cumulative impacts on vegetation at this park site and indirect impacts on vegetation in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and no indirect impacts on coastal dune plant communities in adjacent lands.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited on the beach or trails	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Stinson Beach. On-leash dog walking would be allowed only in the parking lot and picnic areas of Stinson Beach. Dogs would not be allowed on the beach itself, because it is a designated swimming beach. Assuming compliance, the preferred alternative would produce no impact on coastal dunes at Stinson Beach because dune communities are not in areas where dogs would be allowed on leash and compliance with the leash regulations in the parking lot and picnic areas has historically been good.

Since dune communities are not in areas where dogs would be allowed there would be no impact on coastal dunes at Stinson Beach from commercial dog walkers.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or will have the potential to have effects on coastal dune vegetation at or in the vicinity of this site.

The Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect habitat at GGNRA park sites such as Stinson Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008). This project will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Stinson Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The lack of impacts on coastal dune vegetation from dogs at Stinson Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the lack of impacts on coastal dune vegetation from the preferred alternative would result in beneficial cumulative impacts on coastal dune vegetation.

Indirect Impacts in Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). No indirect impacts on coastal dune plant communities in adjacent lands would be expected under the preferred alternative since there would be no change in dog management conditions at the site.

STINSON BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited on the beach	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Muir Beach

Alternative A: No Action. At Muir Beach, dune communities, including a dune restoration area, are located adjacent to the beach, which is open to dogs under voice control. This site has high visitor use and there were three recorded incidents of dogs in a closed area in 2007/2008 at this site (appendix G). The dune communities at Muir Beach are not well protected, and rocky intertidal habitat also exists at Muir Beach but is unlikely to be affected by dogs. Ineffective post-and-cable fencing at Muir Beach discourages visitors from entering the dune restoration area; other dune areas are unfenced and would not physically exclude dogs.

As a result, alternative A would have continued long-term moderate adverse impacts on coastal dune plant species because the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on dune communities.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding riparian vegetation at the Banducci site (NPS 2010d). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2007b; NPS 2009m). The Park Stewardship Programs Initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c). The Pirates Cove project disturbed a large area of soil and vegetation and resulted in a short-term adverse impact, but these impacts were offset by the long-term, beneficial impacts on soils and vegetation resources (NPS 2010b).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Muir beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the many habitat restoration projects at and near Muir Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). No indirect impacts on vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dune communities are not well protected, are adjacent to off-leash areas, and are subject to impacts by dogs through trampling, digging, and dog waste	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, on the Pacific Way Trail, the boardwalk/path to beach, and the beach. The dune communities located adjacent to Muir Beach would be generally protected by physically restraining dogs. However, on-leash dog walking is based on an allowed 6-foot dog leash. Coastal dune vegetation located in the 6-foot area adjacent to the beach (LOD area) would receive long-term minor adverse impacts from dogs trampling and digging in vegetated areas; nutrient addition from dog waste would also occur.

The long-term minor adverse impacts from dogs on the trails and in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail. Therefore, the overall impact on vegetation under alternative B would be negligible because no measurable or perceptible changes in the dune plant community would occur; plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, since voice-control dog walking would no longer be allowed at Muir Beach under this alternative. However, dogs would still be allowed on the site on leash; therefore, indirect impacts on vegetation in adjacent lands from increased dog use would be expected to be negligible.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to beach (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Because alternative C would have the same dog walking restrictions as alternative B, the impacts on dune communities would also be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, impacts to the coastal dunes by commercial dog walkers would be prevented by requiring dogs to be on a leash resulting in no impact on vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on vegetation at this park site and indirect impacts on vegetation in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to beach (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste		

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Pacific Way Trail. The boardwalk/path to the beach and the beach itself would be closed to dogs; the tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Assuming compliance, no impact on vegetation (in or beyond LOD area) would occur as a result of alternative D because trampling, digging, and nutrient addition in coastal dunes would be prevented by on-leash dog walking since dogs would not be allowed on the beach, the boardwalk, or path near dune communities.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. Under alternative D, the lack of impacts on the coastal dune plant community from dogs was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the lack of impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mount Tamalpais State Park, because it is the closest dog use area. Since dog walking would not be allowed on the beach, indirect impacts on vegetation in adjacent lands from increased dog use would be negligible to long term, minor, and adverse since coastal vegetation could occur in adjacent lands.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or boardwalk/path near dune communities	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. In the vicinity of Muir Beach, the parking area, the Pacific Way Trail, and the boardwalk/path to the beach would be open to on-leash dog walking. The portion of Muir Beach south of the access path would be a designated ROLA open to dogs under voice and sight control. Dogs would be prohibited on the remainder of the beach north of the access path. The ROLA designated as part of this alternative is located immediately adjacent to the fenced dune restoration area. The dunes would not be able to expand naturally beyond the fencing because of dog use, due to continued trampling, digging, and dog waste. Therefore, impacts in the LOD area and the

ROLA would be long term, moderate, and adverse because the effects would be measurable and perceptible over a relatively large area and would affect the overall integrity of a plant community.

The long-term moderate adverse impacts in the ROLA and the LOD area would occur in a relatively small area compared to the site as a whole, and physically restraining dogs would protect dune vegetation, including the restored dunes. However, the dunes would not be able to expand naturally because the ROLA would be located immediately adjacent to the fenced dune restoration area. Therefore, the overall impact on dune vegetation under alternative E would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on coastal dune communities from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the many habitat restoration projects at and near Muir Beach should reduce the adverse impacts from this alternative to the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on vegetation in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in the LOD area and ROLA	Dune vegetation in ROLA and adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; dunes would not be able to expand naturally	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. In the vicinity of Muir Beach, the preferred alternative would require on-leash dog walking in the parking area and on the Pacific Way Trail. The boardwalk/path to the beach and the beach itself would be closed to dogs; the tidal lagoon and Redwood Creek, which are currently closed to dogs, would remain so. Assuming compliance, no impact on vegetation (in or beyond LOD area) would occur as a result of the preferred alternative because trampling, digging, and nutrient addition in coastal dunes would be

prevented by on-leash dog walking since dogs would not be allowed on the beach, the boardwalk, or path near dune communities.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. However, impacts to the coastal dunes by commercial dog walkers would be prevented by requiring dogs to be on a leash resulting in no impact on vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1). The Park Stewardship Programs Initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Muir Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The lack of impacts on the coastal dune plant community from dogs at Muir Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the many habitat restoration projects at and near Muir Beach combined with the negligible impacts from any development or construction actions and the lack of impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). The adjacent lands may experience increased visitation, particularly Mount Tamalpais State Park, because it is the closest dog use area. Since dog walking would not be allowed on Muir Beach, indirect impacts on vegetation in adjacent lands from increased dog use would be negligible to long term, minor, and adverse since coastal vegetation could occur in adjacent lands.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed on the beach or boardwalk/path near dune communities	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Rodeo Beach/South Rodeo Beach

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on Rodeo Beach/South Rodeo Beach, the footbridge over the lagoon, and the trails connecting to the beach. Coastal dune habitat at Rodeo Beach/South Rodeo Beach is generally located between the crest of the beach and the lagoon and along the south side of the lagoon inlet west of the pedestrian bridge, and is in the area where dogs are currently allowed under voice control. Rocky intertidal communities also exist at this site although these communities are unlikely to be affected by dogs. Both Rodeo Lagoon and Rodeo Lake are currently closed to dogs. Four incidents of dogs in closed areas (Rodeo Lagoon) were recorded in 2007/2008 (appendix G) and park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather (Merkle 2010b).

Therefore, alternative A would result in continued long-term moderate adverse impacts on the coastal dune plant community, including fenced dunes, because the integrity of the plant community in dune areas could be negatively affected by dogs through trampling, digging, and dog waste. Effects would be measurable and perceptible and may affect the overall integrity of a plant community.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rodeo Beach/South Rodeo Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on coastal dune vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dune communities, including fenced dunes, are in the area where dogs would be allowed under voice control and would be subject to impacts by dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Rodeo Beach and South Rodeo Beach, the footbridge to the main beach, and the trail leading to South Rodeo Beach. Under alternative B, on-leash dog walking would not allow dogs to roam freely along the beach. The dune communities located on the beach would be protected by physically restraining dogs; however, some individuals may still walk their dogs through this sensitive area. Vegetation located in this area and in the 6-foot area adjacent to the beach and trails (LOD area) would receive long-term minor adverse impacts from dogs trampling the vegetation and digging in the sand. Nutrient addition from dog waste would also occur.

Adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, but even on-leash dogs could trample unfenced dune vegetation at this site. Therefore, assuming compliance, the overall impact on coastal dune vegetation under alternative B would be negligible to long term, minor, and adverse because measurable or perceptible changes in the dune plant community could occur, but would be localized in a relatively small area.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together

with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Adjacent lands may experience some increase in visitation under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and this park is the closest dog use area that allows dogs off leash. Indirect impacts on coastal dune vegetation in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent lands could be affected by dogs.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to beach/trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, but even on-leash dogs could trample unfenced dune vegetation.	Beneficial, assuming compliance	Negligible cumulative impact Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would establish a ROLA on Rodeo Beach that includes areas of vegetated coastal foredunes within the ROLA extending from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. In the ROLA at Rodeo Beach/South Rodeo Beach, dogs would create long-term moderate adverse impacts on coastal foredune vegetation due to the large size of the ROLA and the vegetation within this off-leash area. Dogs would run/play through the foredune areas, potentially trampling and digging up vegetation and adding nutrients through dog waste.

The long-term moderate adverse impacts from dogs in the LOD area would occur in a large area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, but some dune vegetation is in the ROLA and would be affected by dogs. Therefore, assuming compliance, the overall impact on vegetation under alternative B would be long term, minor to moderate, and adverse because measurable or perceptible changes in the dune plant community would occur and the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six

dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal dune vegetation in adjacent lands would be expected under alternative C, since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Concentrated use would occur in the ROLA, which supports dune vegetation; dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs in some areas and fencing would protect dune vegetation, but dune vegetation is also in ROLA and subject to impacts from dogs	Beneficial to no change, assuming compliance	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, restricting dogs to on leash only on the footbridge and on Rodeo Beach north of the footbridge and prohibiting dog walking on the rest of Rodeo Beach, South Rodeo Beach, and the connecting paths would provide additional protection to the vegetated foredunes along the crest of the dunes, but the vegetated foredunes along the lagoon inlet west of the pedestrian bridge would still be open to on-leash dog walking. There are no obvious trails in this location and no fencing planned, since the beach topography near the inlet is dynamic in the winter months. The dune communities located on the beach would be protected by physically restraining dogs on a leash; however, some individuals may still walk their dogs through this sensitive area. Coastal dune vegetation located in this area and in the 6-foot area adjacent to the beach and trails (LOD area) would receive long-term minor adverse impacts from dogs trampling the vegetation and digging in the sand. Nutrient addition from dog waste would also occur.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole because dogs would be prohibited on the southern portion of Rodeo Beach, on the trail to South Rodeo Beach, and on South Rodeo Beach. Physically restraining dogs would protect vegetation and habitat off trail, but vegetated foredunes along the lagoon inlet would still be open to on-leash dog walking. Therefore, the overall impact on vegetation under alternative D, assuming compliance, would be long term, minor, and adverse because measurable or perceptible changes in the dune plant community would occur, but would be localized in a relatively small area.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Adjacent lands may experience some increase in visitation under alternative D, particularly Remington Dog Park, since dogs under voice control would not be allowed under alternative D and this park is the closest dog use area that allows dogs off leash. Indirect impacts on coastal dune vegetation in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation could be affected by dogs in adjacent parks.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to beach/trail (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, but vegetated foredunes along the lagoon inlet would still be open to on-leash dog walking	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would include a ROLA on Rodeo Beach that would encompass the beach from the ocean shoreline to the crest of the beach. On-leash dog walking would be allowed on the remainder of the beach, on South Rodeo Beach, and on the paths leading to the beach. The ROLA includes some areas of coastal dune habitat but the foredune area east of the crest of the dune would be an on-leash area. Dogs would run/play through the foredune area, potentially trampling and digging up vegetation and adding nutrients through dog waste. Impacts in the ROLA would be long term, would be readily apparent, and would cause noticeable changes in coastal dune vegetation. Vegetation located in the 6-foot area adjacent to the on-leash portion of the beach and the trails (LOD area) would also be affected by dogs. In the ROLA and the LOD area,

long-term moderate adverse impacts on vegetation from dogs through trampling and digging would occur; nutrient addition from dog waste would also occur.

The long-term moderate adverse impacts from dogs in the LOD area would occur in a reduced area compared to the site as a whole, because only a portion of the beach would be a ROLA (as compared to alternative C). Physically restraining dogs would protect the majority of dune vegetation and habitat off trail, but some dune vegetation is in the ROLA and would be affected by dogs. Therefore, assuming compliance, the overall impact on vegetation under alternative B would be long term, minor, and adverse because measurable or perceptible changes in the dune plant community would occur, but would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on vegetation.

Cumulative Impacts. The long-term minor adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on vegetation in adjacent lands would be expected under alternative E since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in 6-foot corridors adjacent to beach/trails (LOD area) and in ROLA	Concentrated use would occur in the ROLA, which supports dune vegetation; dune vegetation adjacent to beach/trails would be affected by dogs through trampling, digging, and dog waste		
Overall long-term minor adverse impacts, assuming compliance	Fencing and physical restraint of dogs would protect the majority of dune vegetation, but some dune vegetation is still in the ROLA	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach/South Rodeo Beach. The preferred alternative would establish a ROLA on Rodeo Beach that includes areas of vegetated coastal foredunes within the ROLA extending from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. The installation of a post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. In the ROLA at Rodeo Beach/South Rodeo Beach, dogs would create long-term moderate adverse impacts on coastal foredune vegetation due to the large size of the ROLA and the vegetation within this off-leash area. Dogs would run/play through the foredune areas, potentially trampling and digging up vegetation and adding nutrients through dog waste. The adverse impacts from dogs in the LOD area would occur in a large area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, but some dune vegetation is in the ROLA and would be affected by dogs. Therefore, the overall impact on vegetation under the preferred alternative would be long term, minor to moderate, and adverse because measurable or perceptible changes in the dune plant community would occur and the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Rodeo Beach/South Rodeo Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects near Rodeo Beach/South Rodeo Beach should reduce some of the adverse

impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on coastal dune vegetation in adjacent lands would be expected under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Concentrated use would occur in the ROLA, which supports dune vegetation; dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs in some areas and fencing would protect dune vegetation, but dune vegetation is also in the ROLA and subject to impacts from dogs	Beneficial to no change, assuming compliance	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. On-leash dog walking is currently allowed throughout Fort Baker except on the Chapel Trail and the pier, where no dogs are allowed. This site experiences moderate visitor use and low dog walking use, and there were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum. Since compliance is an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads.

Under alternative A, off-leash dogs could gain access to rocky intertidal vegetation from the Bay Trail or the Battery Yates Loop but it would be unlikely that dogs could measurably affect these rocky, intertidal plant communities through trampling and nutrient addition. Fort Baker does not support coastal dunes or coastal dune vegetation. Therefore, negligible impacts on coastal communities would continue to occur at Fort Baker because a measurable or perceptible change to this plant community is not anticipated at this site.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on rocky intertidal vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part

of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the rocky intertidal plant community from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects near Fort Baker combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on rocky intertidal vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	No coastal dunes; off-leash dogs could gain access to rocky intertidal vegetation but it would be unlikely that dogs could cause measurable changes through trampling and dog waste	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop as part of this alternative due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/fire road. No coastal dune communities exist at this site and the rocky, intertidal habitat is not located immediately along trails that require on leash dog walking. Therefore, assuming compliance, overall impacts at the site would be negligible since it would be unlikely that dogs would affect rocky intertidal plant communities through trampling and nutrient addition due to the leash restriction.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on rocky intertidal plant communities.

Cumulative Impacts. The negligible impacts on the rocky intertidal plant community from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Fort Baker combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant communities would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

No indirect impacts on vegetation in adjacent lands would be expected under alternative B since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rocky, intertidal habitat only, no coastal dune communities; it is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling and dog waste	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, with the addition of on-leash dog walking on Battery Yates Loop, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on rocky intertidal vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on rocky intertidal plant communities.

Cumulative Impacts. Under alternative C, the cumulative impacts on rocky intertidal vegetation at this park site and indirect impacts on rocky intertidal vegetation in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on rocky intertidal vegetation in adjacent lands.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rocky, intertidal habitat only, no coastal dune communities; it is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling and dog waste	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge/Conference Center Grounds and on the Bay Trail (excluding the Battery Yates Loop). Dogs would be prohibited on Drown Fire Road and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. No coastal dune communities exist at this site and the rocky, intertidal habitat is not located immediately along trails that require on leash dog walking. Therefore, assuming compliance, overall impacts at the site would be negligible since it would be unlikely that dogs would affect rocky intertidal plant communities through trampling and nutrient addition due to the leash restriction.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on rocky intertidal plant communities.

Cumulative Impacts. The negligible impacts on the rocky intertidal plant community from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects near Fort Baker combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

Negligible indirect impacts on rocky intertidal vegetation in adjacent lands may occur under alternative D since on-leash dog walking would not be allowed on the Parade Ground or Drown Fire Road and it is unknown where and to what extent rocky intertidal vegetation in adjacent parks could be affected by dogs. Visitors with dogs may choose to go to another park site that has a large area for walking dogs.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rocky, intertidal habitat only, no coastal dune communities; it is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling and dog waste	No change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on rocky intertidal plant communities.

Cumulative Impacts. Under alternative E, the cumulative impacts on rocky intertidal vegetation at this park site and indirect impacts on rocky intertidal vegetation in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and no indirect impacts on rocky intertidal vegetation in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impact, assuming compliance	Rocky, intertidal habitat only, no coastal dune communities; it is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling and dog waste	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail (including Battery Yates Loop but excluding the Battery Yates Trail), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs will not be allowed on the Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/fire road. No coastal dune communities exist at this site and the rocky, intertidal habitat is not located immediately along trails that require on leash dog walking. Therefore, assuming compliance, overall impacts at the site would be negligible since it would be unlikely that dogs would affect rocky intertidal plant communities through trampling and nutrient addition due to the leash restriction.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on rocky intertidal plant communities.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the rocky intertidal plant community from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects near Fort Baker combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on rocky intertidal vegetation in adjacent lands would be expected under the preferred alternative since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rocky, intertidal habitat only - no coastal dune communities; It is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling and dog waste	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Action Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) will be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease

the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Dogs are currently allowed under voice control throughout Crissy Field except for the WPA (which has a seasonal leash restriction), the tidal marsh (which is closed to dogs), and the parking and picnic areas (which allow on-leash dog walking only). This site has documented moderate to high visitor use and there were 487 leash law violations documented at this site in 2007/2008 (table 9). In addition, 17 incidents of dogs in closed areas were recorded in 2007/2008 (appendix G). There is currently considerable access to dune habitat at Crissy Field, although the restored dune areas are fenced (NPS 2009b). In the restored dune areas, the shifting sand buries the fences, and dogs have accessed dune areas; there are also sparsely vegetated foredunes that have formed in the WPA that are frequently trampled by dogs.

Therefore, alternative A would result in continued long-term moderate adverse impacts on the coastal dune vegetation in the Central and East beach areas and the WPA. Impacts would result from trampling, digging, and dog waste from dogs. Effects on the coastal community would be measurable and perceptible over a relatively large area, and would affect the overall integrity of the plant community. Additionally, the restoration areas at Crissy Field, which have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower, would continue to be at risk.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term moderate adverse impacts on the coastal dune vegetation. Commercial dog walkers with multiple dogs under voice control would impact vegetation through dogs trampling, digging, and depositing dog waste.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1–2).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. The Doyle Drive project, which included a newly constructed facility at East Beach in late 2009 (GGNPC 2010b), is one example of such a project. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on the coastal dune plant community from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at Crissy Field should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 25). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on coastal dune vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Restored dune areas are fenced, but there is considerable access to dune habitat, which is also present in the WPA and subject to impacts by dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in all unfenced areas, including the promenade, Crissy Airfield, East and Central beaches, the paths to Central Beach, the trails and grassy area near East Beach, and the trail on Mason Street, and would prohibit dogs in the WPA. Having dogs on leash throughout the site would restrict dogs from going into the fenced dune habitat. However, some individuals may still allow their dogs to enter this sensitive area. The impacts from dogs on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) would be long term, minor, and adverse due to trampling, digging, and dog waste.

The adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Overall, assuming compliance, negligible impacts on coastal dune vegetation would occur as a result of this alternative. Physically restraining dogs would protect dune vegetation, and the WPA, which supports dunes, would be closed to dogs. No measurable or perceptible change in coastal dune vegetation or CNPS-listed plant species in coastal dune habitat would be expected.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would contribute to a portion of the adverse impacts on vegetation from dogs at the site. Overall impacts on vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by both individual and commercial dog walkers under alternative B, particularly Mountain Lake Park, because it is the closest dog use area that allows off-leash dog walking. Indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not have coastal dune vegetation and does not allow off-leash dog walking no indirect impacts would occur at this adjacent land.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to on-leash portions of the beach (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. The addition of one ROLA on Central Beach and one at Crissy Airfield in alternative C would allow dogs under voice and sight control. On-leash dog walking would be allowed in the remainder of the site, except for East Beach and the fenced areas and the WPA, where dogs would not be allowed. Crissy Field has documented moderate to high visitor use and there were 487 leash law violations issued at this site in 2007/2008 (table 9). Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Restoration areas at Crissy Field that have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower would be protected by leash requirements as part of alternative C. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) and the Central Beach ROLA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur).

The long-term minor adverse impacts from dogs in the LOD area and the Central Beach ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on coastal dune vegetation under alternative C would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be

expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on coastal dune vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

No indirect impacts on vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative C since ROLAs would be provided on Crissy Airfield and Central Beach.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to on-leash portions of the beach (LOD area) and the Central Beach ROLA	Dune vegetation adjacent to trails and in the Central Beach ROLA would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur)		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and ROLAs are a small portion of the site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a ROLA on the western section of Crissy Airfield. On-leash dog walking would be allowed in all other areas of Crissy Field, except for the fenced areas and the beach. The ROLA does not contain any dune vegetation, but this community does exist adjacent to the trails. The impacts on coastal dune vegetation adjacent to the trails (LOD area) would be long term, minor, and adverse as a result of trampling, digging, and dog waste.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole, and the ROLA does not contain any dune vegetation. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on coastal dune vegetation under alternative D would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

Some increase in visitation by both individual and commercial dog walkers would be expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field under this alternative. However, dogs under voice and sight control would be allowed on half of Crissy Airfield. Indirect impacts on dune vegetation in adjacent lands would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not have coastal dune vegetation and does not allow off-leash dog walking no indirect impacts would occur at this adjacent land.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	No dune vegetation exists in ROLA, but dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; LOD area is a small portion of the entire site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the promenade and the paths to Central Beach, in the WPA, on East Beach, on the trails and grassy areas near East Beach, and on the multi-use trail along Mason Street. Two ROLAs would be established at the site, one on Crissy Airfield and one on Central Beach. Having dogs on leash in the designated areas would restrict dogs from entering the fenced dunes habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area, including the WPA) as well as the Central Beach ROLA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur). The dune vegetation in the WPA would also experience long-term minor adverse impacts as a result of on-leash dogs.

Even though the long-term minor adverse impacts from on-leash dog walking in the Central Beach ROLA and the LOD area would affect only a small portion of the site, the overall impacts on dune vegetation at

Crissy Field would also be long term, minor, and adverse, assuming compliance. Physically restraining dogs would protect dune vegetation in restored dune areas, but the WPA, which supports dunes, would be open to on-leash dogs as discussed in the LOD area above. Effects on coastal dune vegetation as a result of dogs would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on the coastal dune plant community from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at Crissy Field should reduce some of the adverse impacts from this alternative on the coastal dune plant community. Therefore, cumulative impacts on the coastal dune plant community under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal dune vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative E since ROLAs would be provided on Crissy Airfield and Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails and on-leash portions of the beach (LOD area including the WPA) and in the Central Beach ROLA	Dune vegetation adjacent to trails and in the Central Beach ROLA would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur)		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and ROLAs are a small portion of the site; the WPA (which supports dunes) would be open to on-leash dogs	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. The addition of one ROLA on Central Beach and one at Crissy Airfield in the preferred alternative would allow dogs under voice and sight control. On-leash dog walking would be allowed in the remainder of the site, except for East Beach and the fenced areas and the WPA, where dogs would not be allowed. Crissy

Field has documented moderate to high visitor use and there were 487 leash law violations issued at this site and 17 reports of dogs in closed areas in 2007/2008 (table 9 and appendix G). Having dogs on leash in the designated areas would restrict dogs from going onto the beach and into the fenced dunes habitat. Restoration areas at Crissy Field that have been planted with CNPS-listed species such as San Francisco dune gilia and San Francisco spineflower would be protected by leash requirements as part of the preferred alternative. The impacts on coastal dune vegetation adjacent to the trails and on-leash portions of the beach (LOD area) and the Central Beach ROLA would be long term, minor, and adverse due to trampling, digging, and dog waste (nutrient addition would occur).

The long-term minor adverse impacts from dogs in the LOD area and the Central Beach ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation and habitat off trail, and the WPA, which supports dunes, would be closed to dogs. Therefore, assuming compliance, the overall impacts on vegetation under the preferred alternative would be negligible because no measurable or perceptible changes in the dune plant community would occur: plant structure, abundance, and distribution (both quality and quantity) of the coastal community would not measurably change.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Crissy Field. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Crissy Field. Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of a tidal marsh and dune habitat. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1-2).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. The Doyle Drive project, which included a newly constructed facility at East Beach in late 2009 (GGNPC 2010b, 1), is one example of such a project. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and the past re-creation of a tidal marsh and dune habitat at

Crissy Field combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 25). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on coastal dune vegetation in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative since ROLAs would be provided on Crissy Airfield and Central Beach.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to on-leash portions of the beach (LOD area) and the Central Beach ROLA	Dune vegetation adjacent to trails and in the Central Beach ROLA would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation in restored dune areas; trails, LOD area, and ROLAs are a small portion of the entire site; the WPA (which supports dunes) would be closed to dogs	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Coastal dune scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge is one of the few remaining intact stands of this vegetation type in central California. In coastal dune scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge, restoration for pink sand-verbena has occurred, as well as restoration for CNPS-listed species San Francisco dune gilia and San Francisco spineflower. Other documented CNPS-listed plant species at Baker Beach and Bluffs to Golden Gate Bridge include the Mission Delores (San Francisco) campion, dune tansy, Indian paintbrush, and San Francisco wallflower (USFWS 2003). In some areas at this site, dogs and their owners/walkers have created a myriad of social trails in coastal dune vegetation. This site has documented low to high visitor use (varies depending on weather, holidays, and weekend use), and dog walking use is considered low to moderate (table 9).

Under alternative A, dogs would be allowed under voice control on the beach north of Lobos Creek and would be required to be on leash along trails, except the Batteries to Bluffs Trail, where dogs would not be allowed. As suggested by Shulzitski and Russell (2004, 5), heavy off-leash dog use increases deterioration of native dune communities. Although the dunes nearest the beach, which are actively planted and maintained by the park's resource stewardship programs, are fenced, dogs under voice control and on leash along the trails would have access to undisturbed areas that support the growth of dune vegetation. Digging in dunes destabilizes the dunes, making it difficult for plants to establish in this habitat. Therefore, alternative A would result in continued long-term moderate adverse impacts on coastal

dune vegetation at this site because the effects would be measurable and perceptible over a relatively large area, and would affect the overall integrity of a plant community.

No permit system exists for dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010). The *Lobos Creek Valley Dune Restoration* project near Baker Beach and Bluffs to Golden Gate Bridge involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia (NPS 2010f).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term moderate adverse impacts on dune vegetation from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs and the *Lobos Creek Valley Dune Restoration* project should reduce some of the adverse impacts on the coastal dune plant community from alternative A. Therefore, cumulative impacts on dune vegetation under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park, which allows off-leash dog walking (map 25). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on coastal dune vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Dogs and their owners/walkers have created social trails in coastal dune habitat, which would be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking except on the Batteries to Bluffs Trail and the Battery Crosby Trail, where dogs are not allowed. In addition, dogs would not be allowed on South Beach. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trails. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur). Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

When considering the entire site of Baker Beach, the long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the entire site. Therefore, the overall impact on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation, and the use of social trails at this site would be reduced.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Mountain Lake Park, because it is the closest dog use area and it allows off-leash dog walking. Indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not have coastal dune vegetation and does not allow off-leash dog walking no indirect impacts would occur at this adjacent land.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur)		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dog walking restrictions would be the same as those under alternative B, and impacts on coastal dune vegetation at this park site would also be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal dune vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on coastal dune vegetation at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts in adjacent lands.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste (nutrient addition would occur)		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot, approximately half of the beach, and the trails leading to the northern section of the beach. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling, digging, and dog waste. Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

When considering the entire site of Baker Beach, the long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the entire site. Therefore, the overall impact on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation, and the use of social trails at this site would be reduced.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mountain Lake Park, because it is the closest dog use area and it allows off-leash dog walking. Indirect impacts on the coastal dune community in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not have coastal dune vegetation and does not allow off-leash dog walking no indirect impacts would occur at this adjacent land.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and the Battery Crosby Trail. A ROLA would be established on the southern portion of the beach, south of the north parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Vegetation in areas adjacent to the trails (LOD area) and in the ROLA (which would experience concentrated use) would be affected by dogs through trampling, digging, and dog waste. Impacts on dune vegetation in the LOD area and in the ROLA would be long term, minor, and adverse.

The long-term minor adverse impacts from dogs in the LOD area and ROLA would result in overall long-term minor adverse impacts on the coastal dune vegetation, assuming compliance. Physically restraining dogs would protect dune vegetation, and the unfenced dunes would not be affected in this alternative. The use of social trails would be reduced, but a measurable or perceptible change in the dune plant community would occur as a result of disturbance from dogs, although this effect would remain relatively localized.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The long-term minor adverse impacts on dune vegetation from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs and the *Lobos Creek Valley Dune Restoration* project should reduce some of the adverse impacts on the coastal dune plant community from alternative E. Therefore, cumulative impacts on dune vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative E since voice and sight control dog walking would be allowed in a ROLA at Baker Beach and Bluffs to Golden Gate Bridge. Therefore, no indirect impacts on coastal dune vegetation in adjacent lands, including Area B of the Presidio, would be expected.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in ROLA	Concentrated use would occur in the ROLA; dune vegetation adjacent to trails and in the ROLA would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; no unfenced dunes would be affected; the ROLA, trails, and LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach and Bluffs to Golden Gate Bridge. The preferred alternative would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and on the trails leading to the northern section of the beach. Vegetation in areas adjacent to the trails (LOD area) would be affected by dogs through trampling, digging, and dog waste. Impacts on dune vegetation along the trails would be long term, minor, and adverse. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

The long-term minor adverse impacts from dogs in the LOD area would affect only a small portion of the site. Therefore, the overall impacts on coastal dune vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible, assuming compliance. Physically restraining dogs would protect dune vegetation and the use of social trails at this site would be reduced.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal dune vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate

Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010). The *Lobos Creek Valley Dune Restoration* project near Baker Beach and Bluffs to Golden Gate Bridge involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia (NPS 2010f, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs and the *Lobos Creek Valley Dune Restoration* project combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the coastal dune plant community would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park, which allows off-leash dog walking (map 25). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. The adjacent lands may experience increased visitation under the preferred alternative, particularly Mountain Lake Park, because it is the closest dog use area and it allows off-leash dog walking. Indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not have coastal dune vegetation and does not allow off-leash dog walking no indirect impacts would occur at this adjacent land.

**BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE CONCLUSION
TABLE**

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site; use of social trails would be reduced	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Lands End

Alternative A: No Action. Dogs are currently allowed under voice control at the Lands End site, which includes the Coastal Trail and the El Camino del Mar Trail. This site has low to moderate visitor use by hikers, bicyclists, and dog walkers, and two recorded incidents of dogs in a closed area have occurred (table 9 and appendix G). Lands End contains rocky intertidal vegetation along the shoreline.

Under alternative A, continued dog walking under voice control could contribute to damage to these plant communities through trampling, digging, and dog waste. Since dogs would continue to be allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash. However, due to the steep slopes along the shoreline at Lands End, dogs may not be able to easily access the areas where intertidal plants grow; therefore, impacts would continue to be negligible because no measurable or perceptible changes in the dune plant community would occur as a result of disturbance from dogs.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on rocky intertidal vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of the Park Stewardship Programs at Lands End have included resurfacing and stabilizing segments of the trail, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the rocky intertidal plant community from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). No indirect impacts on rocky intertidal vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts	Off-leash dogs could access rocky intertidal habitat and affect the vegetation through trampling, digging, and dog waste	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. The rocky intertidal plant communities at Lands End have not been previously disturbed, but they represent a very small portion of the entire site. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the rocky intertidal plant community at this site. Therefore, impacts in areas adjacent to the trail (LOD area) would be negligible.

Impacts from dogs in the LOD area would result in overall negligible impacts at the Lands End site, assuming compliance. Physically restraining dogs would protect rocky intertidal habitat and no measurable or perceptible change in the plant community would occur as a result of disturbance from dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on rocky intertidal plant communities.

Cumulative Impacts. The negligible impacts on the rocky intertidal plant community from dogs at Lands End under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central Area and Golden Gate Park—South Central Area, because they are the closest dog use areas and they allow dogs off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on rocky intertidal vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is unknown where and to what extent rocky intertidal vegetation in adjacent parks could be affected by dogs.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Dogs could access rocky intertidal habitat in the LOD area, but this area is only a small portion of the site	No change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail at Lands End, including on the steps to the El Camino del Mar Trail, and would allow dogs under voice and sight control in a ROLA along the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. The plant communities in the 6-foot corridors adjacent to the trails (LOD area) have not been previously disturbed, but represent a very small portion of the entire site. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site. Therefore, impacts in areas adjacent to the trail (LOD area) as a result of disturbance from dogs would be negligible. The ROLA under alternative C would have no impact on rocky intertidal vegetation, as the El Camino del Mar Trail is surrounded by coastal scrub and bishop pine habitat.

Impacts from dogs in the LOD area would result in overall negligible impacts at the Lands End site, assuming compliance. Physically restraining dogs would protect rocky intertidal habitat and no measurable or perceptible change in the plant community would occur as a result of disturbance from dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on rocky intertidal vegetation.

Cumulative Impacts. The negligible impacts on the rocky intertidal plant community from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

No indirect impacts on rocky intertidal vegetation in adjacent lands would be expected under alternative C since voice and sight control dog walking would be offered in a ROLA at Lands End under this alternative.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts in 6-foot corridors adjacent to trails (LOD area); no impact in ROLA	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Dogs could access rocky intertidal habitat in the LOD area, but this area is only a small portion of the site	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail and portions of the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. The adjacent plant communities have not been previously disturbed, but they represent a very small portion of the entire site. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the rocky intertidal plant community at this site. Therefore, impacts in areas adjacent to the trail (LOD area) as a result of disturbance from dogs would be negligible.

Impacts from dogs in the LOD area would result in overall negligible impacts at the Lands End site, assuming compliance. Physically restraining dogs would protect rocky intertidal habitat and no measurable or perceptible change in the plant community would occur as a result of disturbance from dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on rocky intertidal vegetation.

Cumulative Impacts. The negligible impacts on the rocky intertidal plant community from dogs at Lands End under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park—North Central Area and Golden Gate Park—South Central Area, because they are the closest dog use areas and they allow dogs off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these adjacent parks for an off-leash dog experience. Indirect impacts on rocky intertidal vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Dogs could access rocky intertidal habitat in the LOD area, but this area is only a small portion of the site	No change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: negligible in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on rocky intertidal vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the rocky intertidal plant community at this park site and indirect impacts in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and no indirect impacts on the rocky intertidal plant community in adjacent lands.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Dogs could access rocky intertidal habitat in the LOD area, but this area is only a small portion of the site	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative B was selected as the preferred alternative for Lands End. The preferred alternative would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. The rocky intertidal plant communities at Lands End have not been previously disturbed, but represent a very small portion of the entire site. Impacts would be detectable, but not large enough to create a measurable

or perceptible change in the rocky intertidal plant community at this site. Therefore, impacts in areas adjacent to the trail (LOD area) would be negligible.

Impacts from dogs in the LOD area would result in overall negligible impacts to the Lands End site, assuming compliance. Physically restraining dogs would protect rocky intertidal habitat and no measurable or perceptible change in the plant community would occur as a result of disturbance from dogs.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on rocky intertidal vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of Park Stewardship Programs at Lands End have included resurfacing and stabilizing segments of the trail, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the rocky intertidal plant community from dogs at Lands End under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation projects provided by the Park Stewardship Programs combined with the negligible impacts from any development or construction actions and the negligible impacts from this alternative on the rocky intertidal plant community would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). The adjacent lands may experience increased visitation under the preferred alternative, particularly portions of Golden Gate Park, because they are the closest dog use areas and they allow dogs off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is

unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

LANDS END PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Dogs could access rocky intertidal habitat in the LOD area, but this area is only a small portion of the site	No change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Ocean Beach

Alternative A: No Action. Ocean Beach has a designated SPPA from Stairwell 21 south to Sloat Boulevard, which was implemented to protect the western snowy plover when it is present during the nonbreeding season. Under current conditions, the seasonal restriction continues to be implemented and requires dogs to be walked on leash from July 1 to May 15. Dogs are allowed under voice control in the SPPA from May 15 to July 1. This site has documented high visitor use and high numbers of citations and incident reports (845) related to leash law violations (table 9). The NPS has observed that nearly 60 percent of dogs continue to be off-leash in the SPPA even after the seasonal leash restriction was implemented in the SPPA as a result of 36 CFR 7.97(d) (Hatch et al. 2007, 3). In addition, dogs are allowed under voice control both north of Stairwell 21 and south of Sloat Boulevard to Fort Funston. There are no coastal dune communities located north of Stairwell 21 or south of Sloat Boulevard. Between Stairwell 21 and Sloat Boulevard, the majority of the extensive dune system along portions of Ocean Beach is comprised of the non-native European beachgrass that was previously planted to stabilize the sand on the beach, while the sparsely vegetated foredunes consist of native dune vegetation. Alternative A would result in continued long-term minor adverse impacts on coastal dune plant species because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling, digging, and dog waste, although the majority of the dune system is vegetated with non-native European beachgrass.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at

Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Ocean Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts on the coastal dune plant community from dogs at Ocean Beach under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and from the erosion control project would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative impacts analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). No indirect impacts on coastal dune vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OCEAN BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	The majority of the dunes along portions of Ocean Beach are comprised of the non-native European beachgrass, while the sparsely vegetated foredunes consist of native dune vegetation; these areas would be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail along the Great Highway as well as on the beach north of Stairwell 21 and south of Sloat Boulevard. Dogs would not be allowed on the beach in the SPPA. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling, digging, and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass.

The long-term minor adverse impacts on dune vegetation adjacent to the trail would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, even though the majority is non-native European beachgrass. Therefore, assuming compliance, the overall impact on coastal dune vegetation at Ocean Beach would be negligible. Impacts would be detectable, but not large enough to create a measurable or perceptible change in the dune plant community at this site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative B were considered together with the effects of the actions mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the negligible impacts from alternative B would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park, because it is the closest and it allows off-leash dog walking. Under alternative B dogs would no longer be allowed under voice control at Ocean Beach. Indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be expected to be negligible, even though dog walking at Ocean Beach is considered a moderate to high use, because it is unknown where and to what extent coastal community vegetation in adjacent lands could be affected by dogs.

OCEAN BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Dune vegetation adjacent to the trail would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would not allow dogs on the beach in the SPPA, but would allow on-leash dog walking on the Coastal Trail east of the dunes adjacent to the Great Highway and would allow dog walking under voice and sight control in a ROLA on the beach north of Stairwell 21. No dune communities are located in the ROLA north of Stairwell 21. On-leash dog walking is based on an allowed 6-foot dog leash. Under alternative C, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD

area, impacts on the coastal dune vegetation would be long term, minor and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling, digging, and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the ROLA north of Stairwell 21, no impact would occur in the ROLA.

The long-term minor adverse impacts on vegetation in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass. Therefore, assuming compliance, the overall impact on coastal dune vegetation at Ocean Beach would be negligible because no measurable or perceptible change in the plant community would be expected.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative C were considered together with the effects of the actions mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the negligible impacts from alternative C would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative C since dogs would be allowed under voice and sight control in a ROLA on Ocean Beach. Therefore, no indirect impacts on coastal dune vegetation in adjacent lands from dog use would be expected.

OCEAN BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area); no impact in ROLA	No dune vegetation exists in ROLA; dune vegetation adjacent to LOD area would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would generally have the same dog walking restrictions as alternative B, except dogs would not be allowed on the beach south of Sloat Boulevard, and impacts would be the same: long term, minor, and adverse in the LOD area and negligible overall.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under alternative D were considered together with the effects of the actions mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the negligible impacts from alternative D would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park, because it is the closest and it allows off-leash dog walking. Under alternative D dogs would no longer be allowed under voice control, but on-leash dogs would still be allowed on the beach north of Stairwell 21. Indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be expected to be negligible, even though dog walking at Ocean Beach is considered a moderate to high use activity, because it is unknown where and to what extent coastal community vegetation in adjacent lands could be affected by dogs.

OCEAN BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking all year on the beach in the SPPA and south of Sloat Boulevard. Dog walking under voice and sight control would be allowed in a ROLA north of Stairwell 21. The ROLA north of Stairwell 21 does not contain coastal dunes. However, on-leash dog walking would create impacts on dune vegetation because coastal dunes are located in the SPPA. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trails (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling, digging, and dog waste, although the

majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the ROLA north of Stairwell 21, there would be no impact in the ROLA.

The impacts on coastal dune vegetation in the SPPA would occur in a relatively large area of the site. In the coastal dunes of the SPPA, there are some areas of sparsely vegetated foredunes, but the majority of the dune vegetation consists of the non-native plant species European beachgrass; in some areas this species has been removed and native dune vegetation has been planted. Therefore, assuming compliance, the overall impacts from dogs on the coastal dune vegetation at this site would range from negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the coastal dune plant community from dogs at Ocean Beach under alternative E were considered together with the effects of the actions mentioned above under alternative A. The benefits to vegetation from the Park Stewardship Programs and from the erosion control project would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative impacts analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the negligible to long-term minor adverse impacts from alternative E would result in negligible to long-term minor adverse cumulative impacts.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal dune vegetation in adjacent lands would be expected under alternative E since dog walking would be allowed throughout the site and voice and sight control dog walking would be offered in a ROLA.

OCEAN BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area); no impact in the ROLA	No dune vegetation exists in ROLA; dune vegetation adjacent to trail would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site but the impact on vegetation in the SPPA would occur in a relatively large area of the entire site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Ocean Beach. The preferred alternative would not allow dogs on the beach in the SPPA, but would allow on-leash dog walking on the Coastal Trail east of the dunes adjacent to the Great Highway and would allow dog walking under voice and sight control in a ROLA on the beach north of Stairwell 21. No dune communities are located in the ROLA north of Stairwell 21. On-leash dog walking is based on an allowed 6-foot dog leash. Under the preferred alternative, impacts would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail (LOD area). In the LOD area, impacts on the coastal dune vegetation would be long term, minor, and adverse because the integrity of the plant community inhabiting dune areas could be negatively affected by dogs through trampling, digging, and dog waste, although the majority of the dunes are vegetated with non-native European beachgrass. Because there are no dune communities in the ROLA north of Stairwell 21, no impact would occur in the ROLA.

The long-term minor adverse impacts on coastal dune vegetation in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, even though the majority is non-native grass. Therefore, assuming compliance, the overall impact on coastal dune vegetation at Ocean Beach would be negligible because no measurable or perceptible change in the plant community would be expected.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal dune vegetation.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Ocean Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect soils at park sites such as Ocean Beach. The *Ocean Beach–Great Highway Erosion Control Project* is developing long-term solutions to beach and coastal bluff erosion problems at Ocean Beach along the Great Highway (Highway 1) consistent with the enhancement of natural processes (City and County of San Francisco 2008, 3, 7).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Ocean Beach. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on the coastal dune plant community from dogs at Ocean Beach under the preferred alternative were considered together with the effects of the actions mentioned above. The beneficial effects from the Park Stewardship Programs and from the erosion control project combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). The adjacent lands would not be expected to experience increased visitation under the preferred alternative since dogs would be allowed under voice and sight control in a ROLA on Ocean Beach. Therefore, no indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would be expected.

OCEAN BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area); no impact in the ROLA	No dune vegetation exists in the ROLA; dune vegetation adjacent to the LOD area would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation, even though the majority is non-native grass; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Fort Funston

Alternative A: No Action. Fort Funston contains the last remnant of the expansive coastal dune complex that once covered the entire western portion of San Francisco. The habitat has been adversely affected by the site's development as a military site in the 1930s and use of non-native ice plant to stabilize the sand around the military facilities. Fort Funston also has accessible intertidal areas and rocky cliffs, and these areas are discussed in this section along with the beach habitat and the bluffs. Dogs are currently allowed under voice control on the beach and throughout upper Fort Funston (including a habitat corridor of coastal dune habitat along the Coastal Trail), with the exception of a the 12-acre fenced Habitat Protection Area closure in upper Fort Funston and the voluntary seasonal closure (April 1–August 15) for bank swallow protection on a section of beach extending 50 feet from the base of the coastal bluff below the bank swallow habitat areas (GGNRA Compendium; appendix B). Fort Funston has documented high visitor use (table 9). Visitors can access areas surrounding the bluffs from above the beach at the Beach Access Trail. Signs and fencing (currently partially buried) along the bluff edge and along the beach below the colony have been installed to restrict access to these areas by visitors. During the monthly bird surveys at Fort Funston, dogs were recorded in the 12-acre Habitat Protection Area, which is closed to public access; on many occasions, dogs and humans were observed inside this area (USGS 2004). Commercial dog walking is also popular and is considered a high use activity at this site. Current heavy use by recreationists affects the native dune vegetation by trampling, thereby weakening plant root systems. Dogs and their owners/walkers have created a myriad of social trails in coastal dune vegetation between the parking lot and the Sunset and Chip trails. The NPS has implemented dune restoration at Fort Funston and has planted the native foredune species pink sand-verbena (also a CNPS-listed plant species) and dune tansy in a 12-acre Habitat Restoration Area. The restoration area is enclosed by fencing to protect the restoration area from recreational activity; however, dogs have accessed the restoration areas at Fort Funston despite the fencing. The majority of Fort Funston is undeveloped and denuded of vegetation as a result of direct impacts from dogs through trampling, digging, and dog waste. This site

would have the potential to be restored to native plant habitat and is part of the recovery area in the *Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula* (USFWS 2003), but restoration is precluded by unmanaged (or unrestricted) dog use at the site; the level of trampling and nutrient input may inhibit the ability of the NPS to restore the area. Restoration currently can only be carried out in the 12-acre closed area, as dogs and visitors have accessed all other portions of the site, including the bluff tops.

Under alternative A, dogs would continue to access the remnant coastal dune habitat, resulting in long-term major adverse impacts on coastal dune vegetation, including pink sand-verbena, and on restoration areas at Fort Funston because the integrity of the plant community inhabiting dune areas would continue being negatively affected by dogs through trampling, digging, and dog waste; restoration at the site would be precluded by dogs.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term major adverse impacts on vegetation. Dune habitat would be impacted by dogs through trampling, digging, and dog waste.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Fort Funston. The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on vegetation in the area (NPS 2010h, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect vegetation in the area of Fort Funston.

The long-term major adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative impacts analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, major, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 25). No indirect impacts on the coastal dune vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts	The majority of the site is undeveloped and denuded of vegetation as a result of unmanaged (or unrestricted) dog use at the site; the level of trampling and nutrient input may preclude (or inhibit) restoration at the recovery area; there is high visitor use and moderate to high levels of incidents related to dog activities at the site	N/A	Long-term major adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Fort Funston trails and on the beach. A seasonal closure (April 1 through August 15) for the protection of bank swallows extending 50 feet from the foot of the northernmost bluffs currently exists on the site. Parts of Fort Funston are undergoing habitat protection and restoration. Coastal dune habitat north of the Beach Access Trail and west of the Coastal Trail in Fort Funston is closed for habitat protection, as well as a small portion between the Coastal Trail and Skyline Boulevard. These areas collectively account for 12 acres of protected coastal dune habitat and they are fenced in along the Coastal Trail. These closures allow for better protection of restoration sites and the potential recovery of the native San Francisco lessingia. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts on the coastal dune vegetation of Fort Funston would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in areas adjacent to the trails (LOD area) would be long term, minor, and adverse. Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. While dogs would cause impacts on the dunes, most of the vegetation in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than minor and adverse.

The long-term minor adverse impacts on coastal dune vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect dune vegetation, the site could potentially be restored, and the habitat corridor at the site (coastal dune habitat along the Coastal Trail) would be protected. Therefore, assuming compliance, the overall impacts on coastal dune vegetation at Fort Funston would be negligible because no measurable or perceptible change in the coastal dune community would be expected as a result of alternative B.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on coastal dune vegetation from dogs at the site. Overall impacts on coastal dune vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on the coastal dune plant community from dogs at Fort Funston under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of adverse and beneficial actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B since dog walking under voice control would no longer be allowed at Fort Funston. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse since Fort Funston is a high use site for dog walking but it is unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Adjacent dune vegetation would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the entire site; site could potentially be restored and habitat corridor would be protected	Beneficial, assuming compliance	Negligible cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail, the Sand Ladder, the *Americans with Disabilities Act* (ADA)-Accessible Trail, the Chip Trail, and the Sunset Trail. Dog walking under voice and sight control would be allowed in two ROLAs: one on the beach and another adjacent to the parking lot. The upland ROLA is in existing coastal dune vegetation that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated dog use in this designated ROLA, the coastal vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the ROLAs, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging and dog waste. In the LOD area and ROLAs, impacts on coastal dune vegetation would be long term, moderate, and adverse. However, designation of ROLAs could lead to greater compliance and reduced impacts in other (non-ROLA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate and adverse.

Assuming compliance, alternative C would result in an overall long-term minor to moderate adverse impact on coastal dune habitat because the beach ROLA is located in coastal dune habitat that would degrade, but the area in the ROLA is only a small portion of the entire site. Physically restraining dogs would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to

cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor to moderate, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative C since dog walking under voice and sight control would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse since Fort Funston is a high use site for dog walking but it is unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLAs	Concentrated use would occur in the upland ROLA, which supports dune vegetation; dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; the upland ROLA could support dune vegetation that would be affected but potential for restoration would be limited, although the habitat corridor would be protected and restored	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Dog walking restrictions and impacts for alternative D would be similar to those described above for alternative C, although there would be on-leash dog walking instead of a ROLA on the beach and the upland ROLA would be located adjacent to the Coastal Trail, in coastal dune habitat. The proposed ROLA, which would be fenced, would also be in an area that has been affected by social trails. The vegetation would degrade

through concentrated use in this designated ROLA, and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the ROLA, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and ROLA, impacts on coastal dune vegetation would be long term, moderate, and adverse. However, designation of a ROLA could lead to greater compliance and reduced impacts in other (non-ROLA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate and adverse.

Assuming compliance, alternative D would result in overall long-term minor to moderate adverse impacts on coastal dune habitat because the ROLA is located in coastal dune habitat that would degrade, but the area in the ROLA is only a small portion of the entire site. Physically restraining dogs on leash would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal dune vegetation. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D since dog walking under voice and sight control would be limited to a ROLA at Fort Funston. In addition, some interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse since Fort Funston is a high use site for dog walking but it is unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in ROLA	Concentrated use would occur in ROLA, which supports dune vegetation; dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; however, the ROLA supports dune vegetation that would be affected, limiting potential restoration	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on all trails except the Equestrian Trail, which is closed to dogs. Dog walking under voice and sight control would be allowed in two ROLAs: one on the beach and one in a corridor in the uplands east of the Chip and Coastal trails and west of the habitat corridor (along the Coastal Trail) and the Equestrian Trail. The upland ROLA would be in existing coastal dune vegetation that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated dog use in this designated ROLA, the vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the ROLA, impacts on coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and ROLA, impacts on coastal dune vegetation would be long term, major, and adverse. However, designation of a ROLA could lead to greater compliance and reduced impacts in other (non-ROLA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would be considered major and adverse because of the large size of the two ROLAs proposed as part of alternative E.

Assuming compliance, alternative E would result in an overall long-term moderate adverse impact on coastal dune habitat because the upland ROLA corridor is in coastal dune vegetation and encompasses a large portion of coastal dune habitat, which would continue to degrade. In other areas, physically restraining dogs would protect dune vegetation, but restoration potential is limited at this site due to disturbance of vegetation by dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of

the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, moderate, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative E since dog walking under voice and sight control would be offered in two ROLAs at Fort Funston, including the interior portion of Fort Funston and more than half of the beach. Therefore, no indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would occur.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLAs	Concentrated use would occur in ROLA corridor, which supports dune vegetation; dune vegetation in adjacent areas would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall long-term moderate adverse impacts, assuming compliance	The large, upland ROLA corridor is in coastal dune vegetation; in other areas, physically restraining dogs would protect dune vegetation; trails and the LOD area are a small portion of the site but ROLA corridor is large; restoration potential is limited	Beneficial, assuming compliance	Long-term moderate adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Funston. The preferred alternative would allow on-leash dog walking on the Coastal Trail, the Sand Ladder, the ADA-Accessible Trail, the Chip Trail, and the Sunset Trail. Dog walking under voice and sight control would be allowed in two ROLAs: one on the beach and another adjacent to the parking lot. The upland ROLA is in existing coastal dune vegetation that has been fragmented by a myriad of social trails made by dogs and humans traversing the area under current conditions. Through concentrated use in this designated ROLA, the coastal dune vegetation would degrade and the potential for restoration of this remnant coastal dune habitat would be limited. In addition to impacts in the ROLAs, impacts on the coastal dune vegetation would also occur in the 6-foot corridors immediately adjacent to the trails (LOD area). Dogs could enter coastal dune habitat and affect it through trampling, digging, and dog waste. In the LOD area and ROLAs, impacts on coastal dune vegetation would be long term, moderate, and adverse. However, designation of ROLAs could lead to greater compliance and reduced impacts in other (non-ROLA) areas of the site. While dogs would cause impacts on the dunes, most of the vegetation in the coastal dune habitat in Fort Funston is non-native; therefore, the impacts would not be considered greater than moderate and adverse.

Assuming compliance, the preferred alternative would result in overall long-term minor to moderate adverse impacts on coastal dune habitat because the upland ROLA is located in coastal dune habitat that would degrade, but the area in the ROLA is only a small portion of the entire site. Physically restraining

dogs on leash would protect dune vegetation and reduce social trails at this site, but dog use would still limit potential restoration even though the habitat corridor would be protected.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on coastal dune vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on coastal dune vegetation would be expected from this user group. Impacts on coastal dune vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, minor to moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Fort Funston. The City of Daly City is preparing the *Vista Grande Drainage Basin Alternatives Analysis* to develop and evaluate alternatives that will reduce or eliminate flooding, reduce erosion along Lake Merced, and provide other potential benefits such as habitat enhancement and lake level augmentation (City of Daly City 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Funston. For example, the NPS is planning to construct new restroom and maintenance facilities at Fort Funston, which has the potential to have an adverse impact on vegetation in the area (NPS 2010h, 1). The Vista Grande portion of Daly City's stormwater collection system includes an underground collection system that routes storm flows northwest to the Vista Grande canal and tunnel for discharge to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). This system has the potential to adversely affect vegetation in the area of Fort Funston.

The long-term minor to moderate adverse impacts on the coastal dune plant community from dogs at Fort Funston under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of adverse and beneficial effects from actions in and around Fort Funston; when combined, these actions would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on the coastal dune plant community from dogs under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 25). The adjacent lands may experience increased visitation by individual and commercial dog walkers under the preferred alternative since dog walking under voice and sight control would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Therefore, indirect impacts on coastal dune vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and

adverse since Fort Funston is a high use site for dog walking but it is unknown where and to what extent coastal community vegetation in these adjacent parks could be affected by dogs.

FORT FUNSTON PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in ROLAs	Concentrated use would occur in the upland ROLA, which supports dune vegetation; dune vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs would protect dune vegetation and reduce social trails; the upland ROLA supports dune vegetation that would be affected and limits potential restoration, although habitat corridor would be protected	Beneficial, assuming compliance	Long-term minor to moderate adverse cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Mori Point

Alternative A: No Action. For alternative A, on-leash dog walking is currently allowed on all trails and the portion of the beach owned by the NPS. This site has moderate visitor use by dog walkers and over 50 leash law violations were recorded in 2007/2008 (table 9). Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. Mori Point has a small beach area and rocky intertidal vegetation, but the site does not support coastal dunes. Dogs can affect rocky intertidal vegetation through physical damage such as trampling and digging, and through nutrient addition from dog waste.

Given the high amount of noncompliance with the leash law at this site, impacts on vegetation under alternative A would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area at the site.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on intertidal vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j).

Additional actions have had, are currently having, or have the potential to have adverse impacts on at or in the vicinity of Mori Point. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts on the intertidal vegetation from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on intertidal vegetation from alternative A. Therefore, cumulative impacts on intertidal vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). No indirect impacts on intertidal vegetation in adjacent lands would be expected under alternative A since current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Site has beach area but no coastal dunes; off-leash dogs could gain access to rocky intertidal habitat and vegetation and cause impacts through trampling, digging, and dog waste	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail and the portion of the beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the beach and the 6-foot corridors immediately adjacent to the trails. The rocky, intertidal area at Mori Point does not occur where dogs would be allowed on leash. It is unlikely that dogs would be able to access rocky intertidal vegetation if compliance occurs. Therefore, assuming compliance, impacts on intertidal vegetation would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on intertidal vegetation.

Cumulative Impacts. The negligible impacts on intertidal vegetation from dogs at Mori Point under alternative B were considered together with the beneficial effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative B would have beneficial impacts on the intertidal vegetation at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under alternative B since the Old Mori Road and the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on intertidal vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to these closures but it is unknown where and to what extent intertidal vegetation in these adjacent parks could be affected by dogs.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	It is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling, digging, and dog waste	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. The rocky intertidal area at Mori Point does not occur where dogs would be allowed on leash. It is unlikely that dogs would be able to access rocky, intertidal vegetation if compliance occurs. Therefore, assuming compliance, impacts on intertidal vegetation would be negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on intertidal vegetation.

Cumulative Impacts. The negligible impacts on intertidal vegetation from dogs at Mori Point under alternative C were considered together with the beneficial effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative C would have beneficial impacts on the intertidal vegetation at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under alternative C since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on intertidal vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure but it is unknown where and to what extent intertidal vegetation in these adjacent parks could be affected by dogs.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	It is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling, digging, and dog waste	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on intertidal vegetation from dogs would occur at this site.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on intertidal vegetation.

Cumulative Impacts. The lack of impacts on intertidal vegetation from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration and trail rehabilitation projects combined with the lack of impacts on intertidal vegetation from alternative D would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. Indirect impacts on intertidal vegetation in adjacent lands from increased dog use would be expected to range from negligible to long term, minor, and adverse since dog walking is currently considered a moderate use activity at Mori Point and because it is unknown where and to what extent intertidal vegetation in these adjacent parks could be affected by dogs.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative C, with the addition of the Pollywog Path. The rocky intertidal area at Mori Point does not occur where dogs would be allowed on leash. It is unlikely that dogs would be able to access rocky intertidal vegetation if compliance occurs. Therefore, assuming compliance, impacts on intertidal vegetation would be negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers.

Therefore, commercial dog walking under alternative E would have negligible impacts on intertidal vegetation.

Cumulative Impacts. The negligible impacts on intertidal vegetation from dogs at Mori Point under alternative E were considered together with the beneficial effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative E would have beneficial impacts on the intertidal vegetation at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on intertidal vegetation in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	It is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling, digging, and dog waste	Beneficial to no change, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. The rocky intertidal area at Mori Point does not occur where dogs would be allowed on leash. It is unlikely that dogs would be able to access rocky intertidal vegetation if compliance occurs. Therefore, assuming compliance, impacts on vegetation would be negligible.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on intertidal vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Mori Point. Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on intertidal vegetation from dogs at Mori Point under the preferred alternative were considered together with the beneficial effects of the projects mentioned above. Cumulatively, the preferred alternative would have beneficial impacts on intertidal vegetation at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under the preferred alternative since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on intertidal vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure but it is unknown where and to what extent intertidal vegetation in these adjacent parks could be affected by dogs.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	It is unlikely that on-leash dogs could gain access to rocky intertidal vegetation and cause impacts through trampling, digging, and dog waste	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

New Lands: Coastal Communities

Alternative A: No Action. For new lands that come under the management of GGNRA, under alternative A, these lands would be managed under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal vegetation resources exist at the site. At most new lands, the impacts from allowing on-leash dog walking (including commercial dog walking) would range from negligible to long term, minor, and adverse because on-leash walking only would be allowed and it is assumed that the area affected would be relatively small compared to the total park area. Dune plant species, including CNPS-listed plant species at GGNRA, are very sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or disturbance from dogs in general may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously

affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, impacts on coastal vegetation as a result of alternative A would range from negligible to long term, minor, and adverse. However, no impact on coastal vegetation communities would be expected to occur at sites that are currently closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on coastal community vegetation. At sites where commercial dog walking is common, impacts to the coastal community vegetation from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal community habitat exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. For new lands that come under the management of GGNRA, alternative B would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative B would allow on-leash dog walking unless conditions

- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;

- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal vegetation resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dune plant species, including CNPS-listed plant species at GGNRA, are very sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal vegetation in new lands from dog walkers as a result of alternative B would range from negligible to long term, minor, and adverse. However, no impact on coastal vegetation would be expected to occur at sites that are currently closed to or proposed for closure to dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal vegetation communities. At sites where commercial dog walking is common, impacts on coastal vegetation communities would be similar to impacts from other dog walkers. Overall impacts on coastal community vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal community habitat exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE B CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dog walking regulations in new lands would be the same as alternative B, and impacts would be the same, assuming compliance: negligible to long-term minor adverse impacts overall, and no impact at sites that prohibit dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal vegetation communities. At sites where commercial dog walking is common, impacts on coastal vegetation communities would be similar to impacts from other dog walkers. Overall impacts on coastal community vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal community habitat exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE C CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative D: Most Protective Based on of Resource Protection/Visitor Safety. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal vegetation resources exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal habitat.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal community vegetation.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dune plant species, including CNPS-listed plant species at GGNRA, are very sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal vegetation as a result of alternative D would range from negligible to long term, minor, and adverse. However, no impact on coastal dune vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal community vegetation exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands Negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative E: Most Dog Walking Access/Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on-leash dog walking and the possibility of ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on-leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands.

It is entirely possible that new lands managed by GGNRA could include coastal dune habitat, which supports terrestrial plant communities that could be affected by dog activities. Dune plant species, including CNPS-listed plant species at GGNRA, are very sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal dune plant species exist at the site. It is assumed that ROLAs would not be established in or adjacent to areas with sensitive coastal dune resources so that the park's desired future conditions can be attained. Even so, dogs under voice and sight control in a ROLA would affect vegetation in the ROLA by the physical disturbance of dog activities. Dogs in a ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and any ROLAs would be long term, minor to moderate, and adverse because effects would be measurable and perceptible, but may be localized in a relatively small area.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, overall impacts on coastal community vegetation in new lands from dog walkers as a result of alternative E would range from negligible to long term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. However, no impact on coastal vegetation communities would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal vegetation communities. At sites where commercial dog walking is common, impacts on coastal vegetation communities from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on coastal community vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal community vegetation exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in the ROLA and LOD area	Dog impacts would be concentrated in the ROLA; nutrient loading from dog waste, and physical disturbance such as trampling, digging, and dog waste, would occur		
Overall negligible to long-term moderate adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or

closed to dogs to determine whether sensitive coastal vegetation resources exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal habitat.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Dune plant species, including CNPS-listed plant species at GGNRA, are very sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal vegetation as a result of the preferred alternative would range from negligible to long term, minor, and adverse. However, no impact on coastal dune vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal community vegetation. At sites where commercial dog walking is common, impacts to coastal community vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to coastal community vegetation from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal community vegetation exists in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or dune plants would be more sensitive to disturbance	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

COASTAL SCRUB, CHAPARRAL, AND GRASSLAND COMMUNITIES

Coastal scrub, chaparral, and grassland plant communities are found to some extent at many of the GGNRA sites considered in this plan/EIS, but at the more developed sites in San Francisco County, only small remnants may be found (Crissy Field, Fort Point Promenade/Fort Point NHS Trails, Baker Beach and Bluffs to Golden Gate Bridge, Lands End). As a result, only impacts in largely undeveloped park sites containing intact acreage of coastal scrub/chaparral/grassland are analyzed. Because these three communities form a vegetation mosaic along the coast, they are discussed together in this section. The coastal scrub/chaparral/grassland communities provide habitat for many plant species of interest listed by the CNPS (table 8). In general, there is little site-specific documentation that dogs have either directly or indirectly affected coastal scrub/chaparral/grassland habitat at GGNRA. However, NPS staff members have observed noncompliant dogs in unprotected areas due to ineffective fencing or lack of fencing. As described in chapter 3, the coastal scrub/chaparral/grassland communities provide habitat for many CNPS-listed plant species. Also occurring at the grasslands at this site is silver-leaf lupine, the primary host plant for the federally endangered mission blue butterfly; both species are discussed in more detail in the “Special-status Species” section.

MARIN COUNTY SITES

Homestead Valley

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash throughout the site. Even though this site has low visitor use (see table 9), physical damage and nutrient addition from dogs is assumed to be currently happening along the fire road/trails and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trails. Since dogs are currently allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on vegetation communities in the undisturbed areas located along the fire road/trails. Impacts on vegetation in these adjacent areas would include physical damage and would create opportunities for invasive plants to establish. The creation of social trails could further affect the coastal scrub, chaparral, and grassland vegetation by increasing fragmentation. The Oakland mariposa lily occurs in the grasslands of Homestead Valley and is an example of a rare plant with limited distribution that could be susceptible to impacts from dog activities.

The impacts on vegetation at this park site under alternative A would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At Homestead Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Projects funded by the Wildland/Urban Interface Initiative on private lands and habitat restoration could also impact Homestead Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on the coastal scrub, chaparral, and grassland communities at or in the vicinity of Homestead Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub, chaparral, and grassland communities from dogs at Homestead Valley under alternative A were considered together with the effects of the actions mentioned above. The benefits to the coastal scrub, chaparral, and grassland communities from the Park Stewardship Programs would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 24). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location permit off-leash dog access). No indirect impacts on vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area for vegetation that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts on vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this area supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking in Homestead Valley is uncommon, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on vegetation from dogs at Homestead Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grasslands at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative B since off-leash dog walking would no longer be allowed at this site. Impacts on vegetation in adjacent lands from potential increased dog use would be negligible since this is a low use site for dog walking activities and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in the adjacent parks could be affected by dogs.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and the impacts on coastal scrub/chaparral/grassland vegetation would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the vegetation at this park site and on adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Homestead Fire Road; dogs would be prohibited in other areas of the site. The LOD area would include the 6 feet of land adjacent to the road, as described in alternative B. Impacts on vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the fire road (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

No commercial dog walking would be allowed under alternative D; therefore, no impact would occur as a result of commercial dog walking.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Homestead Valley under alternative D were considered together with the effects of the projects

mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative D would have negligible impacts on the coastal scrub/chaparral/grassland communities at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative D since off-leash dog walking would no longer be allowed at this site. Impacts on vegetation in adjacent lands from potential increased dog use would be negligible since this is a low use site for dog walking activities and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in the adjacent parks could be affected by dogs.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to fire road (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and the impacts on vegetation would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and on adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Homestead Valley. The preferred alternative would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area for vegetation that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire roads. Impacts on vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Homestead Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as the GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Homestead Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Homestead Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Homestead Valley under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 24). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location permit off-leash dog access). The adjacent lands may experience some increased visitation under the preferred alternative since off-leash dog walking would no longer be allowed at this site. Impacts on vegetation in adjacent lands from potential increased dog use would be negligible since this is a low use site for dog walking activities and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation at the adjacent parks could be affected by dogs.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 9), with typically 5 to 12 dogs under voice control per commercial walker.

Under alternative A, physical damage to vegetation from dogs through trampling, digging, and dog waste would continue to occur since dogs would be allowed under voice control and there is a higher likelihood of dogs going off the trail and fire roads than if they were on leash. Continued impacts in these areas could prevent the growth of vegetation or allow the establishment of non-native invasive species. These impacts would be considered long term, minor, and adverse due to the high use by commercial dog walkers and because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on vegetation, as described above. Dogs under voice control would continue to disturb the vegetation through digging, trampling, and dog waste.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail/Orchard Fire Road/Pacheco Fire Road.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Alta Trail/Orchard Fire Road/Pacheco Fire Road, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 24). No indirect impacts on vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include all areas adjacent to the edges of the trail/roads (up to 6 feet). Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts on vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Impacts would be detectable, but not large enough to cause a measurable or perceptible change in the coastal scrub/chaparral/grassland communities.

The long-term minor adverse impacts from the high level of dog use in the LOD area would occur in a relatively reduced area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on vegetation from dogs at the site. Overall impacts on vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative B were considered together with the effects of the actions mentioned above in alternative A. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site combined with the negligible impacts from alternative B would result in negligible cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site; however, only negligible indirect impacts on vegetation would be expected because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits may restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on vegetation from dogs would occur at this site.

Since dogs would not be allowed at Alta Trail, Orchard Fire Road, and Pacheco Fire Road, there would be no impact from commercial dog walkers on the coastal scrub, chaparral, and grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative D would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D since this alternative would not allow dogs. Therefore, indirect impacts on vegetation in adjacent lands from increased dog use would be expected to range from negligible to long term, minor, and adverse because it is not known where these dog walkers would go or where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent parks could be affected by dogs.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those

under alternative B: negligible cumulative impacts and negligible impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The preferred alternative would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include all areas adjacent the trail/fire roads (up to 6 feet). Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts on vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Impacts would be detectable, but not large enough to cause a measurable or perceptible change in the coast scrub/chaparral/grassland plant communities.

The long-term minor adverse impacts from the high level of dog use in the LOD area would occur in a relatively reduced area compared to the site as a whole. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking on the Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on vegetation would be expected from this user group. Impacts on vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire

Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Alta Trail, Orchard Fire Road, and Pacheco Fire Road, such as development or construction actions at or in the vicinity of GGNRA sites. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub, chaparral, and grassland communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under the preferred alternative were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on the coastal scrub, chaparral, and grassland communities.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 24). The adjacent lands may experience increased visitation by individual and commercial dog walkers under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site; however, only negligible indirect impacts on vegetation would be expected because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent parks could be affected by dogs.

**ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE CONCLUSION
TABLE**

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed under voice control on Oakwood Valley Fire Road and on Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking is allowed on Oakwood Valley Trail from the trailhead to the junction with

Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 9). In addition, this area contains mission blue butterfly habitat and host plants.

Under alternative A, physical disturbance from dog activities would continue to occur along the fire road and trail and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trail. Since dogs would be allowed under voice control in some areas of the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on coastal scrub, chaparral, and grassland vegetation in adjacent areas. Therefore, these impacts would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Oakwood Valley, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Oakwood Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Oakwood Valley fire road and trail loop in the lower section of the site. No dogs would be allowed above the junction of the road and trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/road. Impacts in areas adjacent to the trail would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling, digging, and dog waste. Impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking is not allowed under alternative B. However, indirect impacts on vegetation in adjacent lands from increased dog use would be negligible since most of the area (road/trail) offered for dog walking would not change and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and in the ROLA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative C would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A should not experience increased visitation under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative. No indirect impacts on vegetation in adjacent lands would occur.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLA	Vegetation in the LOD area and ROLA would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Oakwood Valley Fire Road from Tennessee Valley Road to the junction with Oakwood Valley Trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the fire road. Impacts in areas adjacent to the fire road would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling, digging, and dog waste. The impacts from dogs would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the coastal scrub/chaparral/grassland plant communities.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on vegetation. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative D would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking would not be allowed under alternative D, and the Oakwood Valley Fire Road is the only area offered for on-leash dog walking. However, indirect impacts on vegetation in adjacent lands from increased dog use would be negligible since dog walking would still

be offered under alternative D and because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to fire road (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; the fire road and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with noncontinuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Impacts would be the same as those under alternative C, assuming compliance: long term, minor, and adverse in the LOD area and ROLA and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and no indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in ROLA	Vegetation in LOD areas and ROLAs would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and LOD areas and ROLAs are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Oakwood Valley. The preferred alternative proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and in the ROLA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007),

can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Oakwood Valley, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). The adjacent lands may not experience increased visitation under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA at this site. No indirect impacts on vegetation in adjacent lands would occur.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLA	Vegetation in the LOD area and ROLA would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith-Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers and there were 47 leash law violations issued in 2007/2008 (table 9). In addition, there were 137 recorded incidents of dogs in closed areas at this park site (appendix G). The Marin Headlands Trails area contains diverse habitat, including coastal scrub, serpentine coastal scrub, chaparral, grassland, and mission blue butterfly habitat and host plants; there are

large tracts of coastal scrub habitat in the Marin Headlands Trails that extend north into Muir Beach. Physical disturbance and nutrient addition are currently happening along the trails and fire roads and in off-trail areas throughout the site due to unleashed dogs. In general, in larger tracts such as the Marin Headlands Trails, more dog walkers and their dogs will be concentrated at the trailheads and the ability of dog walkers to disperse provides a dilution that will actually spread impacts to a greater area or throughout the site. At trailheads and other congregating areas, in addition to physical damage, scent marking and dog waste by dogs can cause alteration of habitat conditions as well as furthering the spread of invasive plant species. Due to their nature, dogs are not expected to stay on the fire roads/trails.

Since dogs would be allowed under voice control in portions of the site under alternative A, there is a higher likelihood that dogs would go off trail than if they were on leash, thus affecting vegetation in adjacent undisturbed areas. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of this alternative would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Marin Headlands Trails, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub community from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub community.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on coastal scrub/chaparral/grassland vegetation in

adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands Trails. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on coastal scrub/chaparral/grassland vegetation at the site.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative B would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor (which is entirely adjacent to natural habitat and plant communities); several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash; therefore, the LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this vegetation would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative C would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails); therefore, no impact on coastal scrub/chaparral/grassland vegetation would occur as a result of alternative D, assuming compliance.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. Under alternative D, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible to long-term minor adverse indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor (which is entirely adjacent to natural habitat), the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route.

This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash; therefore, the LOD area would include 6 feet in each direction from the edges of the trails/fire roads. The impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since vegetation in these areas would be affected by trampling, digging, and dog waste. Nutrient addition from dog waste may also occur as a result of runoff, which could also affect the coastal scrub/chaparral/grassland plant communities. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to

cause a change in the intensity of the impact relative to the area of the site. Impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Although more trails would be available to dogs in alternative E compared to alternative C, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be the same. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at the Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative E would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor (which is entirely adjacent to natural habitat and plant communities); several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash; therefore, the LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this vegetation would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at the Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Marin Headlands Trails, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of the preferred alternative not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed throughout Fort Baker except on the Chapel Trail or the pier, where dogs are not allowed. This site experiences moderate visitor use and low dog walking use. There were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum. Dogs on leash have access to areas adjacent to the trails/fire roads, where viable plant communities exist. Impacts on this vegetation would include physical disturbance through trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. Since compliance is an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads. Drown Fire Road traverses natural habitat where extensive mission blue butterfly habitat restoration has occurred. Runoff of nutrients from trails into the adjacent habitat may result in some changes in soil nutrient levels, which could also affect plant communities.

Under alternative A, long-term minor adverse impacts on coastal scrub, chaparral, and grassland vegetation would continue to occur at Fort Baker.

No permit system exists for dog walking under alternative A. At Fort Baker, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide

restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Fort Baker under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs and other restoration projects in the area of this site would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub, chaparral, and grassland communities.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The impacts in the LOD area under alternative B would be the same as described for alternative A: long term, minor, and adverse. The impacts would result from physical disturbance from trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub, chaparral, and grassland vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at Fort Baker under alternative B were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative B would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative B since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, except for the addition of on-leash dog walking on the Battery Yates Loop, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge/Conference Center Grounds and on the Bay Trail (excluding the Battery Yates Loop). On-leash dog walking is based on an allowed 6-foot dog leash; therefore, the LOD area would include 6 feet in each direction from the edges of the trail. Impacts in areas adjacent to the trail would be long term, minor, and adverse since these areas support existing vegetation that would be affected by trampling, digging, and dog waste. Impacts would not be large enough to create a measureable or perceptible change in the coastal scrub/chaparral/grassland plant communities. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Even though alternative D would allow less dog access at the site, the difference in dog impacts between alternatives D and B is not considered large enough to cause a change in the intensity of the impact, because of the developed nature of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub, chaparral, and grassland vegetation from on-leash dog walking at Fort Baker would be negligible.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative D would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

Negligible indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands may occur under alternative D since dog walking would not be allowed in the Parade Ground. Visitors with dogs may choose to go to another park site that has a large area for walking dogs, but it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent parks could be affected by dogs.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to the trail (LOD area)	Vegetation adjacent to the trail would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; the trail and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this site and indirect impacts in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and no indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail (including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be

allowed on the Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The impacts in the LOD area would be long term, minor, and adverse. The impacts would result from physical disturbance from trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the coastal scrub/chaparral/grassland plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Fort Baker, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The overall negligible impacts on the coastal scrub/chaparral/grassland communities from dog activities at this site under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub, chaparral, and grassland communities at this site when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under the preferred alternative since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES**Baker Beach and Bluffs to Golden Gate Bridge**

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach north of Lobos Creek, with on-leash dog walking required for trails leading to the beach; however, social trails exist at the site and traverse sensitive coastal scrub/chaparral/grassland habitat. This site has documented low to high visitor use (depending on weather, holidays, and weekend use) and dog walking use is considered low to moderate (table 9). Baker Beach and Bluffs to Golden Gate Bridge supports plant communities in the following habitats: coastal scrub, chaparral, serpentine outcroppings, serpentine scrub, and serpentine grassland. The unique vegetation that grows in serpentine soils includes several threatened and endangered plants and is particularly sensitive to changes in soil properties.

Under alternative A, continued impacts on vegetation would be long term, minor, and adverse, and would include physical disturbance through trampling and digging, as well as nutrient addition; effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010). The *Lobos Creek Valley Dune Restoration* near Baker Beach and Bluffs to Golden Gate Bridge involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia (NPS 2010f, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and the dune restoration project should reduce some of the adverse impacts on vegetation from alternative A. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park, which allows off-leash dog walking (map 25). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dog walking on the Batteries to Bluffs Trail and the Battery Crosby Trail but would allow on-leash dog walking on all other trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, as well as on the entire beach within the GGNRA boundary. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance,

the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not affect the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the beneficial effects from the Park Stewardship Programs and the dune restoration project. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Mountain Lake Park, because it is the closest dog use area and it allows off-leash dog walking. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands, from increased dog use would be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs. However, since Area B of the Presidio does not allow off-leash dog walking no indirect impacts are expected to occur at this adjacent land.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers.

Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts and indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and on the trails leading to the northern section of the beach. The beach does not contain coastal scrub, chaparral, or grassland habitat. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the beneficial effects from the Park Stewardship Programs and the dune restoration project. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mountain Lake Park, because it is the closest dog use area that allows off-leash dog walking. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs. However, since Area B of the Presidio does not allow off-leash dog walking no indirect impacts are expected to occur at this adjacent land.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the northern portion of the beach and on all trails except the Batteries to Bluffs Trail and the Battery Crosby Trail. A ROLA would be established on the portion of the beach south of the north parking lot. The beach does not contain coastal scrub, chaparral, or grassland habitat. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas have not been previously disturbed and support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal scrub/chaparral/grassland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the beneficial effects from the Park Stewardship Programs and the dune restoration project. Cumulatively, alternative E would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative E since voice and sight control dog walking would be allowed in a ROLA at Baker Beach and Bluffs to Golden Gate Bridge. Therefore, no indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands, including Area B of the Presidio, would be expected.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site; the ROLA is located on the beach, not in coastal scrub/chaparral/grassland habitat	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach and Bluffs to Golden Gate Bridge. The preferred alternative would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as on the multi-use Coastal Trail. Dogs would be prohibited in the section of beach north of the north parking lot (approximately half of the beach) and on the trails leading to the northern section of the beach. The beach does not contain coastal scrub, chaparral, or grassland habitat. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Impacts would affect the plants that grow in the serpentine soils immediately adjacent to the Coastal Trail. Therefore, impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since these areas support the growth of existing vegetation; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Baker Beach and Bluffs to Golden Gate Bridge would be negligible.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Baker Beach and Bluffs to Golden Gate Bridge. Impacts on coastal scrub/chaparral/grassland vegetation from permit

holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Between August and November of 2007, 73,000 tons of landfill debris was unearthed by excavators at Baker Beach and Bluffs to Golden Gate Bridge and conveyed to the top of the cliffs as part of a remediation and restoration effort (Presidio Trust 2010). The *Lobos Creek Valley Dune Restoration* near Baker Beach and Bluffs to Golden Gate Bridge involved efforts to restore the coastal scrub and help increase the population of the listed San Francisco lessingia (NPS 2010f, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Baker Beach and Bluffs to Golden Gate Bridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the beneficial effects from the Park Stewardship Programs and the dune restoration project. Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park, which allows off-leash dog walking (map 25). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. The adjacent lands may experience increased visitation under the preferred alternative, particularly Mountain Lake Park, because it is the closest dog use area and it allows off-leash dog walking. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not allow off-leash dog walking no indirect impacts are expected to occur at this adjacent land.

**BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE CONCLUSION
TABLE**

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Lands End

Alternative A: No Action. Under current conditions, dogs are allowed under voice control at the Lands End site, which includes the Coastal Trail and the El Camino del Mar Trail. This site has low to moderate visitor use by hikers, bicyclists, and dog walkers (table 9). Lands End contains coastal scrub, chaparral, and serpentine coastal scrub vegetation. Off-leash dog activities would contribute to physical disturbance of these communities and nutrient addition in off-trail areas occurs throughout the site. Due their nature, dogs are not expected to stay on the trails. Since dogs are currently allowed under voice control at the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on vegetation in the undisturbed areas located along the trails. Impacts in the undisturbed areas would include trampling and digging, as well as the addition of nutrients to the soil, which would impact vegetation. The Lands End area also contains rare serpentine soils. The unique vegetation that grows in serpentine soils includes several threatened and endangered plants and is particularly sensitive to changes in soil properties.

Therefore, impacts on vegetation would continue to be long term, minor to moderate, and adverse under alternative A because effects would be measurable and perceptible, potentially over a relatively large area, and may affect the overall integrity of the plant communities at the site.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils and vegetation. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of Park Stewardship Programs at Lands End have included resurfacing and stabilizing segments of the trails, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor to moderate adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs should reduce some of the adverse impacts on the coastal scrub, chaparral, and grassland communities from alternative A. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail, where much of the coastal scrub/chaparral habitat occurs. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot LOD corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and digging. The Lands End area also contains rare serpentine soils, which support unique vegetation that includes several threatened and endangered plants; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation at Lands End.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative B were considered together with the beneficial effects of the Park Stewardship Programs. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these actions.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park—North Central Area and Golden Gate Park—South Central Area, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail at Lands End, including on the steps to El Camino del Mar Trail, and would allow dogs under voice and sight control in a ROLA along the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash; therefore, the LOD area would include 6 feet in each direction from the edges of the trail. The ROLA is surrounded by coastal scrub/chaparral habitat. Dogs in the ROLA would have access to undisturbed areas and could disturb vegetation communities through trampling, digging, and nutrient addition. Dogs in the ROLA would be off leash, and therefore would not be impeded from running through and impacting vegetation. Therefore, impacts in areas adjacent to the trail (LOD area) and in the ROLA would be long term, minor to moderate, and adverse and would result from physical disturbance; effects would be measurable and perceptible, potentially over a relatively large area, and may affect the overall integrity of the coastal scrub/chaparral/grassland plant communities.

The long-term minor to moderate adverse impacts on coastal scrub/chaparral/grassland vegetation would occur in a relatively small area compared to the site as a whole, even though the ROLA is partially

located in coastal scrub/chaparral habitat. Physically restraining dogs on leash would protect vegetation off trail, and Lands End receives low to moderate use by dog walkers. Therefore, assuming compliance, the overall impacts on vegetation at Lands End would be negligible to long term, minor, and adverse because impacts may result in measurable or perceptible changes in the plant communities at the site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible to long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the Park Stewardship Programs should reduce some of the adverse impacts on the coastal scrub, chaparral, and grassland communities from alternative C. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on the coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative C since voice and sight control dog walking would be offered in a ROLA at Lands End.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site, but the ROLA is partially located in coastal scrub/chaparral habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail and portions of the Coastal Trail, as well as on the steps between the trails. The impacts would be similar to those under alternative B because the on-leash areas coincide with the coastal scrub/chaparral/grassland habitat of Lands End. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and digging. The Lands End area also contains rare serpentine soils, which support unique vegetation that includes several threatened and endangered plants; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste

may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on vegetation in the land adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under alternative D were considered together with the beneficial effects of the Park Stewardship Programs. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these actions.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park—North Central Area and Golden Gate Park—South Central Area, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and ROLA and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a

permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and negligible indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site, but the ROLA is partially located in coastal scrub/chaparral habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative B was selected as the preferred alternative for Lands End. The preferred alternative would allow on-leash dog walking at Lands End on the Coastal Trail and the El Camino del Mar Trail, where much of the coastal scrub/chaparral habitat occurs. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the 6-foot corridors immediately adjacent to the trails. Vegetation would be affected through physical disturbance such as trampling and digging. The Lands End area also contains rare serpentine soils, which support unique vegetation that includes several threatened and endangered plants; this vegetation is particularly sensitive to changes in soil properties. Nutrient addition from dog waste may also occur beyond the LOD area as a result of runoff. Therefore, impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation and because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts on coastal scrub/chaparral/grassland vegetation adjacent to the trails would occur in a relatively small area compared to the site as a whole, and Lands End receives low to moderate use by dog walkers. Also, physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation at Lands End would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Lands End, so individual

and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils and vegetation. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Lands End. GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Lands End. The efforts of Park Stewardship Programs at Lands End have included resurfacing and stabilizing segments of the trails, eliminating social trails, replanting native species in the local forest and surrounding areas, and engaging the community in park stewardship (GGNPC 2010a, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Lands End, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Lands End under the preferred alternative were considered together with the beneficial effects of the Park Stewardship Programs. Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 25). The adjacent lands may experience increased visitation under the preferred alternative, particularly Golden Gate Park—North Central Area and Golden Gate Park—South Central Area, because they are the closest dog use areas and they allow dogs off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

LANDS END PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

SAN MATEO COUNTY SITES**Mori Point**

Alternative A: No Action. Mori Point contains coastal scrub habitat and grasslands that are dominated by purple needlegrass. On-leash dog walking is currently allowed on all trails and on the portion of beach owned by the NPS. This site has moderate visitor use by dog walkers, and over 50 leash law violations were recorded in 2007/2008 (table 9). Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. In addition, the NPS has invested time and money in extensive restoration projects at Mori Point and the impacts from dogs are negating the benefits of these restoration projects.

Under alternative A, dogs would continue to affect vegetation at Mori Point through digging, trampling, and nutrient addition. In addition, some dogs under voice control may go off trail into undisturbed areas and impact vegetation in these areas. Therefore, impacts on vegetation as a result of this alternative would continue to be long term, minor, and adverse at this site because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Mori Point, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613).

Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and from the *Mori Point Restoration and Trail Plan* should reduce some of the adverse impacts on the coastal scrub, chaparral, and grassland communities from alternative A. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste, and these effects would continue to negate restoration efforts	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. On-leash dog walking is based on an allowed 6-foot dog leash, and in general, impacts would be limited to the beach and the 6-foot corridors immediately adjacent to the trails. The Coastal Trail, where on-leash dog walking is allowed, winds through coastal scrub and grassland habitats. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling, digging, and dog waste. The impacts in the LOD area caused by dog activities would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of coastal scrub/chaparral/grassland vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub and grassland vegetation under alternative B would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative B were considered together with the beneficial effects of the Park Stewardship Programs and the *Mori Point Restoration and Trail Plan*. Cumulatively, alternative B would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under alternative B since the Old Mori Road and Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure, but it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. Impacts under alternative C would be similar to those for alternative B. Coastal scrub and grassland vegetation could be impacted in the LOD area along the Coastal Trail. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling, digging, and dog waste. The impacts caused by dog activities in the LOD area would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/grassland vegetation communities under alternative C would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore,

commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative C were considered together with the beneficial effects of the Park Stewardship Programs and the *Mori Point Restoration and Trail Plan*. Cumulatively, alternative C would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under alternative C since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure but it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, there would be no impact on coastal scrub/chaparral/grassland vegetation from dogs at this site.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs under alternative D was considered together with the beneficial effects of the Park Stewardship Programs and the *Mori Point Restoration and Trail Plan*. Cumulatively, alternative D would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be expected to be negligible. Although dog

walking is currently considered a moderate use activity at Mori Point, it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in the adjacent parks could be affected by dogs.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative C, with the addition of the Pollywog Path. The areas surrounding the Pollywog Path do not support coastal scrub or grassland vegetation. Therefore, the impacts under alternative E would be the same as those described for alternative C. In general, impacts would be limited to the beach and the 6-foot corridors immediately adjacent to the trails. The Coastal Trail and Old Mori Road, where on-leash dog walking is allowed, wind through coastal scrub and grassland habitats. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling, digging, and dog waste. The impacts in the LOD area caused by dog activities would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/grassland vegetation community under alternative E would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under alternative E were considered together with the beneficial effects of the Park Stewardship Programs and the *Mori Point Restoration and Trail Plan*. Cumulatively, alternative E would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E. Since visitors would be allowed to continue to walk dogs at this site, no indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on the Coastal Trail, Old Mori Road, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. Coastal scrub and grassland vegetation could be impacted in the LOD area along the Coastal Trail. The vegetation in the areas adjacent to the trail would be affected by dogs through trampling, digging, and dog waste. The impacts caused by dog activities in the LOD area would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Compared to the size of the Mori Point site, the areas of vegetation that could be impacted by on-leash dog walking are small. Additionally, physically restraining dogs on leash would protect vegetation off trail at the site. Therefore, assuming compliance, the overall impacts on the coastal scrub/chaparral/grassland vegetation community under the preferred alternative would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of vegetation communities at park sites such as Mori Point. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Mori Point. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Mori Point, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Mori Point under the preferred alternative were considered together with the beneficial effects of the Park Stewardship Programs and from the *Mori Point Restoration and Trail Plan*. Cumulatively, the preferred alternative would have beneficial impacts on the coastal scrub/chaparral/grassland communities at this park site when added to the beneficial effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under the preferred alternative since the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to this closure, but it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Milagra Ridge

Alternative A: No Action. Nearly the entire site of Milagra Ridge is composed of coastal scrub vegetation, although the site also supports coastal chaparral and grassland habitat. On-leash dog walking is currently allowed on all trails and fire roads. This site has documented moderate visitor use by bicyclists, walkers, and hikers, and low to moderate visitor use by dog walkers (table 9). Although current GGNRA regulations require dogs to be leashed at Milagra Ridge, unleashed dogs have been observed at the site; 25 leash law violations were issued in 2007/2008 (table 9).

Under alternative A, dogs would continue to contribute to physical disturbance to vegetation through digging, trampling, and nutrient addition. In addition, some of the off-leash dogs at the site may go off trail into undisturbed areas and impact vegetation in these areas. Therefore, impacts would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area. In addition, the NPS has invested time and money in extensive

restoration projects at Milagra Ridge, and the impacts from dogs would continue to negate the success of these restoration projects.

No permit system exists for dog walking under alternative A. At Milagra Ridge, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Milagra Ridge.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Milagra Ridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for this park site will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub/chaparral/grassland communities.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs are caused through physical damage such as trampling, digging, and dog waste, and these effects would continue to negate restoration efforts	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the fire road, the trail to the westernmost overlook and WWII bunker, and Milagra Battery Trail (the future connector to lower Milagra). However, the trail loop to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts in areas adjacent to the trail in the 6-foot corridors or LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on vegetation could include trampling, digging, and nutrient addition from dog waste and urine; these impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Milagra Ridge would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking at Milagra Ridge is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative B would have negligible impacts on the coastal scrub/chaparral/grassland communities at or in the vicinity of Milagra Ridge when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative B since the fire road would still be open for dog walking.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B and impacts on coastal scrub/chaparral/grassland vegetation at

this site would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on the coastal scrub/chaparral/grassland communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur.

Since dogs would not be allowed at Milagra Ridge, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from Park Stewardship Programs combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative D would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs; however, indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a loop to the top of the hill, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts and indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on the coastal scrub, chaparral, and grassland communities in adjacent lands.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Milagra Ridge. The preferred alternative would allow on-leash dog walking on the fire road, the trail to the westernmost overlook and WWII bunker, and Milagra Battery Trail (the future connector to lower Milagra). However, the trail loop to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edges of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails/fire road. Impacts in areas adjacent to the trail in the 6-foot corridors or LOD area would be long term, minor, and adverse

since the area supports existing vegetation. Impacts on vegetation could include trampling, digging, and nutrient addition from dog waste and urine; these impacts on vegetation would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole, and physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Milagra Ridge would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Milagra Ridge. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Milagra Ridge.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Milagra Ridge, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub/chaparral/grassland communities at or in the vicinity of Milagra Ridge when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under the preferred alternative since the fire road would still be open for dog walking.

MILAGRA RIDGE PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Sweeney Ridge/Cattle Hill

Alternative A: No Action. Currently, on-leash dog walking is allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dogs. The site is dominated by coastal scrub and chaparral vegetation, with grassland vegetation occurring along the Notch Trail and the western portions of the Mori Ridge Trail and the Cattle Hill Overlook Trail. This site has documented low to moderate visitor use by dog walkers and 55 leash law violations were recorded in 2007/2008 (table 9); therefore, off-leash dog walking is currently occurring along the trails of Sweeney Ridge. Cattle Hill is not yet part of GGNRA, but unrestricted dog walking occurs at this site, and dogs have contributed to physical disturbance of vegetation.

Under alternative A, dogs would continue to contribute to physical disturbance at both sites through trampling, digging, and dog waste. In addition, since off-leash dog walking currently occurs at the sites, it is likely that dogs would continue to walk or run through other undisturbed areas. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of alternative A would continue to be long term, minor, and adverse at these sites because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. Commercial dog walking is uncommon at Sweeney Ridge and Cattle Hill; therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation at these sites.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge/Cattle Hill. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Sweeney Ridge/Cattle Hill.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Sweeney Ridge/Cattle Hill, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge and Cattle Hill under alternative A were considered together with the effects of the actions mentioned above. The benefits to vegetation from the Park Stewardship Programs would not be expected to reduce the adverse impacts of this alternative; therefore, the cumulative analysis for these park sites will focus on the results of the impact analysis for this alternative. The beneficial effects from the Park Stewardship Programs combined with the long-term minor adverse impacts from alternative A would result in long-term minor adverse cumulative impacts on the coastal scrub/chaparral/grassland communities.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (which is temporarily closed) (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the sites.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, assuming compliance, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at these sites.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge/Cattle Hill under alternative B was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from Park Stewardship Programs combined with the lack of impacts on the coastal scrub/chaparral/grassland communities from alternative B would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly San Bruno Dog Park and Esplanade Beach in Pacifica (which is temporarily closed), because they are the closest dog use areas. However, indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent lands could be affected by dogs.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dogs would not be allowed at Sweeney Ridge. Therefore, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at this site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling, digging, and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Cattle Hill would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Cattle Hill would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under alternative C would have no impact on coastal scrub/chaparral/grassland vegetation. Since commercial dog walking is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge under alternative C was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the Park Stewardship Programs combined with the lack of impacts from the alternative C would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities at Sweeney Ridge. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Cattle Hill under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative C would have negligible impacts on the coastal scrub, chaparral, and grassland communities at Cattle Hill when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

Lands adjacent to Sweeney Ridge may experience increased visitation since dogs would no longer be allowed at this site. However, indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to

what extent vegetation in lands adjacent to Sweeney Ridge could be affected by dogs. No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative C at Cattle Hill since dogs would be allowed on trails at Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge	Dogs would be prohibited at Sweeney Ridge	Beneficial, assuming compliance	Beneficial cumulative impacts at Sweeney Ridge Negligible indirect impacts in lands adjacent to Sweeney Ridge
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) at Cattle Hill	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance, at Cattle Hill	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts at Cattle Hill No indirect impacts in lands adjacent to Cattle Hill

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at Sweeney Ridge and Cattle Hill. Therefore, assuming compliance, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at these sites.

Since dogs would not be allowed at Sweeney Ridge and Cattle Hill, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. Under alternative D, the cumulative impacts and indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and negligible indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at both sites	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Mori Ridge Trail, Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail, and Sneath Lane. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-

leash dog walking is based on an allowed 6-foot dog leash. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling, digging, and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the sites as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Sweeney Ridge and Cattle Hill would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Sweeney Ridge or Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge/Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative E would have negligible impacts on the coastal scrub/chaparral/grassland communities at these park sites when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative E since dogs would be allowed on trails at both Sweeney Ridge and Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the sites	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Sweeney Ridge/Cattle Hill. Under the preferred alternative, dogs would not be allowed at Sweeney Ridge. Therefore, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at this site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts on vegetation would be limited to the 6-foot corridors immediately adjacent to the trails. Impacts in the

LOD area would be long term, minor, and adverse since the area supports existing vegetation; impacts on vegetation could include trampling, digging, and nutrient addition from dog waste and urine. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area at Cattle Hill would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Cattle Hill would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, none of these permits would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge, commercial dog walking under the preferred alternative would have no impact on coastal scrub/chaparral/grassland vegetation. Since commercial dog walking activity is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Sweeney Ridge/Cattle Hill. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Sweeney Ridge/Cattle Hill.

Additional actions have had, are currently having, or have the potential to have adverse impacts on vegetation at or in the vicinity of Sweeney Ridge/Cattle Hill, such as development or construction actions. Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at Sweeney Ridge under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs combined with the lack of impacts from the preferred alternative would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities at Sweeney Ridge. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at Cattle Hill under the preferred alternative were considered together with the effects of the projects mentioned above. Cumulatively, the preferred alternative would have negligible impacts on the coastal scrub, chaparral, and grassland communities at Cattle Hill when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (which is temporarily closed) (map 25). At Sweeney

Ridge, indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected to be negligible because it is unknown where and to what extent vegetation in lands adjacent to Sweeney Ridge could be affected by dogs. No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected at Cattle Hill under the preferred alternative since dogs would be allowed on trails at this site.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge	Dogs would be prohibited at Sweeney Ridge	Beneficial, assuming compliance	Beneficial cumulative impacts at Sweeney Ridge Negligible indirect impacts in adjacent lands at Sweeney Ridge
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) at Cattle Hill	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts at Cattle Hill, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts at Cattle Hill No indirect impacts in adjacent lands at Cattle Hill

Pedro Point Headlands

Alternative A: No Action. Although this site is currently not part of GGNRA, unrestricted dog walking occurs at this site, and dogs have contributed to disturbance of the plant communities along created social trails. Pedro Point Headlands contains coastal scrub, chaparral, and grassland vegetation. This site has documented low to moderate visitor use, but the numbers of citations and incident reports related to dog activities at the site are unknown since the NPS does not currently own the property and it is not patrolled by park rangers (table 9).

Under alternative A, dogs would continue to contribute to physical disturbance through trampling and digging, as well as contributing nutrients to the soil along the trails through dog waste. In addition, the NPS has invested time and money in extensive restoration projects at Pedro Point Headlands and the impacts from dogs would continue to negate the benefits of these restoration projects. Therefore, impacts on coastal scrub/chaparral/grassland vegetation as a result of this alternative would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for dog walking under alternative A. There are currently no commercial dog walking regulations at Pedro Point Headlands and it is unknown if commercial dog walkers contribute to coastal scrub/chaparral/grassland vegetation impacts. Therefore, commercial dog walking would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near the Pedro Point Headlands were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation

performed as part of the Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Pedro Point Headlands. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Pedro Point Headlands. The *Pedro Point Headland Stewardship Project* aims to maintain and improve the ecological status of Pedro Point Headlands, and habitat restoration and trail development efforts include minimizing erosion (City College of San Francisco 2008; Coastsider 2010). Other projects benefit and enhance coastal scrub/chaparral/grassland habitat, including the proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the *Pedro Point Headland Stewardship Project* (PLT 2008, 1), and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current projects and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute to cumulative impacts.

The long-term minor adverse impacts on the coastal scrub/chaparral/grassland communities from dogs at the Pedro Point Headlands under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and actions from the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) should reduce some of the adverse impacts from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on vegetation, since those impacts were found to be negligible due to mitigation. Therefore, cumulative impacts on the coastal scrub/chaparral/grassland communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of the Pedro Point Headlands and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica (which is temporarily closed) (map 25). No indirect impacts on the coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

PEDRO POINT HEADLANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste, and these effects would continue negating restoration efforts	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trail (LOD area). Impacts in the LOD area would be long term,

minor, and adverse since the area supports existing vegetation. Impacts on coastal scrub/chaparral/grassland vegetation could include trampling, digging, and nutrient addition from dog waste and urine; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at the Pedro Point Headlands would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Pedro Point Headlands under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects and projects that enhance mission blue butterfly habitat combined with the negligible impacts from alternative B would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities.

Indirect Impacts in Adjacent Parks

No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under alternative B since on-leash dog walking would be allowed at Pedro Point Headlands.

PEDRO POINT HEADLANDS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restriction as alternative B (on-leash dog walking on the Coastal Trail), and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at the Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at the Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog

walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts and indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and no indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at the Pedro Point Headlands. Therefore, no impact on coastal scrub/chaparral/grassland vegetation from dogs would occur at this site.

Since dogs would not be allowed at Pedro Point Headlands, there would be no impact from commercial dog walkers on the coastal scrub/chaparral/grassland vegetation communities.

Cumulative Impacts. The lack of impacts on the coastal scrub/chaparral/grassland communities from dogs at the Pedro Point Headlands under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects and projects that enhance mission blue butterfly habitat combined with the lack of impacts from alternative D would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Montara State Beach and Esplanade Beach in Pacifica (which is temporarily closed), because they are the closest dog use areas. Indirect impacts on coastal scrub/chaparral/grassland vegetation from increased dog use in adjacent lands would be negligible since dog walking is considered a low to moderate use activity at Pedro Point Headlands and it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation in adjacent parks could be affected by dogs.

PEDRO POINT HEADLANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B (on-leash dog walking on the Coastal Trail), and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts and indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands would be the same as those under alternative B: beneficial cumulative impacts and no indirect impacts on the coastal scrub/chaparral/grassland communities in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Pedro Point Headlands. The preferred alternative would allow on-leash dog walking on the Coastal Trail. In general, impacts on coastal scrub/chaparral/grassland vegetation would be limited to the 6-foot corridors immediately adjacent to the trail (LOD area). Impacts in the LOD area would be long term, minor, and adverse since the area supports existing vegetation. Impacts on coastal scrub/chaparral/grassland vegetation could include trampling, digging, and nutrient addition from dog waste and urine; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on coastal scrub/chaparral/grassland vegetation from on-leash dog walking at Pedro Point Headlands would be negligible.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Projects and actions in and near Pedro Point Headlands were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of the Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils at park sites such as Pedro Point Headlands. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance, which can beneficially affect vegetation at park sites such as Pedro Point Headlands. The *Pedro Point Headland Stewardship Project* aims to maintain and improve the ecological status of Pedro Point Headlands, and habitat restoration and trail development efforts include minimizing erosion (City College of San Francisco 2008, 1; Coastsider 2010, 1).

Other projects benefit and enhance coastal scrub/chaparral/grassland habitat, including the proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the *Coastal Corridor Enhancement Project* (Marin County, San Francisco County, and San Mateo County), the *Pedro Point Headland Stewardship Project*, and the Martini Creek watershed assessment (San Mateo County).

The negligible impacts on the coastal scrub/chaparral/grassland communities from dogs at the Pedro Point Headlands under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects and projects that enhance mission blue butterfly habitat combined with the negligible impacts from the preferred alternative would result in beneficial cumulative impacts on the coastal scrub/chaparral/grassland communities.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of the Pedro Point Headlands and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica (which is temporarily closed) (map 25). No indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands would be expected under the preferred alternative since on-leash dog walking would be allowed at the Pedro Point Headlands.

PEDRO POINT HEADLANDS PREFERRED ALTERNATIVE CONCLUSIONS TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Beneficial cumulative impacts No indirect impacts in adjacent lands

New Lands

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dogs may be allowed at new lands under alternative A.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal scrub, chaparral, and/or grassland vegetation resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking (including commercial dog walking) would range from negligible to long term, minor, and adverse because on-leash walking only would be allowed and it is assumed that the area affected would be relatively small compared to the total park area. Coastal scrub, chaparral, and/or grassland plant species, including CNPS-listed plant species at GGNRA, are sometimes sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, overall impacts on coastal scrub, chaparral, and/or grassland vegetation in new lands as a result of alternative A would range from negligible to long term, minor, and adverse. No impact on coastal scrub, chaparral, and/or grassland vegetation communities would be expected at sites that are currently closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub, chaparral, and/or grassland plant species. At sites where commercial dog walking is common, impacts to the plants from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub, chaparral, and/or grassland plant species in adjacent lands would range from no indirect impacts on plants from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal scrub, chaparral, and/or grassland plant species exist at these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would be in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. For new lands that come under the management of GGNRA, alternative B would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative B would allow on-leash dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities, or
- trigger the compliance-based management strategy's process for closure.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal scrub, chaparral, and/or grassland vegetation resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs on leash would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some coastal scrub, chaparral, and/or grassland plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal scrub, chaparral, and grassland vegetation in new lands from dog walkers as a result of alternative B would range from negligible to long term, minor, and adverse. No impact on coastal scrub, chaparral, and/or grassland vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub, chaparral, and/or grassland vegetation communities. At sites where commercial dog walking is common, impacts on coastal scrub, chaparral, and/or grassland vegetation communities from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on coastal scrub, chaparral, and/or grassland vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub, chaparral, and/or grassland vegetation communities in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal scrub, chaparral, and/or grassland vegetation communities exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative C: Emphasis on Multiple Use—Balanced by County. For new lands that come under the management of GGNRA, alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible to long term, minor, and adverse overall and no impact at sites that prohibit dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub, chaparral, and/or grassland vegetation communities. At sites where commercial dog walking is common, impacts on coastal scrub, chaparral, and/or grassland vegetation communities from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on coastal scrub, chaparral, and/or grassland vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub, chaparral, and/or grassland vegetation communities in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal scrub, chaparral, and/or grassland vegetation communities exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive resources exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal scrub/chaparral/grassland communities.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs on leash would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the

new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some coastal scrub, chaparral, and/or grassland plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal scrub/chaparral/grassland vegetation in new lands from dog walkers as a result of alternative D would range from negligible to long term, minor, and adverse. No impact on coastal scrub, chaparral, and/or grassland vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on coastal scrub/chaparral/grassland vegetation.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub/chaparral/grassland vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent coastal scrub/chaparral/grassland vegetation exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative E: Most Dog Walking Access/Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management response).

Alternative E would allow on leash dog walking and, possibly, ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on-leash dog walking if allowing on-leash dog walking would impede attainment of the park's desired future conditions. Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive coastal scrub/chaparral/grassland communities exist at the site.

It is entirely possible that new lands managed by GGNRA could include coastal scrub, chaparral, and/or grassland habitat supporting terrestrial plant communities that could be affected by dog activities. Some coastal scrub, chaparral, and/or grassland plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive coastal scrub/chaparral/grassland vegetation exists at the site. It is assumed that ROLAs would not be established in areas with sensitive coastal scrub, chaparral, and/or grassland habitat so that the park's desired future conditions can be attained. Even so, dogs under voice and sight control in a ROLA would affect vegetation in the ROLA by the physical disturbance from dog activities. Dogs in a ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and any ROLAs would be long term, minor to moderate, and adverse because effects would be measurable and perceptible, but may be localized in a relatively small area.

At most new lands, impacts from allowing on-leash dog walking would be negligible because physically restraining dogs on leash would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, overall impacts on coastal scrub, chaparral, and/or grassland vegetation from dog walkers as a result of alternative E would range from negligible to long term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on coastal scrub, chaparral, and/or grassland communities would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub/chaparral/grassland vegetation. At sites where commercial dog walking is common, impacts on coastal scrub/chaparral/grassland vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on coastal scrub, chaparral, and/or grassland vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub, chaparral, and/or grassland habitat in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal scrub, chaparral, and/or grassland habitat exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLAs and LOD area	Dog impacts would be concentrated in the ROLAs; nutrient loading from dog waste, as well as physical disturbance, such as trampling, digging, and dog waste, would occur		

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term moderate adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive resources exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal scrub/chaparral/grassland communities.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs on leash would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some coastal scrub, chaparral, and/or grassland plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on coastal scrub/chaparral/grassland vegetation from dog walkers as a result of the preferred alternative would range from negligible to long term, minor, and adverse. No impact on coastal scrub, chaparral, and/or grassland vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub, chaparral, and/or grassland plant species. At sites where commercial dog walking is common, impacts to coastal scrub, chaparral, and/or grassland plant species from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to coastal scrub, chaparral, and/or grassland plant species from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal scrub, chaparral, and/or grassland plant species in adjacent lands would range from no indirect impacts on plants from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent coastal scrub, chaparral, and/or grassland plant species exist in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect vegetation off trail; trampling, digging, and dog waste would occur in a relatively small area; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

WETLANDS AND AQUATIC HABITATS

GGNRA contains both freshwater wetlands and coastal (estuarine) wetlands (riparian forest and stream corridors are considered separately). Vegetation in these wetlands is composed of both herbaceous and woody plant species; detailed descriptions have been presented in chapter 3 for wetland plant communities. Wetlands are located at Rodeo Beach/South Rodeo Beach (Rodeo Lagoon and Rodeo Lake), Muir Beach (tidal lagoon), Crissy Field, and Mori Point. Some of the wetlands in GGNRA have already been restored or are currently undergoing restoration. In general, dogs are prohibited from accessing most wetlands in GGNRA, but citations and incident reports related to dog activities at some of these sites do exist (table 9 and appendix G).

MARIN COUNTY SITES

Muir Beach (Lagoon)

Alternative A: No Action. The lagoon located at Muir Beach is described as a small tidal lagoon fringed by wetland vegetation. A wetland restoration project was completed at this site in 2009, which included increasing its size and depth, adding woody debris and revegetating the shoreline; invasive vegetation was also removed as part of the restoration project (NPS 2007b); Phase I of this project reconnected the creek to the flood plain and expanded the tidal lagoon (NPS 2010b). Under current conditions, dog walking is allowed on leash or under voice control at the site. The park has closed the lagoon and Redwood Creek to dogs, although there is no physical barrier to prevent dogs from accessing the lagoon or Redwood Creek and it has been observed that these closures have been violated (appendix G). The area is considered a moderate to high use site, and dogs do gain access to the lagoon and surrounding wetland habitat.

Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wetland and aquatic vegetation at this site because effects on sensitive habitat would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for commercial dog walking. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c, 1). Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The Muir Beach Wetland and Creek Restoration Project restored the lagoon in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. This project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1). Phase I of this project reconnected the creek to the flood plain and expanded the tidal lagoon (NPS 2010b). Similarly, the NPS and the California State Lands Commission formulated the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). The Lower Redwood Creek Floodplain and Salmonid Habitat Restoration restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1).

Additional actions have had or have the potential to have adverse effects on wetland and aquatic habitats at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008)

will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor to moderate adverse impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even with wetland mitigation. There would be a combination of beneficial and adverse effects from actions in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate, adverse impacts	Wetland vegetation around lagoon would be affected by dogs through trampling and increased turbidity; there would be no physical barrier to prevent dogs from accessing the lagoon shoreline and closures would continue to be violated regularly	N/A	Long-term, minor to moderate, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area, on the Pacific Way Trail, the boardwalk/path to beach, and the beach. Under alternative B, protection of wetland and aquatic habitat would occur through requiring on-leash dog walking. If dogs at this site are physically restrained on leash, they should not gain access to the lagoon or its shorelines. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon, but the fencing would not physically exclude noncompliant dogs from the area. Therefore, assuming compliance, alternative B would result in

negligible impacts on wetland and aquatic vegetation at this site because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative; however, on-leash dog walking would still be allowed at the site. Therefore, indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on wetland and aquatic vegetation at this park site and indirect impacts in adjacent lands would be the same as those under alternative B:

negligible cumulative impacts and negligible indirect impacts on wetland and aquatic vegetation in adjacent lands.

MUIR BEACH LAGOON ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Pacific Way Trail, which has some adjacent wetland habitat. Dogs would not be allowed along the lagoon shoreline. Assuming compliance, dogs would not be able to gain access to wetland vegetation. Therefore, assuming compliance, alternative D would result in negligible impacts on wetland and aquatic vegetation at this site because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mount Tamalpais State Park, because it is the closest dog use area. Even though dog walking would not be allowed on Muir Beach, only negligible indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would occur because it is unlikely that wetland and aquatic vegetation in adjacent lands would be affected by dogs.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon because dogs would not be allowed along the lagoon shoreline, but only on the Pacific Way Trail, which has some adjacent wetland habitat	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking in the parking area, on the Pacific Way Trail, and the boardwalk/path to beach, and would establish a ROLA on the beach south of the boardwalk/path to the beach. This alternative would protect wetland and aquatic habitat through requiring on-leash dog walking and prohibiting dogs on the portion of beach adjacent to the lagoon. The ROLA is not located in or adjacent to wetland vegetation surrounding the lagoon. Therefore, assuming compliance, alternative E would result in negligible impacts on wetland vegetation.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

Indirect Impacts in Adjacent Parks

No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking (in a ROLA) would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. The preferred alternative would allow on-leash dog walking in the parking area and on the Pacific Way Trail. Assuming compliance, dogs would not be able to gain access to wetland and aquatic vegetation. The protection of wetland and aquatic habitat would occur through requiring on-leash dog walking. If dogs at this site are physically restrained on leash, they should not gain access to the lagoon or its shorelines because dogs would not be allowed along the lagoon shoreline. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon, but the fencing would not physically exclude noncompliant dogs from the area. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wetland and aquatic vegetation at this site because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. The Park Stewardship Programs Initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c, 1). Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The Muir Beach Wetland and Creek Restoration Project restored the lagoon in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. This project restored and enhanced ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009r, 1). Similarly, the NPS and the California State Lands Commission formulated the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). The Lower Redwood Creek Floodplain and Salmonid Habitat Restoration restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanding vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way.

Additional actions have had or have the potential to have adverse effects on wetland and aquatic habitat at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). The adjacent lands may experience increased visitation under the preferred alternative, particularly Mount Tamalpais State Park, because it is the closest dog use area. Even though dog walking would not be allowed on Muir Beach, only negligible indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would occur because it is unlikely that wetland and aquatic vegetation in adjacent lands would be affected by dogs.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon because dogs would not be allowed along the lagoon shoreline; dogs would be allowed on leash on the Pacific Way Trail, which supports some wetland habitat	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Rodeo Beach/South Rodeo Beach (Rodeo Lagoon)

Alternative A: No Action. Under current conditions, dogs are allowed on leash or under voice control in all beach areas (Rodeo Beach and South Rodeo Beach). Dogs are also allowed under voice control on the wooden footbridge over the lagoon; Rodeo Lagoon and Rodeo Lake (discussed under “Marin Headlands Trails” for Wetlands and Aquatic Habitat Impacts) are currently closed to dogs. The NPS has restricted people and their pets from accessing the lagoon and its shoreline for overall resource protection. A fence is proposed along the western shoreline of the lagoon that will deter but not physically exclude dogs from accessing the lagoon from the beach. The voice-control areas are located immediately adjacent to the shoreline of the lagoon. The area receives moderate to high use by beachgoers and low to moderate use by dog owners/walkers (table 9). Park staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather (Merkle 2010b, 1). Trampling can affect wetland and aquatic plant species either directly, by reducing the integrity of the plants’ root systems, or indirectly, by causing increased turbidity (sedimentation) that may smother emergent plants.

Therefore, because dogs would continue to access Rodeo Lagoon and its shoreline, alternative A would result in continued long-term minor adverse impacts on wetland and aquatic vegetation at Rodeo Lagoon because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for commercial dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as

GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach. A specific example of a project that will provide beneficial effects to wetlands is the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009I; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor adverse impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wetland and aquatic vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wetland and aquatic vegetation, even with mitigation. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland vegetation under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor, adverse impacts	Wetland vegetation around lagoon would be affected by dogs through trampling and turbidity; no physical barrier would exist to prevent dogs from accessing the lagoon, and closures would continue to be violated regularly	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on Rodeo Beach and South Rodeo Beach and the footbridge and trail that access those beaches. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. As part of an already approved project, a post-and-cable fence would be constructed on the western edge of Rodeo Lagoon that would discourage visitors but not physically exclude visitors or dogs from accessing the lagoon. If dogs at this site are physically restrained on leash and deterred by the fence, they should not gain access to the lagoon or its shoreline. Therefore, assuming compliance, alternative B would result in negligible impacts on the wetland and aquatic vegetation associated with Rodeo Lagoon because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and this park is the closest dog use area that allows dogs off leash. Indirect impacts on wetland and aquatic vegetation in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, on-leash dog walking would be allowed on trails adjacent to the lagoon and lake and on the footbridge to the beach, and dogs would be allowed under voice and sight control in a ROLA on Rodeo Beach. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. The ROLA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. The installation of a post-and-cable fence along the beach end of Rodeo Lagoon to be constructed as part of a concurrent project would discourage visitors from accessing the lagoon, but would not physically exclude noncompliant dogs from the lagoon. With the addition of the fence as a deterrent, assuming compliance, this alternative would result in negligible impacts on wetland and aquatic vegetation, because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Rodeo Beach/South Rodeo Beach. Impacts on wetland and aquatic vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

No indirect impacts on wetland vegetation in adjacent lands would be expected under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation would be expected.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach in areas north of the footbridge and on the footbridge to the beach only. Rodeo Lagoon and Rodeo Lake (discussed under “Marin Headlands Trails” for Wetlands and Aquatic Habitat Impacts) are currently closed to dogs. If dogs at this site are physically restrained on leash and deterred by the fence, they should not gain access to the lagoon or its shoreline. Therefore, assuming compliance, alternative D would result in negligible impacts on the wetland and aquatic vegetation associated with Rodeo Lagoon because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation under alternative D, particularly Remington Dog Park, since dogs under voice control would not be allowed under alternative D and this park is the closest dog use area that allows dogs off leash. However, indirect impacts on wetland and aquatic vegetation in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physically restraining dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. This alternative would include a ROLA on Rodeo Beach that would extend from the ocean shoreline to the crest of the beach instead of encompassing the entire beach to the edge of Rodeo Lagoon. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. The installation of a post-and-cable fence along the beach side of Rodeo Lagoon proposed as part of an already approved project would discourage visitors from accessing the

lagoon, but would not physically exclude noncompliant dogs. Although this alternative includes a ROLA, the addition of the fence as deterrent and compliance with regulations would result in protection of wetland vegetation surrounding Rodeo Lagoon. Assuming compliance with proposed regulations, alternative E would result in negligible impacts on wetland and aquatic vegetation; habitat would be protected and no measurable or perceptible changes in the vegetation would occur.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Rodeo Beach/South Rodeo Beach. Impacts on wetland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

Indirect Impacts in Adjacent Parks

No indirect impacts on wetland vegetation in adjacent lands would be expected under alternative E since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation would be expected.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAGOON) ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach/South Rodeo Beach. Under the preferred alternative, on-leash dog walking would be allowed on trails adjacent to the lagoon and lake and on the footbridge to the beach, and dogs would be allowed under voice and sight control in a ROLA on Rodeo Beach. Rodeo Lagoon and Rodeo Lake are currently closed to dogs. The ROLA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon and south to the ridge on the beach just north of South Rodeo Beach. The installation of a post-and-cable fence along the beach end of Rodeo Lagoon to be constructed as part of a concurrent project would discourage visitors from accessing the lagoon, but would not physically exclude noncompliant dogs from the lagoon. With the addition of the fence as a deterrent, and assuming compliance, this alternative would result in negligible impacts on wetland vegetation, because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed for Rodeo Beach/South Rodeo Beach. Impacts on wetland vegetation from permit holders with four to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Rodeo Beach/South Rodeo Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Rodeo Beach/South Rodeo Beach. A specific example of a project that will provide beneficial effects to wetlands is the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA under this alternative. No change in visitation would be expected.

RODEO BEACH/SOUTH RODEO BEACH (RODEO LAAGOON) PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA and physical restraint of dogs would protect wetlands along the shoreline of the lagoon	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith-Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers, and there were 47 leash law violations and 137 incidents of dogs in closed areas recorded in 2007/2008 (table 9 and appendix G). The Marin Headlands Trails area contains wetland vegetation around Rodeo Lake (which is currently closed) and extensive areas of wetlands in the valley bottom along Rodeo Valley Trail. These wetlands are being affected by dogs through trampling and turbidity; there is no physical barrier to prevent dogs from accessing the lake and closures are violated regularly. Physical disturbance and nutrient addition are currently happening along the trails and fire roads and in off-trail areas throughout the site due to unleashed dogs.

Since dogs would continue to be allowed under voice control in portions of the site under alternative A, there is a higher likelihood that dogs would go off trail than if they were on leash, thus affecting vegetation in adjacent undisturbed areas. Therefore, impacts on wetland and aquatic vegetation as a result of this alternative would continue to be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at the Marin Headlands Trails and projects beyond the park boundaries will generally provide an overall benefit to wetland (including tidal marsh) and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). Another such project is the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit the vegetation at the Bolinas Lagoon (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively

affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The long-term minor adverse impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even with mitigation. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Wetland vegetation around Rodeo Lake would be affected by dogs through trampling and turbidity; no physical barrier would exist to prevent dogs from accessing the lake and closures would continue to be violated regularly; extensive areas of wetlands exist in the valley bottom along Rodeo Valley Trail	N/A	Long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands Trails. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on wetland vegetation at the site.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the wetland vegetation.

Cumulative Impacts. The lack of impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Cumulatively, there would be negligible impacts on wetland and aquatic vegetation at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. Indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would range from negligible to long term, minor, and adverse because it is unknown where and to what extent wetland and aquatic vegetation in adjacent parks could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor; several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along the Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation and is currently closed. On-leash dog walking is based on an allowed 6-foot dog leash, and the LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and dogs would not be allowed in Rodeo Lake. Therefore, assuming compliance, the overall impact on wetland and aquatic vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in these plant communities.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a

permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at the Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wetland and aquatic vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect Rodeo Lake wetland vegetation and habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would have the same restrictions as alternative B (dogs would be prohibited on the trails) and impacts would be the same, assuming compliance: no impact.

Since dogs would not be allowed at the Marin Headlands Trails, there would be no impact from commercial dog walkers on the wetland vegetation.

Cumulative Impacts. Under alternative D, the cumulative impacts on wetland and aquatic vegetation at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible to long-term minor adverse indirect impacts on wetland and aquatic vegetation in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation and is currently closed. On-leash dog walking is based on an allowed 6-foot dog leash, and the LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Impacts in areas adjacent to the trails/fire roads (LOD area) would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Although more trails would be available to dogs in alternative E compared to alternative C, the overall impacts on wetland vegetation from on-leash dog walking would be the same. The continued closure of Rodeo Lake and physically restraining dogs on leash would protect wetland vegetation off trail. Therefore, assuming compliance, the overall impact on wetland and aquatic vegetation would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wetland vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to the trail would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect Rodeo Lake wetland vegetation and habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor; several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation and is currently closed. On-leash dog walking is based on an allowed 6-foot dog leash, and the LOD would include 6 feet in each direction from the edges of the trails/fire roads. Impacts in areas adjacent to the trails/fire roads would be long term, minor, and adverse since this wetland and aquatic vegetation would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative E would allow more dog access at the site, the difference in dog walking use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect wetland and aquatic vegetation off trail. Therefore, assuming compliance, the overall impact on wetland and aquatic vegetation from on-leash dog walking would be negligible because impacts would result in no measurable or perceptible changes in the plant communities.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not

common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails. Another project that will provide beneficial effects to wetlands is the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009i; NPS and CSLC 2007).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The negligible impacts on wetland and aquatic vegetation from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around the Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wetland vegetation.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of the preferred alternative not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES**Crissy Field**

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) will be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Both freshwater and tidal wetlands are present at Crissy Field. A restoration project reestablished a narrow and steep fringe of salt marsh vegetation at approximately 18 acres of an unvegetated tidal lagoon that links with San Francisco Bay (referred to as the tidal marsh). As part of the restoration, California seablite (a federally listed plant species) and Point Reyes bird’s-beak (a CNPS-listed species) were introduced into the tidal marsh. Despite protection of the restored tidal marsh (which is currently closed) by installed fencing, dogs under voice control have been documented as gaining access to the tidal marsh through the tidal inlet that allows exchange of water between the marsh and San Francisco Bay. Specifically, the park has documented that dogs entering the marsh typically go under that spans the inlet and onto the flood shoal and adjacent areas along the marsh (NPS 2010b). Freshwater wetlands are located in swales formed by the dunes at Crissy Field and primarily consist of willows, tule reeds, and cattails.

Alternative A would continue to result in long-term minor adverse impacts on salt marsh vegetation from physical damage by dogs (trampling and increased turbidity). The freshwater wetlands at Crissy Field would continue to receive negligible impacts from dog activities because they are fenced to prohibit access by dogs and people.

No permit system exists for commercial dog walking under alternative A. However, commercial dog walking at Crissy Field occurs regularly. Commercial dog walking would continue to contribute to the long-term minor adverse impacts on salt marsh vegetation. Commercial dog walkers with multiple dogs under voice control would impact wetland and aquatic vegetation through trampling.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing,

and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and aquatic habitats. A specific example of a project that will provide beneficial effects to wetlands is the Giacomini Wetland Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009i; NPS and CSLC 2007). Another such project is the Gulf of the Farallones National Marine Sanctuary's proposed Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1-2). The California seablite (a federally listed plant species) has been extirpated from the San Francisco Bay Area, although it was reintroduced to the restored salt marsh at Crissy Field in 2001. However, two efforts to reintroduce the species to the Crissy Field Marsh have both failed, potentially due to excessive flooding of the marsh.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible to long-term minor adverse impacts on wetland vegetation from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on vegetation from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on vegetation, even though mitigation has contributed to reducing impacts. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 25). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wetland vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts on tidal wetlands; negligible impacts on freshwater wetlands	Tidal marsh vegetation would be affected by dogs through trampling and increased turbidity; despite fencing, dogs under voice control would continue to gain access to the tidal marsh through the tidal inlet; freshwater wetland areas would be fenced to prohibit access by dogs and people	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in all unfenced areas and dogs would be prohibited in the WPA. Dogs are currently prohibited in the tidal marsh. Since dogs would be physically restrained on leash, they should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, negligible impacts on wetland and aquatic vegetation could occur as a result of this alternative; no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Therefore, impacts on wetland and aquatic vegetation from dogs walked by both commercial dog walkers and private individuals would be negligible.

Cumulative Impacts. The negligible impacts on wetland vegetation from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above under alternative A. Cumulatively, alternative B would have negligible impacts on wetland vegetation at or in the vicinity of Crissy Field.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Mountain Lake Park, because it is the closest dog use area that allows off-leash dog walking. However, indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs. Since Area B of the Presidio does not allow off-leash dog walking no indirect impacts are expected to occur at this adjacent land.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The existing fence and physical restraint of dogs would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. The addition of one ROLA on Central Beach and a second on Crissy Airfield in alternative C would allow dog walking under voice and sight control; on-leash dog walking would be required in all other areas of Crissy Field that would be open to dog walking in this alternative. All fenced areas, including the tidal marsh, are currently closed to dogs, and the WPA and East Beach would be closed under this alternative. Since dogs would be physically restrained on leash in areas surrounding the tidal marsh, dogs should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, alternative C would result in negligible impacts on wetland and aquatic vegetation because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated at this site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the previous paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative A. Cumulatively, alternative C would have negligible impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

No indirect impacts on wetland and aquatic vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative C since ROLAs would be provided on Crissy Airfield and Central Beach and on-leash dog walking would be allowed in other areas at the site.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	The existing fence and physical restraint of dogs would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a ROLA on the western section of Crissy Airfield. On-leash dog walking would be allowed on the trails and other areas open to dogs in this alternative. All fenced areas, including the tidal marsh, are currently closed to dogs, and the WPA, Central Beach, and East Beach would be closed to dogs under this alternative. Assuming compliance, negligible impacts on wetland and aquatic vegetation would occur as a result of alternative D because no measurable or perceptible changes in wetland and aquatic plants would occur as a result of this alternative.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative A. Cumulatively, alternative D would have negligible impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field when added to the effects from these projects.

Indirect Impacts in Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field. However, dogs under voice and sight control would be allowed in a ROLA on half of Crissy Airfield. Indirect impacts on wetland and aquatic vegetation in adjacent lands would be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent parks could be affected by dogs. However, since Area B of the Presidio does not allow off-leash dog walking and does not have beaches no indirect impacts are expected to occur at this adjacent land.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the promenade, East Beach, and the WPA. Dogs would not be allowed in the tidal marsh, but dogs would be allowed under voice and sight control in two ROLAs established on the Crissy Airfield and Central Beach. Compliance in the ROLAs, physical restraint of dogs on leash in other areas of the site, and the existing fence would protect tidal marsh wetlands at the site. Assuming compliance, alternative E would result in negligible impacts on wetland and aquatic vegetation in the tidal marsh because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated as a result of this alternative.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, compliance in the ROLAs, physical restraint of dogs on leash in other areas of the site, and the

existing fence would protect tidal marsh wetlands at the site. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative A. Cumulatively, alternative E would be negligible impacts on vegetation at or in the vicinity of Crissy Field.

Indirect Impacts in Adjacent Parks

No indirect impacts on wetland and aquatic vegetation in adjacent lands, including Area B of the Presidio, would be expected under alternative E since ROLAs would be provided on Crissy Airfield and Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLA, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. The addition of one ROLA on Central Beach and a second on Crissy Airfield in the preferred alternative would allow dog walking under voice and sight control; on-leash dog walking would be required in all other areas of Crissy Field that would be open to dog walking in this alternative. All fenced areas, including the tidal marsh, are currently closed to dogs, and the WPA and East Beach would be closed under this alternative. Since dogs would be physically restrained on leash in areas surrounding the tidal marsh, dogs should not gain access to the tidal marsh through the tidal inlet. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wetland and aquatic vegetation because no measurable or perceptible change in the wetland and aquatic plant community would be anticipated at this site.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash, and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Even though the percentage of commercial dog walkers is considered moderate to high at Crissy Field, dogs would be required to be on leash, preventing dog access to the tidal marsh and wetland vegetation. Impacts on wetland and aquatic vegetation from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial effects to wetlands include the Giacomini Wetland

Restoration Project (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). The Gulf of the Farallones National Marine Sanctuary has proposed the Bolinas Lagoon Ecosystem Restoration Project (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh. The subsequent 5-year monitoring program included tracking of hydrology and geomorphology, water quality, soils and sedimentation, vegetation, fish, invertebrates, and birds (NPS 2010i, 1-2). The California seablite (a federally listed plant species) has been extirpated from the San Francisco Bay Area, although it was re-introduced to the restored salt marsh at Crissy Field in 2001. However, two efforts to reintroduce the species to the Crissy Field Marsh have both failed, potentially due to excessive flooding of the marsh.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* and the *Doyle Drive Project* will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

Under the preferred alternative, the negligible impacts on wetland and aquatic vegetation from dogs at Crissy Field were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulatively, the preferred alternative would have negligible impacts on wetland and aquatic vegetation at or in the vicinity of Crissy Field.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 25). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wetland vegetation in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative since ROLAs would be provided on Crissy Airfield and Central Beach and on-leash dog walking would be allowed in other areas at the site.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Compliance in the ROLAs, physical restraint of dogs, and the existing fence would protect tidal marsh wetlands, which would be closed to dogs	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Dogs are currently allowed on leash on all trails at Mori Point. This site has moderate visitor use by dog walkers, and over 50 leash law violations were recorded in 2007/2008 (table 9). Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site. The NPS created four ponds at Mori Point to enhance the freshwater wetland habitat for California red-legged frog and to provide foraging habitat for the San Francisco garter snake (NPS 2009b). Educational signs and fences have been placed around the ponds and wetland habitat at Mori Point to prevent direct impacts on frogs and frog habitat; however, dogs have occasionally been observed in the ponds.

Alternative A would result in continued negligible impacts on freshwater wetland vegetation because impacts would generally result in no measurable or perceptible changes in the plant community due to the exclusionary fences that protect wetland vegetation.

No permit system exists for commercial dog walking under alternative A. At Mori Point, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on wetland vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and aquatic habitats. The Sharp Park Golf Course, located in Pacifica in San Mateo County (adjacent to Mori Point) has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Plans at the golf course range from restoration to entirely natural habitat, to minor modifications that would improve habitat connectivity for frogs and snakes. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* could negatively affect wetland and aquatic resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). No indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected under alternative A since current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts on freshwater wetlands	Exclusionary fences have been placed around the ponds and wetland habitat; however, dogs have occasionally been observed in ponds	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail and the portion of beach owned by the NPS, but dogs would not be allowed on Old Mori Road or the Pollywog Path, which is located adjacent to the ponds. Impacts on freshwater wetland vegetation under alternative B would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements, no dogs on the Pollywog Path or Old Mori Road, and the exclusionary fences that protect wetland and aquatic vegetation.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). These parks may experience some increased visitation under alternative B since Old Mori Road and the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on wetland and aquatic vegetation in adjacent lands. Some visitors with dogs may choose to visit a different park due to these closures, but it is unknown where and to what extent wetland and aquatic vegetation in adjacent lands could be affected by dogs.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Physical restraint of dogs, fewer on-leash dog walking areas, and existing fences would protect wetlands	No change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. In addition, the ponds and the vegetation surrounding them are enclosed by exclusionary fences. Impacts would be similar to those for alternative B. Therefore, assuming compliance, the impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements, no dogs on the Pollywog Path, and the exclusionary fences that protect wetland and aquatic vegetation.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative C, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would prohibit dogs at the entire Mori Point site. Therefore, assuming compliance, alternative D would result in no impact on freshwater wetland vegetation.

Since dogs would not be allowed at Mori Point, there would be no impact from commercial dog walkers on the wetland and aquatic vegetation.

Cumulative Impacts. The lack of impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs at this site; however, indirect impacts on wetland and aquatic vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wetland and aquatic vegetation in adjacent parks could be affected by dogs.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative C, with the addition of on-leash dog walking on the Pollywog Path. The Pollywog Path, which borders the freshwater wetland vegetation, would be open for dog walking, but there are exclusionary fences surrounding the ponds that would protect the vegetation. Therefore, assuming compliance, impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements and the exclusionary fences that protect wetland vegetation.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a

permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on freshwater wetland vegetation.

Cumulative Impacts. The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland and aquatic vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of beach owned by the NPS, but dogs would not be allowed on the Pollywog Path, which is located adjacent to the ponds. In addition, the ponds and the vegetation surrounding them are enclosed by exclusionary fences. Assuming compliance, impacts on freshwater wetland vegetation from dogs would be negligible because impacts would result in no measurable or perceptible changes in the plant community due to the on-leash requirements, no dogs on the Pollywog Path, and the exclusionary fences that protect wetland vegetation.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on wetland and aquatic vegetation.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. The Sharp Park Golf Course,

located in Pacifica in San Mateo County (adjacent to Mori Point) has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Plans at the golf course range from restoration to entirely natural habitat, to minor modifications that would improve habitat connectivity for frogs and snakes. The *Mori Point Restoration and Trail Plan* includes preserving and restoring habitat by reducing threats to native plant communities and natural processes, ensuring habitat connectivity between upland and wetland areas, and developing a safe and sustainable trail system to improve recreational experiences and reduce impacts on park resources (NPS 2010j, 1).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* could negatively affect wetland resources within and beyond park boundaries. However, wetland and aquatic impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetland and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wetlands.

The negligible impacts on wetland and aquatic vegetation from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative impacts on wetland vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica (which is temporarily closed) and the San Bruno Dog Park (map 25). The adjacent lands would probably not experience any increased visitation under the preferred alternative, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wetland and aquatic vegetation in adjacent lands would be expected.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Existing fences and physical restraint of dogs would protect wetlands	No change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Wetland and Aquatic Habitats

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive wetland resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetland or aquatic habitats even if a trail is developed (or previously located) adjacent to a wetland or aquatic habitat. Physically restraining dogs on leash would protect wetland and aquatic resources and would minimize access to these areas. If dogs gain access to these communities, impacts on the wetlands, aquatic vegetation, and any CNPS-listed plant species in the area could be elevated to long term, minor, and adverse. Therefore, overall impacts on wetland and aquatic vegetation from private and commercial dog walkers as a result of alternative A would range from negligible to long term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on wetland or aquatic habitat would be expected at sites that are closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wetland vegetation. At sites where commercial dog walking is common, impacts to wetland vegetation from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wetland and aquatic habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. For new lands that come under the management of GGNRA, alternative B would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative B would allow on-leash dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive wetland resources exist at the site.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetland or aquatic habitats even if a trail is developed (or previously located) adjacent to a wetland or aquatic habitat; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and surrounding wetland and/or aquatic vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some wetland and aquatic plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, the impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on wetland and aquatic vegetation from dog walkers as a result of alternative B would range from negligible to long term, minor, and adverse. No impact on

wetland or aquatic habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wetland vegetation. At sites where commercial dog walking is common, impacts on wetland vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on wetland and aquatic vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wetland and aquatic habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dog walking regulations in new lands would be the same as alternative B, and impacts would be the same, assuming compliance: negligible to long-term minor adverse impacts overall and no impact at sites that prohibit dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wetland vegetation. At sites where commercial dog walking is common, impacts on wetland vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on wetland and aquatic vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wetland and aquatic habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive wetland resources exist at the site. It is entirely possible that new lands managed by GGNRA could include wetland and aquatic habitats.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetland or aquatic habitats even if a trail is developed (or previously located) adjacent to a wetland or aquatic habitat; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and

surrounding wetland and/or aquatic vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some wetland and aquatic plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover, due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on wetland and aquatic vegetation as a result of alternative D would range from negligible to long term, minor, and adverse. No impact on wetland or aquatic habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wetland and aquatic vegetation.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wetland and aquatic habitat exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative E: Most Dog Walking Access/Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;

- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and, potentially, ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on-leash dog walking if allowing on-leash dog walking would impede attainment of the park's desired future conditions. Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands.

It is entirely possible that new lands managed by GGNRA could include wetland and/or aquatic habitats that could be affected by dog activities. Some wetland and/or aquatic plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover, due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive wetland and aquatic vegetation exist at the site. It is assumed that ROLAs would not be established in sensitive wetland or aquatic habitat so that the park's desired future conditions can be attained. Even so, dogs in a ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and any ROLAs would be long term, minor to moderate, and adverse because effects would be measurable and perceptible, but may be localized in a relatively small area.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetland or aquatic habitats even if a trail is developed (or previously located) adjacent to a wetland or aquatic habitat; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs would protect water bodies and surrounding wetland and/or aquatic vegetation. Therefore, assuming compliance, overall impacts on wetland and aquatic vegetation from dog walkers as a result of alternative E would range from negligible to long term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on wetland and aquatic vegetation would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible

impact on wetland and aquatic habitats. At sites where commercial dog walking is common, impacts on wetland and aquatic habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on wetland and aquatic vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wetland and aquatic habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLA and LOD area	Dog impacts would be concentrated in the ROLAs; nutrient loading from dog waste, and physical disturbance such as trampling, digging, and dog waste, would occur		
Overall negligible to long-term moderate adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive wetland and aquatic resources exist at the site. It is entirely possible that new lands managed by GGNRA could include wetland and aquatic habitats.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetland or aquatic habitats even if a trail is developed (or previously located) adjacent to a wetland or aquatic habitat; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and surrounding wetland and/or aquatic vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Some wetland and aquatic plant species, including CNPS-listed plant species at GGNRA, are sensitive and easily disturbed by trampling, digging, and other dog activities. These plants may not recover, due to their sensitive nature, or their disturbance may create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on wetland and aquatic vegetation as a result of the preferred alternative would be negligible to long term, minor, and adverse. No impact on wetland or aquatic habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wetland vegetation. At sites where commercial dog walking is common, impacts to vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wetland and aquatic vegetation from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wetland vegetation in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wetland and aquatic habitat exist in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Habitat Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect wetland and aquatic resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

NATIVE HARDWOOD FORESTS AND DOUGLAS-FIR/COAST REDWOODS

In the planning area at GGNRA, native hardwood forests exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker. The Douglas-fir and coast redwood community is found sporadically in portions of Homestead Valley and in Oakwood Valley but outside the area accessed by dogs; therefore, impacts on this community at these sites is not discussed further in this section.

Therefore, the native hardwood forest and/or Douglas-fir/coast redwood communities exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker, and impacts on these communities at these sites are discussed in more detail in the paragraphs that follow.

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Under current conditions, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 9), with typically 5 to 12 dogs under voice control per commercial walker. Native hardwood communities occur adjacent to Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Under alternative A, physical damage to vegetation from dogs through trampling, digging, and dog waste would continue to occur since dogs would be allowed under voice control and there is a higher likelihood of dogs going off the trail and fire roads than if they were on leash. Impacts in these areas could prevent the growth of vegetation or allow the establishment of non-native invasive species. These impacts would be considered long term, minor, and adverse due to the high use by commercial dog walkers and because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on vegetation. Dogs under voice control would continue to disturb vegetation due to trampling, digging, and dog waste.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007),

can also beneficially affect vegetation at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The long-term minor adverse impacts on native hardwood communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 24). No indirect impacts on native hardwood and Douglas-fir/coast redwood vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include all areas adjacent to the edges of the trail/fire roads up to 6 feet. Impacts on native hardwood vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively reduced area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Alta Trail/Orchard Fire Road/Pacheco Fire Road under this alternative were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site. However, only negligible indirect impacts on native hardwood and Douglas-fir/coast redwood vegetation would be expected because it is unknown where and to what extent native hardwood vegetation in adjacent lands could be affected by dogs.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on native hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized

above. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on native hardwood vegetation would be expected. Impacts on native hardwood vegetation from commercial dog walkers would be similar to impacts from other dog walkers; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on native hardwood communities at this park site and indirect impacts on native hardwood forest and Douglas-fir/coast redwood communities in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on native hardwood communities in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on native hardwood vegetation from dogs would occur at this site.

Since dogs would not be allowed at Alta Trail, Orchard Fire Road, and Pacheco Fire Road, there would be no impact from commercial dog walkers on native hardwood forest and Douglas-fir/coast redwood vegetation.

Cumulative Impacts. The lack of impacts on native hardwood communities from dogs at Alta Trail, Orchard Fire Road, and Pacheco Fire Road under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration and trail rehabilitation projects combined with the lack of impacts on native hardwood communities from alternative D would result in beneficial cumulative impacts.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D since this alternative would not allow dogs at this site. However, because it is not known where these dog walkers would go and where and to what extent native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent parks could be affected by dogs, negligible impacts would occur in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on native hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Under alternative E, the cumulative impacts on native hardwood communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on native hardwood and Douglas-fir/coast redwood communities in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The preferred alternative would allow on-leash dog walking on the Alta Trail to Orchard Fire Road and on Orchard and Pacheco fire roads. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include all areas adjacent to the edges of the trail/fire

roads up to 6 feet. Impacts on native hardwood vegetation could include physical damage from trampling and digging, as well as nutrient addition from dog waste and urine. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of native vegetation, some of it rare, such as the Oakland mariposa lily. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively reduced area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on native hardwood vegetation from dogs at the site. Overall impacts on native hardwood vegetation from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Projects and actions in and near Alta Trail, Orchard Fire Road, and Pacheco Fire Road were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Alta Trail/Orchard Fire Road/Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Under the preferred alternative, the negligible impacts on native hardwood communities from dogs at Alta Trail/Orchard Fire Road/Pacheco Fire Road under this alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 24). The adjacent lands may experience increased visitation by individual and commercial dog walkers under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site. However, only negligible indirect impacts on native hardwood vegetation would be expected because it is

unknown where and to what extent native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands could be affected by dogs.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed on leash or under voice control on Oakwood Valley Fire Road and Oakwood Valley Trail from the junction with the fire road to the junction with Alta Trail. On-leash dog walking is allowed on Oakwood Valley Trail from the trailhead to the junction with Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 9). Oakwood Valley contains native hardwood vegetation; this site also contains Douglas-fir and coast redwood communities, but these occur outside the area accessed by dogs.

Under alternative A, physical disturbance from dog activities would continue to occur along the fire road and trail and in off-trail areas throughout the site. Due to their nature, dogs are not expected to stay on the fire road/trail. Since dogs would be allowed under voice control in some areas of the site, there is a higher likelihood that dogs would go off trail than if they were on leash, creating impacts on native hardwood vegetation in adjacent areas. Therefore, these impacts would be considered long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Oakwood Valley, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

The long-term minor adverse impacts on native hardwood communities from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused through physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Oakwood Valley road and trail loop in the lower section of the site. No dogs would be allowed above the junction of the road and trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts in areas adjacent to the trail (LOD area) would be long term, minor, and adverse since this habitat supports the growth of existing vegetation, which would be affected by trampling, digging, and dog waste. Impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the Park Stewardship Programs

and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking would not be allowed under alternative B. However, indirect impacts on native hardwood vegetation in adjacent lands from increased dog use would be negligible since most of the area (road/trail) offered for dog walking would not change and it is unknown where and to what extent native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands could be affected by dogs.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice and sight control in the ROLA on the Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There would be impacts from locating and constructing the fence and gates that would extend beyond the ROLA. After the ROLA is open to dogs, the area would be devoid of any vegetation; therefore, there would be impacts in the ROLA where the shoulders of the trails, which are currently vegetated, would become part of the ROLA. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and ROLA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and the ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash in all areas outside the ROLA would protect vegetation off trail, and the areas in the ROLA would be fenced. Therefore, assuming compliance, the overall impact on native hardwood vegetation from dog walking at

Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from alternative C would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A should not experience increased visitation under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative. No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would occur.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLA	Vegetation adjacent to trails/roads and in ROLAs would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; LOD area and ROLAs are a small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Oakwood Valley Fire Road from Tennessee Valley Road to the junction with Oakwood Valley Trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the fire road. Impacts on native hardwood vegetation in the LOD area would be long term, minor, and adverse and would be caused by trampling, digging and dog waste; impacts would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail.

Therefore, assuming compliance, the overall impact on native hardwood vegetation from on-leash dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on native hardwood vegetation.

Cumulative Impacts. The negligible impacts on native hardwood communities from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from alternative D would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking would not be allowed under alternative D, and the Oakwood Valley Fire Road would be the only area offered for dog walking. However, indirect impacts on native hardwood vegetation in adjacent lands from increased dog use would be negligible since dog walking would still be offered under alternative D and it is unknown where and to what extent native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands could be affected by dogs.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with noncontinuous fencing where needed to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Alternative E would have the same impacts as alternative C, assuming compliance: long term, minor, and adverse in the LOD area and ROLA and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore,

commercial dog walking under alternative E would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on native hardwood communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative C: negligible cumulative impacts and no indirect impacts on native hardwood forest and Douglas-fir/coast redwood communities in adjacent lands.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail (LOD area) and in ROLA	Vegetation adjacent to trails and in ROLA would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and LOD areas and ROLAs are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Oakwood Valley. The preferred alternative proposes a ROLA on the Oakwood Valley Fire Road to the junction with Oakwood Valley Trail. Double gates would be located at both ends, with continuous fencing to protect sensitive habitat. Oakwood Valley Trail would allow on-leash dog walking from the junction with Oakwood Valley Fire Road to a new gate at Alta Trail. Dogs under voice and sight control in the ROLA on Oakwood Valley Fire Road would have access to the land between the edge of the trail and the fence (LOD area). The vegetation in this area would be affected by physical disturbance from dog activities. Dogs in the ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There would be impacts from locating and constructing the fence and gates that would extend beyond the ROLA. After the ROLA is open to dogs, the area would be devoid of any vegetation; therefore, there would be impacts in the ROLA where the shoulders of the trails, which are currently vegetated, would become part of the ROLA. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined into a smaller area directly adjacent to natural habitat. Dogs would affect vegetation in the LOD area of the on-leash portion of Oakwood Valley Trail as well. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation in the LOD area and ROLA would be long term, minor, and adverse because effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area and the ROLA would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash in all areas outside the ROLA would protect vegetation off trail, and the areas in the ROLA would be fenced. Therefore, assuming compliance, the overall impact on native hardwood vegetation from dog walking at Oakwood Valley would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private,

could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Oakwood Valley. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Oakwood Valley.

The negligible impacts on native hardwood communities from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). The adjacent lands should not experience increased visitation under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA under this alternative. No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would occur.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area) and in the ROLA	Vegetation adjacent to trail/road and in ROLA would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; LOD areas and ROLAs are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. Currently, dogs are required to be on leash throughout Fort Baker. Dogs are not allowed on the Chapel Trail or the pier. This site experiences low dog walking use, although there were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum (NPS 2007c). Dogs on leash have access to areas adjacent to the trails/fire roads, where viable plant communities exist. Impacts on this vegetation would include physical disturbance through trampling and digging, as well as nutrient addition, which would prevent the growth of new vegetation. Since compliance has been an issue at this site, it is likely that many dogs are off leash and go beyond the trails and fire roads.

Under alternative A, long-term minor adverse impacts would continue to occur on the native hardwood vegetation that occurs in the northeast portion of the Fort Baker site because impacts would be measurable and perceptible but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Fort Baker, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

The long-term minor adverse impacts on native hardwood communities from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on native hardwood communities from alternative A. Therefore, cumulative impacts on native hardwood communities under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Impacts on vegetation from dogs would be caused by physical damage such as trampling, digging, and dog waste; these effects, as well as fragmentation, could lead to the spread of invasive plant species	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts would result from dogs through physical disturbance from trampling and digging and nutrient addition, which would prevent the growth of new vegetation. The impacts in the LOD area under alternative B would be long term, minor, and adverse because the effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. The negligible adverse impacts on native hardwood communities from dog activities at this site under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from alternative B would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would be expected under alternative B since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, with the addition of on-leash dog walking on the Battery Yates Loop, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on native hardwood communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on native hardwood forest and Douglas-fir/coast redwood communities in adjacent lands.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge/Conference Center Grounds and on the Bay Trail

(excluding the Battery Yates Loop), and no dogs would be allowed on the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts in the LOD area would be long term, minor, and adverse since these areas support the growth of existing vegetation and would be affected by trampling, digging and dog waste. Effects would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative D would allow less dog access at the site, the difference in dog impacts between alternatives D and B is not considered large enough to cause a change in the intensity of the impact due to the developed nature of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on native hardwood vegetation.

Cumulative Impacts. The negligible adverse impacts on native hardwood communities from dog activities at this site under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from alternative D would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

Negligible indirect impacts on native hardwood vegetation in adjacent lands may occur under alternative D since on-leash dog walking would not be allowed in the Parade Ground. Visitors with dogs may choose to go to another park site that has a large area for walking dogs but it is unknown where and to what extent native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands could be affected by dogs.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on native hardwood vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Under alternative E, the cumulative impacts on native hardwood communities at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on native hardwood forest and Douglas-fir/coast redwood communities in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail, the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. Dogs will not be allowed on the Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. Impacts would result from dogs through physical disturbance from trampling and digging and nutrient addition, which would prevent the growth of new vegetation. The impacts in the LOD area would be long term, minor, and adverse because the effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail. Therefore, assuming compliance, the overall impacts on native hardwood vegetation from on-leash dog walking at Fort Baker would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. Any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs; permits would restrict use by time and area. Permits would be allowed for Fort Baker. Impacts on vegetation from permit holders with four to six dogs would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers.

Therefore, commercial dog walking under the preferred alternative would have negligible impacts on native hardwood vegetation.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Fort Baker. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Fort Baker.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on native hardwood forest communities. Even though these efforts both within and beyond park boundaries would affect vegetation, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on native hardwood communities from dog activities at this site under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs and other restoration projects combined with the negligible impacts from the preferred alternative would result in negligible impacts on native hardwood communities at this park site.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on native hardwood forest and Douglas-fir/coast redwood vegetation in adjacent lands would be expected under the preferred alternative since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect vegetation off trail; trails and the LOD area are a small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Native Hardwood Forest and Douglas-fir/Coast Redwood

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive native hardwood or Douglas-fir/coast redwood resources exist at the site.

At new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, impacts on native hardwood or Douglas-fir/coast redwood habitat from on-leash dog walking as a result of alternative A would be negligible because impacts would result in no measurable or perceptible changes in the plant community. No impact on native hardwood or Douglas-fir/coast redwood habitat would be expected at sites that are closed to or proposed for closure to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on native hardwood or Douglas-fir/coast redwood habitat. At sites where commercial dog walking is common, impacts to vegetation from commercial dog walkers would be similar to impacts from other dog walkers and would be negligible.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on native hardwood or Douglas-fir/coast redwood habitat in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent native hardwood or Douglas-fir/coast redwood habitat exists in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. For new lands that come under the management of GGNRA, alternative B would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative B would allow on-leash dog walking unless conditions

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether native hardwood or Douglas-fir/coast redwood resources exist at the site.

At new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, impacts on native hardwood or Douglas-fir/coast redwood habitat from on-leash dog walking as a result of alternative B would be negligible because impacts would result in no measurable or perceptible changes in the plant community. No impact on native hardwood or Douglas-fir/coast redwood habitat would be expected at sites that are closed to or proposed for closure to dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on native hardwood or Douglas-fir/coast redwood habitat. At sites where commercial dog walking is common, impacts on this habitat from commercial dog walkers would be similar to impacts from other

dog walkers. Overall impacts on native hardwood or Douglas-fir/coast redwood habitat from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on native hardwood or Douglas-fir/coast redwood habitats in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent native hardwood or Douglas-fir/coast redwood habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dog walking regulations in new lands would be the same as alternative B, and impacts would be the same, assuming compliance: negligible impacts overall and no impact at sites that prohibit dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on native hardwood or Douglas-fir/coast redwood habitat. At sites where commercial dog walking is common, impacts on this habitat from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on native hardwood or Douglas-fir/coast redwood habitat from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on native hardwood or Douglas-fir/coast redwood habitats in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent native hardwood or Douglas-fir/coast redwood habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include native hardwood or Douglas-fir/coast redwood habitats.

At new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, impacts on native hardwood or Douglas-fir/coast redwood habitat from on-leash dog walking as a result of alternative D would be negligible because impacts would result in no measurable or perceptible changes in the plant community. No impact

on native hardwood or Douglas-fir/coast redwood habitat would be expected at sites that are closed to or proposed for closure to dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on native hardwood or Douglas-fir/coast redwood habitats.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on native hardwood or Douglas-fir/coast redwood habitats in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent native hardwood or Douglas-fir/coast redwood habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands Negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative E: Most Dog Walking Access/Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless conditions

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking, and potentially ROLAs, at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on-leash dog walking if allowing on-leash dog walking would impede attainment of the park's desired future conditions. Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether native hardwood or Douglas-fir/coast redwood habitats exist at the site.

It is assumed that ROLAs would not be established in sensitive native hardwood or Douglas-fir/coast redwood habitats so that the park's desired future conditions can be attained. Even so, dogs in a ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation adjacent to the LOD area and ROLA would be long term, minor, and adverse because effects would be measurable and perceptible, but localized in a relatively small area.

At most new lands, outside the ROLAs, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs on leash would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, overall impacts on native hardwood or Douglas-fir/coast redwood habitats from dog walkers as a result of alternative E would range from negligible to long term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on native hardwood or Douglas-fir/coast redwood habitats would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on native hardwood or Douglas-fir/coast redwood habitats. At sites where commercial dog walking is common, impacts on these habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on native hardwood or Douglas-fir/coast redwood habitats from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community wildlife in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in the ROLA and LOD area	Dog impacts would be concentrated in the ROLA; nutrient loading from dog waste, and physical disturbance such as trampling, digging, and dog waste, would occur		
Overall negligible to long-term minor adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include native hardwood or Douglas-fir/coast redwood habitats.

At new lands, the impacts from allowing on-leash dog walking would be negligible because physically restraining dogs would protect vegetation off trail and it is assumed that the area affected would be relatively small compared to the total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Therefore, assuming compliance, impacts on native hardwood or Douglas-fir/coast redwood habitat from on-leash dog walking as a result of the preferred alternative would be negligible because impacts would result in no measurable or perceptible changes in the plant community. No impact on native hardwood or Douglas-fir/coast redwood habitat would be expected at sites that are closed to or proposed for closure to dogs.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on the native hardwood or Douglas-fir/coast redwood habitat. At sites where commercial dog walking is common, impacts to vegetation from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to the native hardwood or Douglas-fir/coast redwood habitat from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on native hardwood or Douglas-fir/coast redwood habitats in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent native hardwood or Douglas-fir/coast redwood habitats exist in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir/Coast Redwood Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect native hardwood or Douglas-fir/coast redwood vegetation resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

RIPARIAN FOREST AND STREAM CORRIDORS

Riparian plant communities in GGNRA include streamside corridors of forests, shrubs, and herbaceous vegetation that tolerate moist conditions. The sites in GGNRA that possess riparian habitat include: Easkoot Creek at Stinson Beach, Redwood Creek at Muir Beach in Marin County, Marin Headlands Trails along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing, and Lobos Creek at Baker Beach. The area at the Lobos Creek inlet that supports riparian vegetation is generally not used by visitors with dogs and is not affected by this plan/EIS (NPS 2009I). At Easkoot Creek, the creek is densely vegetated with riparian plant species and generally difficult to access. Therefore, impacts on riparian vegetation as a result of alternatives A through E at both Lobos Creek at Baker Beach and Easkoot Creek at Stinson Beach would be negligible and are not discussed further in this section. Below and discussed in more detail include the following sites: Muir Beach (Redwood Creek) and Marin Headlands Trails (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing).

MARIN COUNTY SITES

Muir Beach

Alternative A: No Action. At Muir Beach, riparian forest habitat surrounds the parking lot to the north and east and continues south adjacent to the grassland habitat. Under alternative A, on-leash dog walking is allowed in the parking lot and dogs are allowed under voice control on the beach and on the boardwalk/path to the parking lot. This site has moderate to high visitor use by beachgoers and hikers (table 9). The park has closed the lagoon and Redwood Creek, although it has been observed that these closures have been violated and dogs have accessed Redwood Creek (appendix G).

Under alternative A, dogs in the parking lot could enter the areas containing riparian forest. As a result, continued long-term minor adverse impacts on riparian vegetation would occur under this alternative because the integrity of the plant community could be negatively affected by dogs through trampling, digging, and dog waste; these effects would be measurable and perceptible, but would be localized in a relatively small area.

No permit system exists for commercial dog walking under alternative A. At Muir Beach, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* plan restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from the *Muir Beach Wetland and Creek Restoration*, through restoring and enhancing ecological processes near the mouth of Redwood Creek as well as enhancing

habitat and improving erosion and sedimentation conditions (NPS 2009r, 1). The Park Stewardship Programs Initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c, 1).

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which can ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on riparian vegetation from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and improvement projects should reduce some of the adverse impacts on riparian vegetation from alternative A. Therefore, cumulative impacts on riparian vegetation under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). No indirect impacts on riparian forest and stream corridor communities in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Redwood Creek has been closed to dogs by the NPS to protect sensitive habitat in the watershed, but there is no physical barrier and off-leash dogs enter the riparian areas as well as the creek; this habitat would continue to be subject to impacts from dogs through trampling, digging, and dog waste	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking in the parking area and on the Pacific Way Trail, the boardwalk/path to beach, and the beach. The riparian forest located adjacent to Muir Beach would be generally protected by physically restraining dogs on leash. However, on-leash dog walking is based on an allowed 6-foot dog leash. Riparian forest vegetation located in the

6-foot areas adjacent to the trail and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling and digging in vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from alternative B would result in negligible cumulative impacts on riparian vegetation at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative. However, on-leash dog walking would still be allowed in the site; therefore, indirect impacts on riparian vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent riparian forest and stream corridor communities in adjacent parks could be affected by dogs.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails and beach (LOD area)	Riparian vegetation adjacent to the trails and beach would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on riparian vegetation.

Cumulative Impacts. Under alternative C, the cumulative impacts on riparian vegetation at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible indirect impacts on riparian forest and stream corridor communities in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails and beach (LOD area)	Riparian vegetation adjacent to the trails and beach would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. In the vicinity of Muir Beach, alternative D would allow on-leash dog walking in the parking area and on the Pacific Way Trail. The boardwalk/path to beach and the beach itself would be closed to dogs. These on-leash areas are surrounded by riparian forest; therefore, impacts would be expected to be similar to those described for alternative B. Riparian forest vegetation located in the 6-foot area adjacent to the trail and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling and digging in vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small portion of the site. Therefore, assuming compliance, the overall impact on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative D was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from alternative D would result in negligible cumulative impacts on riparian vegetation at this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mount Tamalpais State Park, because it is the closest dog use area. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative; however, on-leash dog walking would still be allowed on the site. Therefore, indirect impacts on riparian vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent riparian forest and stream corridor communities in adjacent parks could be affected by dogs.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail and parking area (LOD area)	Riparian vegetation adjacent to the trail and parking area would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Under alternative E at Muir Beach, the parking area, the Pacific Way Trail, and the boardwalk/path to the beach would be open to on-leash dog walking. The portion of Muir Beach south of the access path would be a designated ROLA and dogs would be prohibited on the remainder of the beach north of the access path. The ROLA designated as part of this alternative, the Pacific Way Trail, and the parking lot are located immediately adjacent to riparian forest. Riparian forest vegetation located in the 6-foot area adjacent to the trail and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling and digging in vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash in areas beyond the ROLA would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a

permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration and improvement projects combined with the negligible impacts from alternative E would result in negligible cumulative impacts on riparian vegetation at this park site.

Indirect Impacts in Adjacent Parks

No indirect impacts on riparian forest and stream corridor communities in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking (in a ROLA) would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in the LOD area and ROLA	Riparian vegetation adjacent to trails/parking lot/ROLA would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area and ROLAs are a small portion of the entire site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. The preferred alternative would allow on-leash dog walking in the parking area and on the Pacific Way Trail. The boardwalk/path to beach and the beach itself would be closed to dogs. The tidal lagoon and Redwood Creek is currently closed to dogs. Riparian forest vegetation located in the 6-foot area adjacent to the trail and parking lot (LOD area) would receive long-term minor adverse impacts from dogs trampling and digging in vegetated areas; nutrient addition from dog waste would also occur. The effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. Physically restraining dogs on leash would protect vegetation off trail, and trails in riparian habitat constitute a small area in comparison to the entire site. Therefore, assuming compliance, the overall impacts on riparian vegetation from on-leash dog walking at Muir Beach would be negligible because impacts would result in no measurable or perceptible changes in the plant community.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain, as well as expanding riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from the *Muir Beach Wetland and Creek Restoration Project*, through restoring and enhancing ecological processes near the mouth of Redwood Creek as well as enhancing habitat and improving erosion and sedimentation conditions (NPS 2009r, 1). The Park Stewardship Programs Initiative at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats (GGNPC 2010c, 1).

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which can ultimately affect the fisheries in the stream.

The negligible impacts on riparian vegetation from dogs at Muir Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and improvement projects combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on riparian vegetation at this park site.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 24). The adjacent lands may experience increased visitation under alternative D, particularly Mount Tamalpais State Park, because it is the closest dog use area. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative; however, on-leash dog walking would still be allowed on the site. Therefore, indirect impacts on riparian vegetation in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent riparian forest and stream corridor communities in these adjacent parks could be affected by dogs.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trail and parking area (LOD area)	Riparian vegetation adjacent to the trail and parking area would be affected by dogs through trampling, digging, and dog waste		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail; trails and the LOD area are a small portion of the site; trails in riparian habitat are a small area in comparison to the entire site; trails generally receive low to moderate use	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Under current conditions, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith-Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88, including portions of the Lagoon Trail); the Coastal, Wolf Ridge, and Miwok Trail Loop; and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers and there were 47 leash law violations issued and 137 recorded incidents of dogs in closed areas in 2007/2008 (table 9 and appendix G). Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length and the Lagoon Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon; portions of both of these trails are currently open to dogs under voice control. Physical disturbance and nutrient addition are currently happening along the trails and in off-trail areas due to unleashed dogs.

Because only a portion of the entire site supports riparian vegetation in areas that would be open to dogs, alternative A would result in continued long-term minor adverse impacts on the riparian community as a result of dogs through trampling, digging, and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

Under alternative A, no permit system exists for dog walking. At the Marin Headlands Trails, commercial dog walking is uncommon; therefore, commercial dog walking would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which can ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and restoration projects should reduce some of the adverse impacts on riparian vegetation from alternative A. Therefore, negligible cumulative impacts on riparian vegetation would result from alternative A.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). No indirect impacts on riparian forest and stream corridor communities in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dogs would affect riparian vegetation along the Lower Rodeo Valley Trail Corridor and along the Lagoon Trail through trampling, digging, and dog waste; nutrient addition would also occur outside the LOD area	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs on the trails at the Marin Headlands. Not allowing dog walking on the Marin Headlands Trails would eliminate physical disturbance by dogs and nutrient addition from dog waste. Therefore, assuming compliance, alternative B would result in no impact on riparian vegetation at the site.

Since dogs would not be allowed on the Marin Headlands Trails, there would be no impact from commercial dog walkers on the riparian vegetation community.

Cumulative Impacts. The lack of impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative B was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation and restoration projects combined with the lack of impacts on riparian vegetation from alternative B would result in beneficial cumulative impacts on riparian vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. Indirect impacts on riparian vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent riparian forest and stream corridor communities in these adjacent parks could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use—Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor; several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length and the Lagoon Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon. Although only a portion of the Rodeo Valley Trail is currently open to dogs, under alternative C an additional section in riparian habitat would be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley; the Lagoon Trail would allow on-leash dog walking. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Therefore, impacts in the LOD area would be long term, minor, and adverse since the vegetation in these areas would be affected by trampling, digging, and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a fair portion of the site as a whole. However, physically restraining dogs on leash would protect habitat off trail along the Lower Rodeo Valley Trail Corridor. Therefore, assuming compliance, alternative C would result in overall negligible impacts on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at the Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation and restoration projects combined with the negligible impacts on riparian vegetation from alternative C would result in negligible cumulative impacts on riparian vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on riparian vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent riparian forest and stream corridor communities in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails). Therefore, assuming compliance, no impact on riparian vegetation would occur as a result of alternative D.

Since dogs would not be allowed on the Marin Headlands Trails, there would be no impact from commercial dog walkers on the riparian vegetation community.

Cumulative Impacts. Under alternative D, the cumulative impacts on riparian vegetation at this park site and indirect impacts in adjacent lands would be the same as those under alternative B: beneficial

cumulative impacts and negligible impacts on riparian forest and stream corridor communities in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at the site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, the Lagoon Trail, and the Coastal Trail Bike Route. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length and the Lagoon Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon. Although only a portion of the Lower Rodeo Valley Trail Corridor is currently open to dogs, under alternative E, an additional section in riparian habitat would be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. This alternative would allow dog access only on the perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking will also be allowed on the Lagoon Trail under alternative E. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts in the LOD area would be long term, minor, and adverse since some of the riparian vegetation along the Lower Rodeo Valley Trail Corridor has not been previously disturbed and would be affected by trampling, digging, and dog waste. Effects would be measurable and perceptible, but would be localized in a relatively small area. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impacts relative to the area of the site.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area compared to the site as a whole. However, physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor and along the Lagoon Trail. Therefore, assuming compliance, alternative E would result in overall negligible impacts on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community. Although more trails would be available to dogs in comparison to alternative C, the overall impact on vegetation from on-leash dog walking would still be negligible, assuming compliance.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have negligible impacts on riparian vegetation.

Cumulative Impacts. The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the rehabilitation and restoration projects combined with the

negligible impacts on riparian vegetation from alternative E would result in negligible cumulative impacts on riparian vegetation.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on riparian vegetation in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent riparian forest and stream corridor communities in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor and the Lagoon Trail, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Marin Headlands Trails. This alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor; several trails, including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail; the Battery Smith-Guthrie Fire Road Loop; and the Old Bunker Fire Road Loop. Within the Marin Headlands Trails, the Rodeo Valley Trail Corridor parallels riparian habitat for its entire length and the Lagoon Trail both passes through and is adjacent to riparian habitat along both sides of Rodeo Lagoon. Although only a portion of the Rodeo Valley Trail is currently open to dogs, under the preferred alternative, an additional section in riparian habitat would be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley; the Lagoon Trail would allow on-leash dog walking. Although only a portion of this trail is currently open to dogs, under the preferred alternative an additional section in riparian habitat would be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trails/fire roads. Therefore, impacts in the LOD area would be long term, minor, and adverse since the vegetation in these areas will be affected by trampling, digging, and dog waste; effects would be measurable and perceptible, but would be localized in a relatively small area.

The long-term minor adverse impacts from dogs in the LOD area would occur in a fair portion of the site as a whole. However, physically restraining dogs on leash would protect habitat off trail along the Lower Rodeo Valley Trail Corridor. Therefore, assuming compliance, the preferred alternative would result in an

overall negligible impact on riparian vegetation because impacts would result in no measurable or perceptible changes in the plant community.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at the Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at the Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have negligible impacts on riparian vegetation.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs Initiative projects provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. Habitat restoration and the implementation of projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities, such as the GGNRA *Long-range Transportation Plan Update*, require project-specific mitigation measures to address impacts on these communities and their wildlife. Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation can lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which can ultimately affect the fisheries in the stream.

The negligible impacts on riparian vegetation from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the rehabilitation and restoration projects combined with the negligible impacts on riparian vegetation from the preferred alternative would result in negligible cumulative impacts on riparian vegetation.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 24). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of the preferred alternative not allowing dogs under voice control at the Marin Headlands Trails. Indirect impacts on riparian vegetation in adjacent lands from

increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent riparian forest and stream corridor communities in adjacent lands could be affected by dogs.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridors adjacent to trails (LOD area)	Vegetation adjacent to trails would be affected by dogs through trampling, digging, and dog waste; nutrient addition would also occur		
Overall negligible impacts, assuming compliance	Physically restraining dogs would protect habitat off trail along the Lower Rodeo Valley Trail Corridor, which supports riparian habitat; LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

New Lands: Riparian Forest and Stream Corridors

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive riparian and stream resources exist at the site.

At most new lands, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive riparian or stream habitats even if a trail is developed (or previously located) adjacent to these habitats. Physically restraining dogs on leash would protect these resources and would minimize dog access to these areas. If dogs gain access to these communities, impacts on the riparian vegetation and any CNPS-listed plant species in the area could be elevated to long term, minor, and adverse. Therefore, overall impacts on riparian forest and stream habitat in new lands from dog walkers as a result of alternative A would range from negligible to long term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on riparian forest and stream habitat would be expected at sites that are closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on riparian forest and stream habitats. At sites where commercial dog walking is common, impacts to vegetation from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian forest and stream habitats in adjacent lands would range from no indirect impacts on vegetation from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent riparian forest and stream habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. For new lands that come under the management of GGNRA, alternative B would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative B would allow on-leash dog walking unless conditions

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive riparian and stream resources exist at the site.

At most new lands, assuming compliance, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive riparian and stream habitats even if a trail is developed (or previously located) adjacent to a stream; walking dogs on leash would minimize dog access

to these areas. Physically restraining dogs on leash would protect water bodies and surrounding riparian vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Riparian plant species, including CNPS-listed plant species at GGNRA, could be disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, which would create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on riparian and stream habitat in new lands from dog walkers as a result of alternative B would range from negligible to long term, minor, and adverse. No impact on riparian and stream habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on riparian and stream habitat. At sites where commercial dog walking is common, impacts on riparian and stream habitat from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on riparian and stream habitat from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian and stream habitat in adjacent lands would range from no indirect impacts on these habitats from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent riparian and stream habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative C: Emphasis on Multiple Use—Balanced by County. Under alternative C, dog walking regulations in new lands would be the same as alternative B, and impacts would be the same, assuming compliance: negligible to long-term minor adverse impacts overall, and no impact at sites that prohibit dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on riparian and stream habitat. At sites where commercial dog walking is common, impacts on riparian and stream habitat from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on riparian and stream habitat from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian and stream habitat in adjacent lands would range from no indirect impacts on these habitats from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent riparian and stream habitats exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative D: Most Protective Based on Resource Protection/Visitor Safety. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or

- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include riparian and stream resources.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive riparian and stream habitats even if a trail is developed (or previously located) adjacent to a stream; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and surrounding riparian vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Riparian plant species, including CNPS-listed plant species at GGNRA, could be disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, which would create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, impacts would be considered long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on riparian and stream habitat in new lands as a result of alternative D would range from negligible to long term, minor, and adverse. No impact on riparian and stream habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on riparian and stream habitats.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian and stream habitat in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent riparian and stream habitat exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream corridor resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands

N/A = not applicable.

Alternative E: Most Dog Walking Access/Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless conditions:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- impede or interfere with park programs or activities; or
- trigger the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control of

- off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on-leash dog walking, and potentially ROLAs, at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on-leash dog walking if allowing on-leash dog walking would impede attainment of the park's desired future conditions. Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if riparian and stream habitats exist at the site. It is assumed that ROLAs would not be established within sensitive riparian and stream habitat so the park's desired future conditions can be attained.

It is entirely possible that new lands managed by GGNRA could include riparian and stream habitats that could be affected by dog activities. Some riparian plant species, including CNPS-listed plant species at GGNRA, could be disturbed by trampling, digging, and other dog activities, or may create opportunities

for the establishment of non-native and/or invasive plant species. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive riparian vegetation exists at the site. It is assumed that ROLAs would not be established in sensitive riparian or stream habitat so that the park's desired future conditions can be attained. Even so, dogs in a ROLA would be confined to a smaller area, potentially increasing the impacts on the adjacent natural habitat and vegetation. There is also a potential for an increase in nutrient loading from dog waste due to having more dogs confined to a smaller area directly adjacent to natural habitat. Impacts would result from physical disturbance, such as trampling, digging, and dog waste. Impacts on vegetation adjacent to the LOD area and any ROLAs would be long term, minor to moderate, and adverse because effects would be measurable and perceptible, but may be localized in a relatively small area.

At most new lands, assuming compliance, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access stream habitats even if a trail is developed (or previously located) adjacent to a stream; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and surrounding riparian vegetation. Therefore, assuming compliance, overall impacts on riparian and stream habitat in new lands from dog walkers as a result of alternative E would range from negligible to long term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. No impact on riparian and stream habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on riparian and stream habitats. At sites where commercial dog walking is common, impacts on these habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on riparian and stream habitats from dogs walked by both commercial dog walkers and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian and stream habitat in adjacent lands would range from no indirect impacts on these habitats from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent riparian and stream habitat exist in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLAs and LOD area	Dog impacts would be concentrated in the ROLAs; nutrient loading from dog waste, and physical disturbance such as trampling, digging, and dog waste, would occur		
Overall negligible to long-term moderate adverse impacts, assuming compliance; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream resources; undisturbed natural areas or sensitive plant species would be more easily disturbed; dogs in ROLAs could increase impacts in and adjacent to the ROLAs	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities, from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine whether sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include riparian and stream resources.

At most new lands, assuming compliance, impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive riparian and stream habitats even if a trail is developed (or previously located) adjacent to a stream; walking dogs on leash would minimize dog access to these areas. Physically restraining dogs on leash would protect water bodies and surrounding riparian vegetation. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. Riparian plant species, including CNPS-listed plant species at GGNRA, could be disturbed by trampling, digging, and other dog activities. These plants may not recover due to their sensitive nature, which would create opportunities for the establishment of non-native and/or invasive plant species. At sites where natural habitat exists and humans and dogs have not previously affected the area, impacts would be considered

long term, minor, and adverse because these lands are intact and preserved, and are more sensitive to new impacts from humans and/or dogs. Dogs could affect vegetation through trampling, digging, and dog waste. Therefore, assuming compliance, overall impacts on riparian and stream habitat in new lands as a result of the preferred alternative would range from negligible to long term, minor, and adverse. No impact on riparian and stream habitat would be expected at sites that are currently closed to or proposed for closure to dogs.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on riparian and stream habitat. At sites where commercial dog walking is common, impacts to riparian and stream habitat from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to riparian and stream habitat from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on riparian and stream habitat in adjacent lands would range from no indirect impacts on riparian and stream habitat from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent riparian and stream habitat exist in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts; no impact at sites that prohibit dogs	Physically restraining dogs would protect riparian and stream corridor resources; undisturbed natural areas or sensitive plant species would be more easily disturbed	N/A	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands

N/A = not applicable.

WILDLIFE

As stated previously in chapter 3, GGNRA supports a rich assemblage of wildlife in grasslands, coastal scrub, wetlands, and forests that compose the coastal ecosystem. Approximately 387 vertebrate species occur within the park boundaries, including 11 amphibians, 20 reptiles, 53 fish, 53 mammals, and 250 birds; terrestrial invertebrates are less well known. The documented species list includes species that are federally or state listed as threatened, endangered, or candidate species as well as species that are of local or management concern. Species that are federally listed and/or candidate species are discussed in the “Special-status Species” section of this chapter. This section addresses all other wildlife species found in the park, including those considered sensitive by agencies such as the DFG, which maintains an informal list of plant and wildlife species of special concern. The NPS makes every reasonable effort to conduct its actions in a manner consistent with relevant state laws and regulations. In this section, impacts on wildlife in general are analyzed by habitat type to be consistent with the wildlife description included in chapter 3. Species are specifically analyzed where applicable and when affected by dog management as part of this plan/EIS. The sites included in the analysis of this section are those where habitat quality and/or quantity may be affected by the various alternatives considered. Urbanized sites with little wildlife habitat or value that support species acclimated to human activity (raccoons, opossums, skunks, etc.) are not analyzed in this plan/EIS. It is presumed that those acclimated species persist currently where dogs are present and will most likely continue to persist under alternatives A through E.

GGNRA is guided by a variety of legal directives, including federal and state laws, regulations, executive orders, NPS management policies, Director’s Orders, other agency and departmental policies, decisions made through other NEPA planning processes, and legal agreements. Foremost among these directives is the NPS *Organic Act of 1916* and its interpretation in the NPS *Management Policies 2006* (NPS 2006b, 10). Following is an overview of the guiding policies and regulations, a description of the study area, a definition of duration, details of the assessment methodology, and a definition of the impact thresholds for wildlife.

GUIDING POLICIES AND REGULATIONS

Federal Laws and Regulations

Code of Federal Regulations. Disturbances to wildlife are addressed under 36 CFR 2.2(a) and 2.15(a)(4). Under 2.2(a), the following are prohibited:

- The taking of wildlife, except by authorized hunting and trapping activities conducted in accordance with paragraph (b) of this section.
- The feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities.

Under 2.15(a)(4), the following is prohibited: allowing a pet to make noise that is unreasonable considering location, time of day or night, impact on park users, and other relevant factors, or that frightens wildlife by barking, howling, or making other noise. Section 2.15(a)(5) requires compliance with pet excrement disposal conditions established by the superintendent.

Migratory Bird Treaty Act of 1918. The *Migratory Bird Treaty Act* (16 USC 703–712), which was first enacted in 1918, implements domestically a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Union of Soviet Socialist Republics (USSR), which provide for international migratory bird protection and authorize the Secretary of the Interior to regulate the taking of migratory birds. The act makes it unlawful, except as allowed by regulations, “at any time,

by any means, or in any manner, to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird, included in the terms of conventions” with certain other countries (16 USC 703). This includes direct and indirect acts, although harassment and habitat modification are not included unless they result in the direct loss of birds, nests, or eggs. All the bird species at GGNRA discussed in chapters 3 and 4 are protected under the *Migratory Bird Treaty Act*, with the exception of starlings, pigeons, crows, and game birds.

Marine Mammal Protection Act. The *Marine Mammal Protection Act* (16 USC 1361–1423), which was most recently reauthorized in 1994, establishes a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters. The term “take” is statutorily defined as, “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” Harassment is defined under the 1994 amendments as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. All the marine mammal species at GGNRA discussed in chapters 3 and 4 are protected under the *Marine Mammal Protection Act* and marine mammals both strand and haul out on GGNRA beaches and other shoreline habitat. The *Marine Mammal Protection Act* defines a stranding as one or more of the following occurrences:

- Any dead marine mammal on the shore or in the water;
- A live marine mammal that is on the shore and unable to return to the water;
- A live marine mammal that is on the shore and in need of medical attention;
- A live marine mammal that is in the water but is unable to return to its natural habitat under its own power or without assistance (e.g., an animal entangled in fishing gear).

Magnuson-Stevens Fishery Management and Conservation Act. The *Magnuson-Stevens Fishery Conservation and Management Act* (PL 94-265), as amended by the *Sustainable Fisheries Act* of 1996 (PL 104-297), requires all federal agencies to consult with NOAA Fisheries (formerly the National Marine Fisheries Service) on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect essential fish habitat. Essential fish habitat is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (NOAA 2010b, 1) 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 managed species’ contribution to a healthy ecosystem.

Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds. This executive order from January 2001 provides a comprehensive strategy for the conservation of migratory birds by the federal government, thereby fulfilling the government’s duty to lead in the protection of migratory birds. The executive order provides a specific framework for the federal government’s compliance with its treaty obligations to Canada, Mexico, Russia, and Japan and serves to enhance coordination and communication among federal agencies regarding their responsibilities under the four bilateral treaties on the conservation of migratory birds (Canada—1916, Mexico—1936, Japan—1972, Russia—1978). The executive order provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance, which is still in draft format. This executive order aids in incorporating national planning for bird conservation into agency programs and provides the formal presidential guidance necessary for agencies to incorporate migratory bird conservation more fully into their programs.

NPS Natural Resource Policies and Guidelines

As stated previously in the “Vegetation” section, the NPS has developed specific guidelines for the management of natural resources as described in NPS DO-77, *Natural Resource Management Guidelines* (NPS 1991). The guidelines provide for the management of native and non-native plant and animal species.

The NPS *Management Policies 2006* state that the NPS “will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term “plants and animals” refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals.” The NPS will achieve this by:

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006b, section 4.1).

Additionally, the *Organic Act of 1916* (16 USC 1) directs national parks to conserve wildlife unimpaired for future generations and is interpreted to mean that native animal life is to be protected and perpetuated as part of a park unit’s natural ecosystem. Parks rely on natural processes to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

State Laws and Regulations

California Fish and Game Code. Protection of birds: The California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (section 3503). Specifically, it is unlawful to take, possess, or destroy any raptors (i.e., eagles, hawks, owls, and falcons), including their nests or eggs (section 3503.5). The code adopts the provisions of the *Migratory Bird Treaty Act* and states that it is unlawful to take or possess any designated migratory nongame bird or any part of such migratory nongame bird (section 3513). The state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame migratory birds. Typical violations include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of the code could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction.

STUDY AREA

The geographic study area for analysis of wildlife impacts includes the GGNRA sites under consideration for the dog management plan/EIS where wildlife could be impacted by proposed dog management actions including new lands. Not all wildlife species that use particular vegetation communities in GGNRA will be affected by this project; therefore, this section only analyzes impacts on the wildlife that could be affected by dog management activities.

DURATION OF IMPACT

Duration describes the length of time an effect would occur, either short term or long term. Long term impacts to wildlife are described as those persisting for the life of the plan/EIS (the next 20 years). After the implementation of the plan, a 1- to 3-month period of public education would occur to implement the proposed action followed by a 1- to 3-month period testing the compliance-based management strategy. At the beginning of the education and enforcement period, short-term impacts on all natural resources would occur, regardless of the alternative chosen. During this period, impacts on wildlife would be similar to the current conditions and would be short-term. Following the education period, monitoring for compliance would begin and it is expected that compliance with the dog walking regulations and associated adverse impacts would improve gradually and the impacts on wildlife would then become long term, as described below for each alternative.

ASSESSMENT METHODOLOGY

This analysis of impacts on wildlife considered the changes and disturbance to wildlife habitat, wildlife species, or the natural processes sustaining them that would occur as a result of the implementation of alternatives A through E.

Overall, impacts on wildlife were analyzed qualitatively. The information in this analysis was obtained through best professional judgment of park staff, experts in the field, and supporting literature (as cited in the text). Data on frequency of disturbance of wildlife in a particular park site, if available, has been incorporated with relevant scientific literature to predict the impact of dog management activities on wildlife. Where data on the frequency of disturbance is not available, information from park staff and visitors on the relative intensity of use by visitors and the relative number of dogs both on and off leash has been used to predict impacts.

At GGNRA, the management of wildlife and wildlife habitat is primarily focused on research, monitoring, and actively protecting and restoring natural processes that sustain native habitat and the wildlife therein. Wildlife species that could be affected by this project primarily include bird species, mammalian species (small and large terrestrial mammals as well as marine mammals), reptiles, and amphibians and are discussed as applicable by site and alternative. With the exception of listed fish species (which are discussed in the “Special-status Species” section), fish and invertebrates are not included in this section because these groups are unlikely to be affected by dogs. Inventorying of wildlife species is currently ongoing at the sites not yet acquired by the park, such as Cattle Hill and Pedro Point Headlands. Therefore, wildlife species with the potential to occur at these sites are identified when applicable.

IMPACT THRESHOLDS

Wildlife impacts were determined by examining the potential effects of dog walking activities on native wildlife species, their habitats (including quality, quantity, and distribution of habitats), or the natural processes sustaining them, as well as responses to disturbance by dogs. The intensity of each adverse impact is judged as having a minor, moderate, or major effect. Negligible impacts are neither adverse nor beneficial, nor long-term or short-term. A beneficial impact would be a positive change in the condition or appearance of the resource. “No impact” on wildlife species may also be applicable for some alternatives and sites if dogs are prohibited. The following impact thresholds were established to describe the relative changes in wildlife under the various alternatives being considered:

- Beneficial* A beneficial impact is a beneficial change from the current condition and is a relative indicator of progress compared to the no action alternative. In general, a beneficial impact would include an increase of the native wildlife species, their habitats (including quality, quantity, and distribution of habitats), or the natural processes sustaining them.
- Negligible* There would be no observable or measurable impacts on native species, their habitats, or the natural processes sustaining them. Impacts would be well within the natural range of variability.
- Adverse* **Minor.** Impacts on native wildlife species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses to disturbance from dogs by some individuals could be expected, with some negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. Sufficient habitat in the park would remain functional to support wildlife at GGNRA.
- Moderate.** Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses to disturbance from dogs by some individuals could be expected, with some negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. However, sufficient habitat in the park would remain functional to support wildlife at GGNRA.
- Major.** Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, would be outside the natural range of variability, and would be permanent. Frequent and repeated responses to disturbance from dogs by some individuals could be expected, with negative impacts on feeding, migration, overwintering, reproduction, resting, or other factors that may affect wildlife at the park. Sufficient habitat in the park would not remain functional to support wildlife at GGNRA.

It is important to note that dogs are viewed as a contributing factor to impacts associated with wildlife, and the total elimination of dogs in the park would not eliminate effects on wildlife, because visitors without dogs would continue to visit the park and use the trails/roads at GGNRA. Disturbance by all manner of visitors and any associated recreation equipment as well as by dogs has occurred and currently occurs in GGNRA as an existing condition. However, visitors with dogs could impact natural resources such as wildlife to a greater extent than visitors without dogs. The impacts analysis that follows describes impacts on wildlife by vegetation type for each alternative and applicable site.

IMPACTS COMMON TO ALL ALTERNATIVES

General Wildlife

It has been suggested that dogs, “particularly while off leash, increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog” (Sime 1999, 8.4; Miller et al. 2001; Lafferty 2001a, 318). “At some level, domestic dogs still maintain instincts to hunt and/or chase” (Sime 1999, 8.2). However, Andrusiak (2003, 3.2) suggests that dogs traveling quietly along a trail with

screening vegetation on both sides are unlikely to disturb or even encounter wildlife. But “even if the chase instinct is not triggered, dog presence in and of itself may be an agent of disturbance or stress to wildlife” (Sime 1999, 8.3) and animals that are prey of wild canids (carnivorous mammals of the family *Canidae*, which includes the dogs, wolves, foxes, coyotes, and jackals) may perceive dogs as predators and may be subject to non-lethal, fear-based alterations in physiology, activity, and habitat use (Miller et al. 2001; Lenth and Knight 2008). Generally, potential direct impacts to wildlife as a result of interactions with domestic dogs could be broadly classified as falling into three categories: harassment, injury, or death and secondary or indirect impacts include displacement, avoidance, abandonment of areas and habitat, physical alteration of habitat, and potential disease transmission. Harassment is defined as the disruption of normal maintenance activities, such as feeding, resting, or grooming and can include disrupting, alarming, or even chasing after wildlife. Dogs may disturb wildlife either accidentally or deliberately by chasing after wildlife (Andrusiak 2003). Reactions are most often short term but may result in responses that range from direct and obvious (flight, confrontation) to covert and physiological (loss of energy, stress), which complicates the documentation of disturbance to wildlife from the presence of dogs (Sime 1999, 8.4). Animals most often affected by disturbance from dogs include deer, small mammals, and birds (Denny 1974 in Sime 1999), although canids and other larger mammals such as bobcats can also be affected by disturbance from dogs (George and Crooks 2006, 14-15). Small mammals, including squirrels (*Sciurus* spp.) and rabbits (*Sylvilagus* spp.) have exhibited reduced levels of activity within 50 m of trails in areas that allowed dogs when compared with areas without dogs (Lenth et al. 2008, 218). This section discusses impacts to general wildlife and is followed by a detailed analysis of dog disturbance to birds.

Dog presence has been correlated with altered patterns of habitat use for wildlife species (Lenth and Knight 2008, 222). “Authors of many wildlife disturbance studies concluded that dogs with people, dogs on leash, or loose dogs all provoked the most pronounced disturbance reactions from their study animals” (Sime 1999, 8.2). Dogs on leash disturb wildlife less frequently than dogs off leash, but actual direct injury or mortality to wildlife by dogs in either situation is rare (Andrusiak 2003). If dogs chase or pursue wildlife, injuries to wildlife could be sustained directly or indirectly as a result of accidents that occur during the chase rather than direct contact with the dog. Injuries sustained may result in death or may compromise the animal’s ability to carry on other necessary life functions resulting in eventual death, or reduced reproductive success. The modification of normal behaviors such as feeding, nesting, grooming, resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment, including the displacement of wildlife from public to private lands (Sime 1999, 8.4).

When dogs participate in “marking” (scent marking with urine), it could also attract wildlife or cause avoidance of an area by wildlife. The “impacts of dogs on native carnivores are not well understood, but may include disruption of carnivore behavior through chasing after, barking, and scent marking via urine and scat” (George and Crooks 2006, 14). As cited in Lenth et al. (2008, 223), the City of Boulder Open Space and Mountain Parks has noted that dogs often defecate very soon after arriving at a trail, and many visitors do not walk dogs much beyond the trailhead. Recreational trails with abundant dog scent could appear to carnivores to be linear dog territories, necessitating increased vigilance and activity (Lenth et al. 2008, 219). In a study conducted by George and Crooks (2006, 14-15), coyotes specifically showed a trend of temporal displacement in response to dogs and bobcats were also affected by the presence of dogs. These inverse correlations of dog and native carnivore activity in areas that allow dogs indicate that native carnivores may be avoiding trailheads where dog activity is concentrated (Lenth et al. 2008, 223). Lenth et al. (2008, 223) has also found that wildlife species that are preyed upon by native canids demonstrated sensitivity to the presence of domestic dogs (Lenth et al. 2008, 223). Dogs can also physically damage burrows used by ground-dwelling mammals (squirrels, pocket gophers, chipmunks, and other rodents) by digging up or collapsing the burrows. Although not occurring in GGNRA, a study of marmots by Mainini et al. (1993) provides some indication of potential responses of ground-dwelling

mammals to the presence of dogs and/or people. Mainini et al. (1993) reports findings in a study of marmots reactions to various tourist-hiking regimes, including on-leash and off-leash dogs. Their study showed that the reaction of marmots was least when hikers remained on trails and greatest from hikers with a free-running dog (Mainini et al. 1993, 163). With trail hikers and no dogs, the marmots hardly ever took refuge in the burrows; this happened more often in the experiments when these hikers had a leashed dog and with cross-country hikers (Mainini et al. 1993, 163). Even more animals took to their burrows in the experiments with burrow hikers (people walking off the trail and across the marmot burrow) or hikers with free-running dogs (Mainini et al. 1993, 163). Marmots reacted with warning whistles only during encounters with hikers with dogs and this occurred more in the case of hikers with a free-running dog than with trail hikers with a dog on a leash; the intense reaction of animals confronted with hikers accompanied by dogs shows that the dogs are recognized as a threat comparable to a fox (Mainini et al. 1993, 163). The fact that a free-running dog elicited more whistles and more animals retreated into their burrows than in the experiments with a [leashed] dog on the trail shows that a free-running dog represents a greater risk [than a leashed dog] (Mainini et al. 1993, 164). Marmots observed were located in the vicinity of frequently used trails; comparison studies of marmots living in more remote areas had even stronger reactions (Sime 1999, 8.11).

A study of off-leash dog/wildlife interactions in the Berkeley Meadow and Cesar Chavez Park found that wildlife (raptors and egrets) were more abundant in Berkeley Meadow, where there are fewer people and off-leash dogs, than at Chavez Park, where the off-leash dog area is adjacent to the delineated Protected Natural Area, which off-leash dogs regularly access (Abraham 2001, 1). In a study conducted by Lenth et al. (2008, 223) at two study sites, dogs were allowed to travel off-leash (under “voice and sight control”) and frequently traveled off-trail. Bekoff and Meaney (1997) noted that off-leash dogs generally travelled less than 6 to 15 feet off trail, for less than 1 to 2 minutes. They further noted that dogs traveling farther off trail were often lured there by the people responsible for them (throwing sticks, balls, or Frisbees, or going off trail and calling their dogs to follow).

In urban parks, a study by Forrest and St. Clair (2006) concluded that off-leash dogs have no impact on the diversity or abundance of birds and small mammals because these species are fairly tolerant of moderate levels of human activity (Forrest and St. Clair 2006, 61). Though leash rules have been found in certain urban parks to have no effect in protecting local biodiversity as noted above in Forrest and St. Clair (2006, 61), the enforced use of leashes could restrict dog activity to a narrower trail corridor and minimize dogs’ influence on wildlife (Lenth et al. 2008, 223). At Fort Funston in GGNRA, a survey was conducted to determine the differences between a restricted/restored habitat that included a fenced exposure and was planted with native vegetation versus an unrestricted/unrestored habitat that included an area that received heavy visitor use, including off leash pets and was not planted with native vegetation (Shulzitski and Russell 2004, 5). Results of the survey detected two to three times more wildlife (bird, amphibian, reptile, and mammal species) in the restricted/restored habitat compared to the unrestricted/unrestored habitat (Shulzitski and Russell 2004, 18). Additionally, this study documented dog-wildlife interactions at Fort Funston (Shulzitski and Russell 2004), including: (1) dogs barking in close proximity to a red fox whose behavior appeared unchanged while dogs barked in close proximity, and (2) dogs barking at, chasing after, and/or catching and consuming a pocket gopher on three separate occasions. Some studies have shown that “local wildlife does not become habituated to continued disturbance” by dogs (Banks and Bryant 2007, 612).

Birds

Birds usually are more sensitive to the approach of dogs than to the approach of human beings (Andrusiak 2003, ES) and the “presence of dogs may intensify bird responses to pedestrians” (Sime 1999, 8.10). Disturbance by dogs generally occurs when unleashed dogs chase feeding and roosting birds; however, birds can also be disturbed by the physical proximity of on-leash dogs and/or by barking (Andrusiak

2003, ES). It has been shown that birds react when dogs accompany walkers and that even ‘dogs restrained on leashes can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna’ (Banks and Bryant 2007, 612). Although leashing makes it difficult for pets to chase birds and reduces the probability of disturbance and the number of birds impacted per disturbance, leashed pets still disturb birds (Lafferty 2001a, 1955). Ground-dwelling birds have been shown to be most affected by dogs (Banks and Bryant 2007, 612). “Dogs can disrupt habitat use, cause displacement responses, and injure or kill birds” (Sime 1999, 8.10). In addition, the predictability of disturbance is reduced when dogs are off-leash and dogs that are off leash in natural areas during the breeding season can result in a higher level of disturbance to wildlife, including ground-nesting or colonially nesting birds (Sime 1999, 8.4, 8.9).

Shorebirds such as gulls and terns may use beach/dune habitat for roosting, and some species are found year-round. Flocking birds in open habitats (i.e., beaches) such as shorebirds are more vulnerable to disturbance than single birds in dense cover (Andrusiak 2003, ES). Lafferty (2001a, 1958) states that in general, shorebirds at the Santa Barbara study beach were very sensitive to dogs on the beach. Shorebirds, gulls, and terns roosting or feeding in areas accessible to on-leash or off-leash dogs may relocate to areas of the beach where dogs are prohibited or may use areas only when dogs are absent. This relocation could use energy that birds require to survive during migration (Andrusiak 2003, ES). Migrating species, especially shorebirds, use stopovers areas to rest and feed, replacing energy consumed between stops. Dogs disturbing foraging birds may diminish a bird’s foraging time and can result in a loss of energy required to migrate and significantly affect their survival during migration (Andrusiak 2003). Even if dogs do not remove habitat or kill birds directly, disturbances cause birds to suspend feeding and/or expend energy in flight, movement or vigilance (Lafferty 2001a, 1950). In addition, some dogs may actively chase birds for prolonged periods (Lafferty 2001a, 1950). Although snowy plovers are discussed in more detail in the Species of Special Status section, the sensitivity of shorebirds to dogs is generally illustrated by the following statement from the U.S. Fish and Wildlife Service (USFWS):

Dogs on beaches can pose a serious threat to snowy plovers during both the breeding and nonbreeding seasons. Unleashed pets, primarily dogs, sometimes chase snowy plovers and destroy nests. Repeated disturbances by dogs can interrupt brooding, incubating, and foraging behavior of adult plovers and cause chicks to become separated from their parents, and that dog disturbance at wintering and staging sites may adversely affect individual survivorship and fecundity, thereby affecting the species at a population level (USFWS 2007a).

Additional evidence that the effects of disturbance may vary seasonally was recorded by Lafferty (2001a, 1958). Wintering Western Snowy Plovers reacted to disturbance at half the distance (40 m) that was reported for breeding Snowy Plovers (80 m) (Lafferty 2001b, 315). It should be noted that people can disturb birds if they approach too closely or too quickly (Lafferty 2001a, 1950). Beach areas are vulnerable to the usual beach activities, such as walking, jogging, fishing and dog walking. The presence of people on beaches where shorebirds congregate in foraging flocks is likely to be disruptive (Burger et al. 2004, 284). The Burger et al. (2004, 286) study suggests that the birds are not adapting to the presence of people by habituation. Other sources of impacts on shorebirds on beaches include aircraft, kite flying, hawks and falcons, equipment on the beach, and beach patrols (NPS 2009b).

Pet activity can reduce shorebird abundance (Burger 1981; Klein 1993 cited in Lafferty 2001b). In Burger et al. (2004), research has indicated (J. Burger, unpublished data 2002) that dogs are currently the prime and most important factor disturbing the shorebirds at protected beaches along Delaware Bay (Burger et al. 2004, 287). The effect of intruders including humans and dogs on the beaches can be disruptive, especially when human activity is intense, or people are on the beaches for long periods of time. Shorebird foraging is disrupted by the presence of people and dogs on their foraging beaches, and they respond by flying away (Burger et al. 2004, 286). Sensitivity of shorebirds to dogs may result from previous experiences of being chased or because birds instinctively view dogs as predators (Gabrielsen

and Smith 1995, cited in Lafferty 2001b). Separate studies further note that even dogs restrained on leash can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna (Banks and Bryant 2007, 612) and that although being walked on leash makes it difficult for dogs to chase birds and reduces the probability and the number of disturbances to birds, dogs walked on leash still disturb birds (Lafferty 2001a, 1955). Dogs can disrupt habitat use, cause displacement responses, and injure or kill birds (Sime 1999, 8.10). They can also cause temporary abandonment of shorebird nests containing eggs or young, as well as crushing eggs or preying on young (USFWS 2007a, K-7). A golden plover study by Yalden and Yalden (1990) summarized in Sime (1999, 8.11) found that during the nest incubation phase, these plovers flushed more readily in response to dogs than to people and took longer to resume incubation if people or dogs were still present. Migrating species, especially shorebirds, use stopover areas to rest and feed, replacing energy consumed between stops.

At GGNRA, there have been multiple instances where dogs have flushed or chased shorebirds or snowy plovers at Ocean Beach and Crissy Field as documented in NPS monitoring reports by Park Natural Resources Division (NPS 2008e; Hatch et al. 2006, 12; Hatch et al. 2007, 4-6; Hatch et al. 2008, 2-4). Birds are unlikely to habituate to dog disturbance because dog disturbance is unpredictable and represents an actual physical threat (Andrusiak 2003, 3.2) and further studies have shown that local wildlife does not become habituated to continued disturbance by dogs (Banks and Bryant 2007, 612).

Marine Mammals

There is documentation of marine mammal strandings as well as healthy animals hauling out on the GGNRA beaches or intertidal, rocky areas (MMC 2010, 1). Marine mammals that strand on beaches or other shoreline areas are often injured or ill, and additional stress from disturbance, such as dogs biting, barking at, or climbing on the animals, from unleashed dogs in a ROLA or noncompliant dogs can occur. Healthy marine mammals can also haul out on GGNRA beaches as well. Recently at the beach in the Crissy Field WPA, three healthy elephant seals (a fully protected species in California) hauled out at different times in December of 2009 and January of 2010 and off-leash dogs detected the scent of the stranded elephant seals and moved toward the seals on the beach (Merkle 2010f, 1). The MMC has documented many cases of marine mammals that have stranded or hauled out on GGNRA sites and been surrounded by dogs, approached by dogs, or chased back into the water by dogs (MMC 2010). Depending on the circumstance, the NPS may temporarily fence, sign, and close areas where marine mammals are hauled out, particularly where visitor use is more moderate as opposed to areas of intense use during good weather. On-leash dog walking would restrain or prevent access to stranded marine mammals and marine mammals that haul out on GGNRA beaches and rocky, intertidal habitat. However, even leashed dogs may disturb and cause additional stress to marine mammals. It is important to note that all marine mammals in GGNRA are protected by the *Marine Mammal Protection Act*, and any disturbance to a marine mammal would be in violation of this act. The impacts on hauled-out marine mammals may be different from those on stranded marine mammals, and include harassment to the extent that they are flushed back into the water and do not return to the beach, which could inhibit establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand.

Disease

Domestic dogs that are not vaccinated can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites from, or transmit diseases to wild animals or wildlife habitats (Sime 1999, 8.2), although the role of dogs in wildlife diseases is not well understood (Sime 1999, 8.4). While dogs can be vaccinated against many of these diseases, adherence to recommended vaccination schedules is necessary for even adult dogs to maintain immunity (Sime 1999, 8.12). Domestic dogs can be vectors for transmission diseases as canine distemper, which can affect wild carnivore species (Sime 1999, 8.9). Viruses related to the canine distemper virus have been documented in the deaths of a wide variety of

wild animals from seals, dolphins (Delphinidae), and porpoises (Phocoenidae) in Russia to lions in Africa, but there are fewer documented instances of deaths caused by canine distemper in areas where domestic animals are regularly vaccinated (Mills 1999). Dog feces have been implicated in the transmission of muscle cysts (*Sarcocystis* spp.), which can infect a variety of ungulate species, including mule deer and white-tailed deer. Dogs may also introduce diseases or parasites to small mammals. While dog impacts on wildlife likely occur at the individual scale, the results may still have important implications for wildlife populations (Sime 1999, 8.4). Rabies is a preventable viral disease transmitted in the saliva of infected mammals and is the most common source of infection for humans and domestic animals such as dogs (City and County of San Francisco 2010, 1). More than 90 percent of all animal rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals like raccoons, skunks, bats, and foxes (City and County of San Francisco 2010, 1). In California, domestic animals, farm animals, and pets such as dogs, cats, and cattle account for approximately three percent of the reported rabies cases (City and County of San Francisco 2010, 1). In San Francisco, all animal rabies cases in the past 60 years occurred in bats, recently at a rate of one to five confirmed cases per year from 2004 through 2009 (City and County of San Francisco 2010, 1). Studies by Riley et al. show that proximity to urban areas (which describes the situation for wildlife in GGNRA lands) or contact with humans and their pets can increase the risk of disease exposure for wild carnivore populations (e.g., canine parvovirus in foxes and feline calicivirus in bobcats) (Riley et al. 2004, 12, 18). However, the collection of dog waste and reducing feral and unaccompanied domestic animals in parks could help reduce the risk of transmission of many diseases (Riley et al. 2004, 19).

Conclusion

Management activities that include prohibiting dogs, restricting dog walking to on-leash only, and establishing ROLAs are expected to reduce impacts on wildlife from encounters with off-leash dogs as has been demonstrated in studies discussed above (Andrusiak 2003; USFWS 2007a, 84; Lafferty 2001a, 1955, 1961; Shulzitski and Russell 2004, 18). The Lenth et al. (2008, 223) study has shown that off-leash dogs (under “voice and sight control”) frequently travel off-trail. Though leash rules have been found in certain urban parks to have no effect in protecting local biodiversity (Forrest and St. Clair 2006, 61), the enforced use of leashes could restrict dog activity to a narrower trail corridor and minimize dogs’ influence on wildlife (Lenth et al. 2008, 223). When compliance is assumed, management alternatives that would prohibit dogs from accessing wildlife habitats would eliminate disturbance to wildlife from dogs chasing after wildlife, and barking at wildlife, as well as potential direct or indirect mortality as a result of dog/wildlife encounters. Prohibiting dogs from areas also prevents habitat degradation and loss of species that are sensitive to the presence of dogs. On-leash dog walking restrictions would physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should also eliminate any potential chasing after wildlife. Additionally, dog waste, nutrient addition, trampling, digging, or spread of invasive species would either be reduced or eliminated if dogs were prohibited or leashed in certain areas. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Although, some studies have shown that local wildlife does not become habituated to continued disturbance by dogs (Banks and Bryant 2007, 612; Andrusiak 2003, 3.2), Lafferty (2001a, 1955, 1961) has suggested that leash requirements would reduce the probability that a dog would disturb birds. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Disease transmission that results from direct contact between dogs and wildlife, especially canids such as coyotes, would also be reduced but not necessarily eliminated as a result of dog waste removal requirements in this plan/EIS. Management alternatives requiring on-leash dog walking on beaches would still result in

impacts as a result of disturbance to resting and feeding shorebirds, waterfowl, and stranded marine mammals. Proposed ROLAs would result in the loss of habitat for wildlife species and may result in the temporary or permanent displacement of wildlife species from those areas. The ROLA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. However, the concentration of off-leash dog use in a ROLA would reduce the likelihood of off-leash dogs disturbing wildlife or wildlife habitat outside of ROLAs when compliance is assumed.

CUMULATIVE IMPACTS ON WILDLIFE THAT ARE COMMON TO ALL ALTERNATIVES

Influences on vegetation communities in GGNRA could result in alterations to plant communities that provide habitat for wildlife in the park, including amphibians and reptiles, small and large mammals (terrestrial and aquatic), birds, and invertebrates. Alterations to vegetation habitat that result in effects on wildlife at GGNRA include those resulting from fire suppression, urban development and loss of habitat continuity, and the establishment of non-native plant species that exclude wildlife or modify wildlife distribution.

Suppression of wildland fires has allowed the unnatural buildup of both dead and live fuels. The buildup of fuels generally increases the risk of wildfire, which when it occurs can cause wildlife species that are mobile to leave their home area or can result in direct mortality of wildlife unable to flee the fire. In addition, wildfire can destroy wildlife habitat for some time after a fire. Development of land in the region, extirpation of some species (grizzly bear, tule elk), introduction of exotic species competing for limited habitats, and fragmentation of available habitat have also contributed to changes in occurrence and population sizes of some species. For example, California coastal scrub habitats have declined due to agricultural, industrial, and residential development, directly affecting mammal and bird species that use this habitat. California grassland habitats, which support rodents as well as raptors and other predators, have been declining due to agricultural use or urban development. Regional loss of forests through logging, catastrophic fire events, and urbanization has led to fragmented, isolated forest stands. Recreational trails and their use also fragment habitat and impact habitat quality.

Past, current and reasonably foreseeable future actions positively affecting wildlife in the park are activities that restore or enhance habitat. These projects include habitat protections and closures, education and outreach, and wetland restoration as well as non-native plant removal and reestablishment of native plant communities with subsequent direct benefits to wildlife species. Potentially adverse impacts could occur through development both within and adjacent to park boundaries, including the various transportation plans and trails plans. These efforts would involve ground disturbance that could add to or exacerbate existing habitat fragmentation along road and trail corridors. However, efforts to identify mitigation measures such as pre-project coordination with nesting seasons, time of year restrictions, and development and implementation of post-project site plans, would reduce the potential for impacts. Current transportation, trail, and development planning efforts both within and beyond park boundaries would affect vegetation and wildlife, but mitigation for these projects would reduce the potential for impacts.

Completed, current, and future project activities that will have a beneficial impact on wildlife and wildlife habitat in the GGNRA sites are listed below and discussed under each alternative as applicable:

- GGNRA GMP, which establishes guidelines for resource protection in the park (NPS 1980).
- *The Inventory and Monitoring Program* at GGNRA for natural resources.
- Park improvements of signs and fencing, and initiation of shorebird docent program for the SPPA at Ocean Beach and the WPA at Crissy Field.

- GGNRA *Fire Management Plan* (NPS 2005a), which provides guidance for the protection of natural resources through the use of prescribed burns, fire protection measures, and the reduction of fuel hazards.
- GGNRA Habitat Restoration Programs, parkwide invasive species removal and/or native plant restoration projects to restore and enhance natural terrestrial plant communities in GGNRA.
- Park Stewardship Programs that have worked with GGNRA since 2003 to control invasive plant species and restore natural plant species throughout the park, resulting in the restoration or enhancement of over 1,000 acres of trailside habitat in sites including Marin Headlands Trails and Lands End.
- *Mori Point Restoration and Trail Plan* (NPS 2006d), which is ongoing and has contributed to the restoration of the ecological integrity of existing habitats and restored native plant communities.
- Restoration of native vegetation as part of the *Lower Easkoot Creek Restoration at Stinson Beach* (NPS n.d.d, 1).
- *Muir Beach Wetland and Creek Restoration Project*, which restores riparian habitat, and proposed fencing will protect wetland plant communities (NPS 2007b, 1).

Conclusion. Overall, these past, current and future projects, whether short term or long term, would have a beneficial impact on wildlife and wildlife habitat. Dog management alternatives that prohibit dogs from wildlife habitat, restrict dog walking to on leash, or establish ROLAs in fenced areas are generally most protective of wildlife and wildlife habitat; fencing, however, can preclude movement by larger wildlife species. In general, dog management alternatives that prohibit dogs or restrict dog walking to on leash or in a designated ROLA combined with the benefits to wildlife and wildlife habitat from the restoration and enhancement projects listed above would have beneficial cumulative impacts on wildlife and wildlife habitat at GGNRA. Sites and proposed actions in alternatives that may have different cumulative impacts on wildlife and/or wildlife habitat are discussed below.

COMPLIANCE-BASED MANAGEMENT STRATEGY

In order to ensure protection of wildlife from dog walking activities, the dog walking regulations defined in action alternatives B, C, D, and E would be regularly enforced by park law enforcement, and compliance monitored by park staff. A compliance-based management strategy would be implemented to address noncompliance and would apply to all action alternatives. Noncompliance would include dog walking within restricted areas, dog walking under voice and sight control in designated on-leash dog walking areas, and dog walking under voice and sight control outside of established ROLAs. If noncompliance occurs, impacts to wildlife have the potential to increase and become short-term minor to major adverse. Wildlife can be directly affected by dogs through the disruption of normal activities, such as feeding, resting, or grooming and can also disrupt, alarm, or even chase after wildlife. Noncompliant dogs that chase or pursue wildlife could result in injuries that may result in death or may compromise the animal's ability to carry on other necessary life functions or reduced reproductive success. To prevent these impacts from increasing or occurring outside of the designated dog walking areas the NPS would regularly monitor all sites. When noncompliance is observed in an area, park staff would focus on enforcing the regulations, educating dog walkers, and establishing buffer zones, time and use restrictions, and SUP restrictions. If noncompliance continues and compliance falls below 75 percent (measured as the percentage of total dogs / dog walkers observed during the previous 12 months not in compliance with the regulations) the area's management would be changed to the next more restrictive level of dog management. In this case, ROLAs would be changed to on-leash dog walking areas and on-leash dog walking areas would be changed to no dog walking areas. Impacts from noncompliance could reach short-term minor to major adverse, but the compliance-based management strategy is designed to return

impacts to a level that assumes compliance, as described in the overall impacts analysis, or provide beneficial impacts where dog walking is reduced or eliminated.

WILDLIFE IN COASTAL COMMUNITIES

This section discusses impacts on wildlife species that use the coastal communities at GGNRA, including dunes, beaches, adjacent open water, and rocky intertidal areas. Migrant and overwintering shorebirds use beach and dune habitats along the coastline in GGNRA primarily as stopover and overwintering areas. The highest density of shorebirds on monitored GGNRA beaches generally occurs during the overwintering months of November and December, as well as in April and September during shorebird northbound and southbound migration, respectively (Beach Watch 2009). Collected data for beaches have indicated that willet, marbled godwit, sanderling, and whimbrel are the most common species of shorebirds using beaches in GGNRA and are found to some extent year-round (Beach Watch 2009). The recently delisted California brown pelican is relatively abundant in the coastal community habitats at GGNRA, and the NPS has previously provided important roost areas for this species, which may be affected by dogs (NPS 2010b). The NPS manages protection of the federally threatened western snowy plover from disturbance by off-leash dogs (discussed in detail in the “Special-status Species” section) through the designation of seasonally protected areas in GGNRA (NPS 2008), which also protects and benefits other shorebirds that use these areas.

The following sites contain coastal beach and/or coastal dune communities and are documented areas where shorebirds, gulls, and terns, as well as marine mammals, may be affected by dog management alternatives, and impacts are discussed in more detail below.

MARIN COUNTY SITES

Stinson Beach

Alternative A: No Action. At Stinson Beach, dogs and dog owners are restricted to having dogs on leash in the parking lots and picnic areas since dogs are not allowed on the beach because it is a swimming beach. Currently, there is low compliance with the no-dog walking restriction on the beach; 334 incidents of dogs in a closed area were recorded in 2007/2008 (appendix G). In addition, there are 4 recorded incidents of dogs disturbing wildlife at this site (appendix G). Dogs are not allowed near dune communities or on the beach, but noncompliance occurs at a small portion of this site, particularly at the north end of the beach and dunes where dog walkers access the adjacent county beach and dogs disturb shorebirds on the beach (NPS 2010b).

Under alternative A, even though dogs would be prohibited on Stinson Beach they could occasionally affect wildlife species that use coastal dunes and beaches through continued dog presence at the site; unleashed dogs could bark at or chase roosting or feeding birds at this site, resulting in disturbance. This type of disturbance could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Stinson Beach could occasionally be affected through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in negligible to long-term minor adverse impacts on wildlife at Stinson Beach.

Under alternative A, no permit system exists for dog walking. At Stinson Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

The Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact wildlife at Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Stinson Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). No indirect impacts on

wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

STINSON BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs would not be allowed near dune communities or on the beach, but noncompliance occurs at this site from the adjacent county beach, where dogs disturb shorebirds on the beach; it is possible that dogs would directly affect wildlife that use coastal dunes and beaches; dog presence and barking at could also indirectly affect wildlife such as shorebirds	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would have the same dog walking restrictions as alternative A: dogs would be allowed on leash in the parking lots and picnic areas. Dogs are not allowed on the beach itself, because it is a designated swimming beach. No impact on wildlife at Stinson Beach would occur if visitors are compliant with the current restrictions. Since dogs are restricted from the beach and dune communities, coastal wildlife and marine mammals would not be affected by dog activities.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Stinson Beach under alternative B was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B since there would be no change in dog management conditions at the site.

STINSON BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts on wildlife would be the same, assuming compliance: no impact.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

STINSON BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at Stinson Beach. Therefore, assuming compliance, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at the site, no impact to the coastal wildlife and marine mammals would occur from commercial dog walkers.

Cumulative Impacts. There would be no impact on wildlife at this site under alternative D. This lack of impact combined with the beneficial effects from the restoration projects provided by the Park Stewardship Programs and the negligible impacts from the past oil spill and from any development or construction actions would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. There are 33 parks with dog use areas within about a 10-mile radius of Stinson Beach and 3 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). Indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wildlife use habitat at these parks.

STINSON BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts on wildlife would be the same, assuming compliance: no impact.

Since dogs are restricted from the beach and dune communities, no impact to the coastal wildlife and marine mammals would occur; therefore commercial dog walkers would have no impact to the coastal wildlife and marine mammals.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

STINSON BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Stinson Beach. Under the preferred alternative, dogs would be allowed on leash in the parking lots and picnic areas. Dogs are not allowed on the beach itself, because it is a designated swimming beach. No impacts on wildlife at Stinson Beach would occur if visitors are compliant with the restrictions. Since dogs are restricted from the beach and dune communities, coastal wildlife and marine mammals would not be affected by dog activities.

No impact to the coastal wildlife and marine mammals would occur from commercial dog walkers since dogs are restricted from the beach and dune communities,

Cumulative Impacts. Projects and actions in and near Stinson Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

The Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact wildlife at Stinson Beach. The *Lower Easkoot Creek Restoration Project* at Stinson Beach has restored native vegetation (NPS n.d.d, 1). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project*, located near Stinson Beach, in partnership with Marin County Open Space District and the USACE (GFNMS Working Group 2008), which will restore natural sediment transport and ecological functions of Bolinas Lagoon, and identify and manage introduced species in the Bolinas Lagoon watershed.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction

areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The lack of impacts on wildlife from dogs at Stinson Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

There are 33 parks with dog use areas within an approximate 10-mile radius of Stinson Beach and 3 parks within a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative since there would be no change in dog management conditions at the site.

STINSON BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on trails and beach	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Muir Beach

Alternative A: No Action. Currently, there is low to high use of the site for on-leash and voice-control dog walking at the beach and other areas of the site (table 9). The lagoon is currently closed to people and dogs for resource protection. There are three recorded incidents of dogs in a closed area in 2007/2008 at this site (appendix G). Although the site has documented low shorebird abundance and diversity compared to other GGNRA coastal beaches (NPS 2009b), dog presence at the site as well as dogs barking at, chasing after, and being in proximity to roosting or feeding birds would continue to result in disturbance to shorebirds and waterbirds. This type of disturbance by dogs could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. The

presence of leashed and mostly unleashed dogs also results in flushing and displacement of shorebirds in response to presence of a perceived predator (NPS 2010b). Muir Beach also has a lagoon that supports shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds along the beach/ocean shoreline. A fence surrounds the lagoon but does not effectively keep dogs out of the area. The lagoon at Muir Beach was recently restored and may attract more shorebirds and waterbirds and increase visitor use of the site in the future, and the area could be subjected to repeated disturbance by unleashed dogs, including in closed or fenced areas. Additionally, marine mammals that haul out or strand at Muir Beach could occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Alternative A would result in continued long-term minor to moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using beach or dune habitat at Muir Beach because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Specific projects both in GGNRA and beyond park boundaries will also provide indirect benefits to shorebirds and include the *Muir Beach Wetland and Creek Restoration Project*, designed to bring back natural function to the water bodies and coastal dunes (NPS 2007b).

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanded riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009m). Park Stewardship Programs at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats in the area (GGNPC 2010c, 1).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include

avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to range from negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Shorebirds on beach would occasionally to frequently be subjected to impacts by on-leash and voice-control dogs through barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low, visitor use is high at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B proposes on-leash dog walking on the beach, on the boardwalk/path to the beach, and on the Pacific Way Trail. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Muir Beach also has a recently restored lagoon, currently closed to people and dogs, that supports shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds along the beach/ocean shoreline. The combination of on-leash dog walking requirements and the fence that surrounds the lagoon would effectively keep dogs out of this area. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term and would range from negligible to minor adverse impacts on wildlife because shorebirds and waterbirds may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers at this site. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative; however, dogs would still be allowed on the site on leash. Therefore, indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because not all dog walkers would choose to visit another site and it is unknown where and to what extent wildlife use habitat at adjacent lands.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same: negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible indirect impacts in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on Pacific Way Trail and would not be allowed on the beach or the boardwalk/path to the beach. Alternative D would provide the most protection to shorebirds, gulls, and terns as well as any stranded marine mammals at Muir Beach by prohibiting dogs in the beach area. The lagoon is currently closed to people and dogs for resource protection. Assuming compliance, alternative D would result in no impact on wildlife, including birds and marine mammals, using beach/dune habitat at Muir Beach.

The coastal community wildlife would not be affected by commercial dog walking as dogs would not be allowed on the beach.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Muir Beach under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D. Since dog walking would not be allowed on Muir Beach, indirect impacts on wildlife in adjacent lands from increased dog use would be likely to occur but would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on the beach	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. At Muir Beach, alternative E would allow on-leash dog walking on the Pacific Way Trail, on the boardwalk/path to the beach, and would provide a ROLA for dogs on the beach south of the entrance path. The lagoon is currently closed to people and dogs for resource protection. Shorebirds, gulls, and terns roosting or feeding in the ROLA would likely relocate to other areas where dogs are not present when unleashed dogs are in the ROLA, but loss of preferred habitat would have an impact on wildlife. Marine mammals that become stranded on the beach in the ROLA proposed in alternative E could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded or hauled-out animals. Therefore, alternative E would result in long-term moderate adverse impacts on wildlife in the ROLA.

The long-term moderate adverse impacts on wildlife in the ROLA would occur on approximately a quarter of Muir Beach. Also, the ROLA is located away from Redwood Creek and the lagoon, where the greatest numbers of birds have been observed at this site, especially following the lagoon restoration that occurred in 2009. Therefore, assuming compliance, the overall impact on wildlife at Muir Beach under alternative E would be long term, minor, and adverse. Physically restraining dogs would protect shorebirds and marine mammals in on-leash areas, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat at the beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs would protect shorebirds and marine mammals in on-leash areas, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; ROLA only encompasses a portion of beach habitat at the site and is located away from Redwood Creek and the lagoon (high bird use areas)	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. Under the preferred alternative, on-leash dog walking would only be allowed on Pacific Way Trail and in the parking area, and would not be allowed on the beach or the boardwalk/path to the beach. The preferred alternative would provide the most protection to shorebirds, gulls, and terns, as well as any stranded marine mammals at Muir Beach, by prohibiting dogs in the beach area. The lagoon is currently closed to dogs and people. Assuming compliance, the preferred alternative would result in no impact on wildlife, including birds and marine mammals, using beach/dune habitat at Muir Beach.

Alternative C was selected as the preferred alternative for permits at all sites. However, the coastal community wildlife would not be affected by commercial dog walking since dogs would not be allowed on the beach.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats. Specific projects both in GGNRA and beyond park boundaries will also provide indirect benefits to shorebirds and include the

Muir Beach Wetland and Creek Restoration Project, designed to bring back natural function to the water bodies and coastal dunes at Muir Beach (NPS 2007b).

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat and contributing to the quality of soils. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect vegetation at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach. The *Lower Redwood Creek Floodplain and Salmonid Habitat Restoration* restored channel function to reduce flooding and reconnect the creek to its floodplain as well as expanded riparian vegetation at the Banducci site (NPS 2010d, 1). The *Dias Ridge Restoration and Trail Improvement Project* is currently realigning trail segments and restoring degraded areas on Dias Ridge above Muir Beach (NPS 2009q, 1). Additional vegetation benefits would be expected from wetland and creek restoration at the tidal lagoon, which would reduce flooding on Pacific Way. The *Muir Beach Wetland and Creek Restoration Project* is restoring and enhancing ecological processes near the mouth of Redwood Creek, contributing to the quality of habitat, particularly as a result of restoration and enhancement of habitat and improvement of erosion and sedimentation conditions (NPS 2009m). Park Stewardship Programs at Pirates Cove, just south of Muir Beach, included efforts to control invasive non-native plants such as pampas grass to support the dense and relatively undisturbed coastal scrub, prairie, and riparian habitats in the area (GGNPC 2010c, 1).

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The lack of impacts on wildlife from dogs at Muir Beach under the preferred alternative was considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past

oil spill and from any development or construction actions and the lack of impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). The adjacent lands may experience increased visitation under the preferred alternative. Since dog walking would not be allowed on Muir Beach, indirect impacts on wildlife in adjacent lands from increased dog use would be likely to occur but would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Dogs would be prohibited on the beach	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Rodeo Beach/South Rodeo Beach

Alternative A: No Action. Currently, there is low to moderate use of the site for on-leash and voice-control dog walking at the beach and other areas. The lagoon and lake are currently closed to people and dogs for resource protection. There is one recorded incident of a dog in a closed area and four recorded incidents of dogs disturbing wildlife at this site in 2007/2008 (appendix G). Although the site has documented low shorebird abundance and diversity compared to other GGNRA coastal beaches (NPS 2009b), dog presence at the site, including unleashed dogs, which could bark at or chase roosting or feeding birds, could result in disturbance. This type of disturbance could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Rodeo Beach/South Rodeo Beach has a lagoon that supports high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. Wading birds, as well as pelicans and cormorants, use both the beach and the lagoon shoreline. Several hundred brown pelicans roost on Rodeo Beach on rare occasions and the nearby Bird Island also supports numerous bird species. Visitor use is moderate to high at this site, and even though the beach at Rodeo Beach/South Rodeo Beach is large and dogs are more spread out, birds along the shoreline of Rodeo Beach/South Rodeo Beach, the lake, and the lagoon are regularly disturbed by off-leash dogs and people, and the proposed fence along the western shoreline of the lagoon will deter but not physically exclude dogs from accessing the lagoon from the beach. Additionally, marine mammals that haul out or strand at Rodeo Beach/South Rodeo Beach would be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Alternative A would result in continued long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals because continued frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had minor to moderate adverse effects on wildlife such as marine mammals and birds at Rodeo Beach/South Rodeo Beach. The impacts on wildlife from this spill at Rodeo Beach/South Rodeo Beach lasted 8 to 9 months. However, by the time this dog management plan/EIS is implemented the adverse impacts on wildlife at Rodeo Beach/South Rodeo Beach should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Shorebirds on beach and wading birds such as pelicans would frequently be subjected to impacts by on-leash and voice-control dogs through barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low, visitor use is high and coastal habitat is large at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B proposes on-leash dog walking on Rodeo Beach/South Rodeo Beach and the footbridge to the beach. The lagoon and lake are currently closed to people and dogs for resource protection. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Rodeo Beach/South Rodeo Beach has a lagoon and a lake that support high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. A fence is proposed along the western shoreline of the lagoon to discourage dogs from accessing the lagoon from the beach. The combination of on-leash dog walking requirements and the fence surrounding the lagoon would effectively keep dogs out of the closed area. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term and would range from negligible to minor adverse impacts on wildlife, because shorebirds and waterbirds may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers at this site. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs along with the negligible impacts from the past oil spill and from any development or construction actions combined with the negligible to long-term minor adverse impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and this park is the closest dog use area that allows dogs off leash. Indirect impacts on wildlife in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would provide a ROLA on North Rodeo Beach between the ocean and the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon. The ROLA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon to the ridge on the beach just north of South Rodeo Beach. On-leash dog walking would be allowed on the footbridge to the beach, and South Rodeo Beach would be closed to dogs. Rodeo Lagoon and lake are currently closed to people and dogs for overall resource protection. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the ROLA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the ROLA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude the establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative C would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the ROLA; impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Birds roosting or feeding in the ROLA may be forced to relocate, but at this site, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up. The ROLA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; there is no on-leash area (non-ROLA) designated for Rodeo Beach as part of alternative C. Therefore, overall impacts on wildlife under alternative C would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence marine mammals and birds as well as the level of activity at the site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative C would result in negligible to long-term minor adverse cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLA	Shorebirds use the habitat at beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly, because no similar habitat is located nearby; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	The ROLA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach in areas north of the footbridge and on the footbridge to the beach. Rodeo lagoon and lake are currently closed to people and dogs for resource protection. Alternative D at Rodeo Beach/South Rodeo Beach would provide shorebirds, gulls, and terns with foraging and roosting habitat

that is protected from dogs; physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. Shorebirds, gulls, and terns roosting or feeding in the on-leash area may relocate to an area of the beach where dogs are prohibited when dogs are present and use the on-leash area only when dogs are absent; this relocation would affect energy reserves in birds. Additionally, marine mammals that become stranded or haul out on the beach in the on-leash area could be subjected to disturbance from dogs. Therefore, assuming compliance, alternative D impacts on shorebirds, gulls, terns, and marine mammals would be negligible to long term, minor, and adverse depending on the seasonal presence of the birds and level of activity at the site. Although birds at the site would have similar habitat in close proximity that is prohibited to dogs, displacement of birds to another location would still have an impact on wildlife. Up to a minor adverse impact is expected because the primary area used by birds would be adjacent to the no-dog area, and dogs would be on leash in the other area, where they could disturb birds along the unfenced portion of the lagoon.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking, would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation by individual and commercial dog walkers under alternative D, particularly Remington Dog Park, since dogs under voice control would not be allowed under alternative D and this park is the closest dog use area that allows dogs off leash. Indirect impacts on wildlife in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would include a ROLA on North Rodeo Beach that would extend from the crest of the beach west to the ocean shoreline. On-leash dog walking would be allowed throughout the rest of the site, including South Rodeo Beach and the footbridge to the beach. As in all alternatives, the lagoon is currently closed to dogs and people. Alternative E would result in the same impacts on shorebirds, gulls, terns, and marine mammals as

previously described in alternative C, although the ROLA in alternative E would extend only from the ocean to the crest of the beach and would not include coastal dune habitat. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon, which would remain closed to people and dogs, but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the ROLA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the ROLA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative E would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the ROLA; impacts would depend on the seasonal presence of the birds and the level of activity at the site. Impacts in the ROLA from alternative E would be slightly less severe than those described for alternative C because dogs would be on leash in the areas closest to Rodeo Lagoon, which would be fenced. The majority of birds at Rodeo Beach/South Rodeo Beach occur at the lagoon, but there are also a lesser number of birds that use the unfenced portion of the lagoon near the inlet/outlet.

Physically restraining dogs on leash would protect shorebirds in on-leash areas, and dogs would be on leash in the areas closest to Rodeo Lagoon, which will be fenced and remain closed to public access (as a high bird use area). Birds roosting or feeding in the ROLA may be forced to relocate, but at this site, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up and resulting in an adverse impact. Therefore, overall impacts for alternative E would be long term, minor to moderate, and adverse. Impacts on wildlife, including marine mammals, would depend on the seasonal presence of birds as well as the level of activity at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs with a limit of six dogs on leash. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the long-term minor to moderate adverse impacts on wildlife from alternative E would result in negligible to long-term, minor, adverse cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLA	Shorebirds use the habitat at beach ROLA (which extends only from the ocean to the crest of the beach) and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly because no similar habitat is located nearby; indirect impacts on wildlife in ROLA due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds, and dogs would be on leash in the areas closest to Rodeo Lagoon (a portion of the Lagoon shoreline will be fenced and closed to public access); ROLA would encompass only a portion of beach habitat but off-leash dogs could disturb shorebirds and marine mammals	Beneficial to no change, assuming compliance	Negligible to long-term, minor, adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach/South Rodeo Beach. The preferred alternative would provide a ROLA on North Rodeo Beach between the ocean and the proposed post-and-cable fence to be installed to protect the shoreline habitat at the western end of Rodeo Lagoon. The ROLA would include portions of the sparsely vegetated foredunes that extend from the crest of the beach east to the lagoon to the ridge on the beach just north of South Rodeo Beach. On-leash dog walking would be allowed on the footbridge to the beach, and South Rodeo Beach would be closed to dogs. Rodeo Lagoon is currently closed to people and dogs for overall resource protection. The installation of the post-and-cable fence along the west end of Rodeo Lagoon would discourage visitors from accessing the lagoon but would not physically exclude dogs from this area. A fence more impervious to dogs in this area is not feasible because winter storm waves wash over the entire beach, and wind-driven litter and debris would be trapped in the fence. Shorebirds, gulls, and terns roosting or feeding in the ROLA would be disrupted by dogs under voice and sight control on North Rodeo Beach. Marine mammals that become stranded or haul out on the beach in the ROLA could be subjected to disturbance from the presence of unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, the preferred alternative would result in long-term minor to moderate adverse impacts on marine mammals and shorebirds in the ROLA; impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Birds roosting or feeding in the ROLA may be forced to relocate, but at this site, there is no other habitat nearby, which may cause birds to flush and settle repeatedly, causing energy reserves to be used up. The ROLA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; there is no on-leash area (non-ROLA) designated for Rodeo Beach as part of alternative C. Therefore, the overall impacts on wildlife under the preferred alternative would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence marine mammals and birds as well as the level of activity at the site.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had minor to moderate adverse effects on wildlife such as marine mammals and birds at Rodeo Beach/South Rodeo Beach. The impacts on wildlife from this spill at Rodeo Beach/South Rodeo Beach lasted for 8 to 9 months. However, by the time this dog management plan/EIS is implemented the adverse impacts on wildlife at Rodeo Beach/South Rodeo Beach should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the long-term minor to moderate adverse impacts on wildlife from the preferred alternative would result in negligible to long-term minor adverse cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative since voice control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in ROLA	Shorebirds use the habitat at beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly because no similar habitat is located nearby; indirect impacts on wildlife in ROLA due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	ROLA encompasses a large portion of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. Dogs are currently allowed on leash throughout Fort Baker, except that dogs are not allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use (table 9). There were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Grounds, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum.

Under alternative A, long-term minor adverse impacts on wildlife would continue to occur at Fort Baker. Fort Baker contains rocky, intertidal habitat; shorebirds or marine mammals that use this habitat would occasionally be subjected to impacts from on-leash dogs through barking at, chasing after, and being in proximity to roosting or feeding birds or other wildlife. Since compliance is an issue at this site, it is

likely that many dogs off leash at this site go into the restricted areas, resulting in disturbance of coastal wildlife.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Site consists of rocky, intertidal habitat only—no coastal dunes; shorebirds or marine mammals using rocky habitat would occasionally be subjected to impacts from on-leash dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds or other wildlife	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop Road), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop or Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. Under alternative B, impacts on coastal wildlife would be negligible, assuming compliance.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since dog walking use in Fort Baker is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road, the Bay Trail including Battery Yates Loop Road, the Lodge/Conference Center Grounds, and the Parade Ground. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. Under alternative C, impacts on coastal wildlife would be negligible, assuming compliance.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge and Conference Center Grounds and on the Bay Trail (excluding the Battery Yates Loop and Drown Fire Road). No dogs would be allowed on the Parade Ground. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. Assuming compliance, alternative D would have the same impacts as alternative B: negligible.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

Under alternative D, no dog walking would be allowed on the Parade Ground and visitors with dogs may choose to go to another park site that has a large area for walking dogs. Indirect impacts on wildlife in adjacent lands may occur, but because it is unknown where and to what extent wildlife use habitat in nearby parks, the impacts would be predicted to be negligible.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail including the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. Dogs will not be allowed on the Battery Yates Trail as part of this alternative, due to the presence of mission blue butterfly habitat. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. Under the preferred alternative, impacts on coastal wildlife would be negligible, assuming compliance.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the

bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible impacts on wildlife from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) would be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Currently, Crissy Field is a moderate to high use site for on-leash and voice-control dog walking at the beach and other areas of the site. Dogs are allowed under voice control throughout Crissy Field except for the picnic and parking area (which require on-leash dog walking) and a seasonal leash restriction in the WPA for protection of the federally threatened western snowy plover.

Crissy marsh is currently closed to people and dogs. The seasonal leash restriction is in effect the majority of the year (from July 1 through the following May 15), but the site has high incidences (514) of dogs in the WPA violating the seasonal leash restriction (appendix G). In addition, 17 recorded incidents of dogs in closed areas (table 9) were documented in 2007/2008. In June through July 2006, there were 2 instances of dogs chasing birds within the Crissy Field WPA (Hatch et al. 2006, 14) and during the September 2006 through April 2007 surveys, there were a total of 3 observations of dogs chasing shorebirds within the Crissy Field WPA (Hatch et al. 2007, 5). There were no observations of dogs chasing shorebirds or plovers during the July 2007 through February 2008 surveys within the Crissy Field WPA (Hatch et al. 2008, 3). Dog presence, as well as unleashed dogs barking at or chasing after roosting or feeding birds at this site, could disturb wildlife. This type of disturbance could cause loss of preferred habitat as well as energy loss in migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. The park has documented the highest year-round bird densities in the Crissy Marsh (discussed in more detail in the “Wildlife in Wetlands and Aquatic Communities” section), with slightly lower densities in the dune swale and rear dune; bird species richness has been reported at its highest in the wetland, with slightly less richness in the beach and nearshore areas (Ward and Ablog 2006, 25–26 and 92–93). Although bird species richness in the WPA is lower in comparison to other Crissy Field habitats like the marsh (which may be a result of the intense visitor and dog use of the site), there are often relatively large flocks of killdeer in the dunes in the WPA (NPS 2009b). Additionally, marine mammals that haul out or strand at the beach at Crissy Field are occasionally affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using beach/dune habitat, including the WPA, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking occurs regularly at Crissy Field. Commercial dog walking would continue to contribute to the long-term minor to moderate adverse impacts on wildlife. Commercial dog walkers with multiple dogs under voice control would impact wildlife by continued disturbances to wildlife by dogs.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996.

About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term, and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor to moderate adverse impacts on wildlife from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Shorebirds on beach and in WPA (seasonal leash restriction is often violated in the WPA) would occasionally be frequently be subjected to impacts from on-leash and voice-control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; although shorebird numbers are low at the beach they are high in the marsh; visitor use is high at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking throughout Crissy Field, although dogs would be prohibited in the WPA. Crissy Marsh is currently closed to dogs. On-leash dog walking would not allow for dogs to roam freely along the beach. Due to physical restraint, it is highly unlikely that dogs would access the WPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after, and

disturbance and reduction of flushing from preferred areas (the WPA). Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Crissy Field also has a fenced marsh that supports high bird use by shorebirds, wading birds, and waterbirds in addition to the limited numbers of shorebirds that use the beach/ocean shoreline. The combination of on-leash dog walking requirements and the fence that surrounds the marsh would effectively keep dogs out of the area. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse, because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would create the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial dog walkers and private individuals are summarized below.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Crissy Field; therefore, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, no dogs would be allowed in the WPA or on East Beach; therefore, there would be no impact on wildlife in this area. Crissy marsh is currently closed to dogs. On-leash dog walking would be allowed on the promenade and the Multi-use Trail, as well as in the picnic area and parking area. Two ROLAs would be provided under this alternative: one on Crissy Airfield and one along Central Beach. The addition of the Central Beach ROLA would result in impacts on wildlife using the beach ROLA. Shorebirds use the habitat at the Central Beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush, which would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed. Therefore, indirect impacts on wildlife in the Central Beach ROLA would occur due to wildlife avoiding the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative C would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated Central Beach ROLA.

The long-term moderate adverse impacts on wildlife in the Central Beach ROLA would occur in a small portion of the site when compared to the site as a whole (the ROLA encompasses about one-third of the beach habitat at the site). Assuming compliance with proposed regulations, alternative C would result in overall long-term minor adverse impacts on wildlife because occasional disturbances to wildlife from dogs would occur, although shorebirds and marine mammals would be protected through WPA site closure to dogs and by physical restraint of dogs on leash in other areas.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized below in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative C, since ROLAs would be provided on the airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat at the Central Beach ROLA, and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in the beach ROLA would occur due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the Central Beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor adverse impacts, assuming compliance	Shorebirds would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas; the Central Beach ROLA encompasses about one-third of the beach habitat at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would allow dogs on leash along the promenade and the eastern portion of Crissy Airfield. Dogs would not be allowed in the WPA, East Beach or Central Beach. Crissy Marsh, is currently closed to dogs. Dogs would be allowed under voice and sight control only on the western portion of Crissy Airfield (not beach habitat) in a ROLA. There would be no impact on coastal community habitat or wildlife in the airfield ROLA, which supports manicured grass. Assuming compliance, overall impacts on shorebirds, gulls, and terns using beach habitat would be negligible. Prohibiting dogs in beach areas would not allow dogs to access stranded marine mammals.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field. However, dogs under voice and sight control would be allowed on half of Crissy Airfield. Indirect impacts on wildlife in adjacent lands would be expected under alternative D, but only at a negligible level because it is unknown where and to

what extent wildlife use habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact in ROLA	No coastal community habitat or wildlife exists in airfield ROLA, which supports manicured grass		
Overall negligible impacts, assuming compliance	Prohibiting dogs on all beach areas would protect shorebirds and stranded or hauled-out marine mammals; no coastal community habitat or wildlife exists in airfield ROLA	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking in the WPA, at East Beach, in the picnic area and parking area, and along the promenade and the multi-use trail. One ROLA would be established on Crissy Airfield and another ROLA would be established at Central Beach. Crissy marsh is currently closed to dogs. As a result of the ROLAs, the presence of dogs, as well as their barking and running, in the Central Beach ROLA could disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding, causing them to flush. This would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed, resulting in indirect impacts on wildlife in the Central Beach ROLA due to avoidance of the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the Central Beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative E would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated ROLA.

The long-term moderate adverse impacts on wildlife in the Central Beach ROLA would occur in a small portion of the site when compared to the site as a whole (the Central Beach ROLA encompasses about one-third of the beach habitat at the site). However, dogs would be allowed in the majority of the coastal community at Crissy Field, including the WPA and East Beach (on leash) as well as in the ROLA on Crissy Airfield and the ROLA on Central Beach (off leash). No similar habitat to Crissy Marsh exists at the site where dogs are not allowed, and on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. Therefore, assuming compliance with the proposed regulations, alternative E would result in overall long-term minor to moderate adverse impacts on wildlife because occasional to frequent disturbances to wildlife from dogs would occur at the site, including at the WPA, which would allow on-leash dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a

change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized below in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative E since ROLAs would be provided on the airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat at the Central Beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in the Central Beach ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	Dogs would be allowed in the majority of the coastal community at Crissy Field, including the WPA and East Beach (on leash) as well as one ROLA on Crissy Airfield and one ROLA on Central Beach (off leash); the beach ROLA encompasses about one-third of the beach habitat at the site; no similar habitat to Crissy Marsh exists at the site where dogs are not allowed; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach	No change, assuming compliance	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. Under the preferred alternative, no dogs would be allowed in the WPA or on East Beach; therefore, there would be no impact on wildlife in this area. Crissy marsh is currently closed to dogs. On-leash dog walking would be allowed on the promenade and the Multi-use Trail, as well as in the picnic area and parking area. Two ROLAs would be provided under this alternative: one on Crissy Airfield and one along Central Beach. The addition of the Central Beach ROLA would result in impacts on wildlife using the beach ROLA. Shorebirds use the habitat at the Central Beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush, which would result in the birds fleeing to the WPA, East Beach, or other areas where dogs are not allowed. Therefore, indirect impacts on wildlife in the Central Beach ROLA would occur due to wildlife avoiding the area during periods of activity or altogether. Also, marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, the preferred alternative would have long-term moderate adverse impacts on shorebirds, gulls, terns, and marine mammals using the beach inside the designated Central Beach ROLA.

The long-term moderate adverse impacts on wildlife in the Central Beach ROLA would occur in a small portion of the site when compared to the site as a whole (the ROLA encompasses about one-third of beach habitat at the site). Assuming compliance with proposed regulations, the preferred alternative would result in overall long-term minor adverse impacts on wildlife because occasional disturbances to wildlife from dogs would occur, although shorebirds and marine mammals would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized below in overall impacts; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect

birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which does not allow dogs to be off-leash. No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative since ROLAs would be provided on the airfield and on Central Beach.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat at Central Beach ROLA and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in the beach ROLA due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the Central Beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Shorebirds would be protected through WPA site closure to dogs and by physically restraining dogs on leash in other areas; the Central Beach ROLA encompasses about one-third of the beach habitat at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Baker Beach and Bluffs to Golden Gate Bridge

Alternative A: No Action. Dog walking under voice control is allowed on the beach (South Beach and North Beach). On-leash dog walking is allowed in the picnic and parking areas, as well as the on other trails at the site except the Batteries to Bluffs Trail or trails leading to the Batteries to Bluffs Trail, where no dogs are allowed. Baker Beach is a low to moderate use area for on-leash and voice-control dog walking at the beach and other areas of the site. Baker Beach has fairly high numbers of shorebirds, and coastal beach habitat is extensive at this site. In addition, the water at Lobos Creek is quite attractive to gulls, and this area is in the voice-control area for dogs at the southern portion of Baker Beach.

Since alternative A would allow voice-control dog walking on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could result in loss of preferred habitat as well as energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Baker Beach would occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in continued long-term moderate adverse impacts on wildlife using beach/dune habitat because continued frequent and repeated disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Shorebirds on beach would frequently be subjected to impacts from on-leash and voice-control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are fairly high, visitor use is low to moderate, and coastal habitat is extensive at this site; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on North Beach, in the picnic and parking areas, and on all trails leading to the beaches except the Batteries to Bluffs Trail or trails leading to the Batteries to Bluffs Trail, where no dogs would be allowed. No dogs would be allowed on South Beach. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. This could cause birds to use energy reserves unnecessarily and could result in the loss of preferred habitat. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse, because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

The water at Lobos Creek is quite attractive to gulls and this area is within the on-leash area for dogs. On-leash dog walking, if occurring in proximity to wildlife, would cause shorebirds, gulls, and terns roosting and/or feeding on the beach to flee to nearby areas of less activity (if available) or to relocate entirely; both actions would result in unnecessary energy expenditure by fleeing birds.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Since some visitors may choose to visit other park sites that allow off-leash dog walking. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and because it is unknown where and to what extent wildlife use habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Dog walking restrictions under alternative C would be the same as alternative B, with the addition of on-leash dog walking on South Beach, and impacts would be the same, assuming compliance: negligible to long-term minor adverse impacts on marine mammals and shorebirds. Impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Baker Beach and Bluffs to Golden Gate Bridge. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible indirect impacts on wildlife in adjacent lands.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, Baker Beach and Bluffs to Golden Gate Bridge would be divided into on-leash areas and no-dog areas, and all trails providing access to the on-leash areas would require on-leash dog walking as well. Dogs would be prohibited on the beach north of the north parking lot and on the trails that access that section of beach. Dogs would be allowed on only a portion of the beach, and physically restraining dogs on leash would

protect shorebirds and marine mammals on the beach, but on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the on-leash area for dogs at the southern portion of Baker Beach. Therefore, alternative D impacts on wildlife would be negligible to long term, minor, and adverse; the impact range is due to changing seasonal presence of the birds and level of activity at the site. Beach habitat is available north of the parking lot (which would be prohibited to dogs) and in close proximity to Baker Beach. Shorebirds, gulls, and terns might flee from dogs on leash to other portions of the beach, and displacement of birds to another location would have an impact on wildlife.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Since some visitors may choose to visit other park sites that allow off-leash dog walking. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Implementation of alternative E at Baker Beach would provide a ROLA on the beach south of the north parking lot to the plan/EIS boundary (South Beach). On-leash dog walking would be allowed on the remaining beach

(North Beach) and on trails, including those through dune habitat, that access the beach. No dogs would be allowed on the Batteries to Bluffs Trail. Because dogs restricted on leash would be allowed along the northern portion of the beach and a ROLA would be designated for the southern portion of Baker Beach, the presence of dogs, as well as their barking and running, in the ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the off-leash area for dogs at the southern portion of Baker Beach. When dogs and dog walkers are present in the ROLA, birds using the beach in the ROLA could flee from the ROLA to other areas where dogs are not allowed or they may flush and return and be repeatedly disturbed. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat would still indirectly affect wildlife. In addition, marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals. Therefore, alternative E impacts on wildlife in the ROLA would be long term, moderate, and adverse because frequent disturbances from dogs would occur; however, impacts would depend on the seasonal presence of the birds and the level of activity at the site.

The long-term moderate adverse impacts from dogs in the ROLA would occur in about one-third of the beach habitat at the site, and on-leash dog walking would be allowed in the remaining portion of Baker Beach and Bluffs to Golden Gate Bridge. Physically restraining dogs on leash in some areas of the site would protect shorebirds and other wildlife such as marine mammals, but the presence of dogs barking and running (even while on leash) would occasionally to frequently disturb wildlife. Therefore, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be long term and would range from minor to moderate and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach and Bluffs to Golden Gate Bridge. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative E since a ROLA would be established on South Beach and on-leash dog walking would be allowed at most of Baker Beach and Bluffs to Golden Gate Bridge.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds and other wildlife use habitat at the beach ROLA located south of the north parking lot; off-leash dogs could disturb and/or harass shorebirds, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which can bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash in some areas of the site would protect shorebirds and other wildlife but the presence of dogs barking and running (even while on leash) would disturb wildlife; ROLA encompasses about one-third of beach habitat at the site	Beneficial to no change, assuming compliance	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach and Bluffs to Golden Gate Bridge. Under the preferred alternative, Baker Beach and Bluffs to Golden Gate Bridge would be divided into on-leash areas and no-dog areas, and all trails providing access to the on-leash areas would require on-leash dog walking as well. Dogs would be prohibited on Batteries to Bluffs Trail, the beach north of the north parking lot, and the trails that access that section of beach. Dogs would be allowed on only a portion of the beach, and physically restraining dogs on leash would protect shorebirds and marine mammals on the beach, but on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. In addition, the water at Lobos Creek is quite attractive to gulls and this area is in the on-leash area for dogs at the southern portion of Baker Beach. Therefore, the preferred alternative impacts on wildlife would be negligible to long term, minor, and adverse; the impact range is due to the changing seasonal presence of the birds and the level of activity at the site. Beach habitat is available north of the parking lot (which is prohibited to dogs) and in close proximity to Baker Beach and Bluffs to Golden Gate Bridge. Shorebirds, gulls, and terns might flee from dogs on leash to other portions of the beach, and displacement of birds to another location would have an impact on wildlife.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Baker Beach and Bluffs to Golden Gate Bridge. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. Some increase in visitation by dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Since some visitors may choose to visit other park sites that allow off-leash dog walking. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and because it is unknown where and to what extent wildlife use

habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under the preferred alternative, since this area does not have beaches and does not allow off-leash dog walking.

**BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE CONCLUSION
TABLE**

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Lands End

Alternative A: No Action. Dogs are currently allowed under voice control at the Lands End site, which includes the Coastal Trail and the El Camino del Mar Trail. This site has low to moderate use by dog walkers (table 9) and low numbers of reported incidents of dogs in closed areas (two in 2007/2008) (appendix G). This site has no coastal dunes or beaches but rocky, intertidal habitat only.

Alternative A would result in long-term minor adverse impacts on wildlife because shorebirds, waterbirds, wading birds, and marine mammals may occasionally be affected by dogs both on and off leash through dogs barking at, chasing after, and being in proximity to birds or other wildlife, as well as by loss of preferred habitat.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect

birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Site consists of rocky, intertidal habitat only—no coastal dunes; shorebirds or marine mammals using rocky habitat would occasionally be subjected to impacts from on-leash dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds or other wildlife	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking at Lands End on the Coastal Trail, the El Camino del Mar Trail, and the parking areas and connecting trails. This site has no coastal dunes or beaches but rocky, intertidal habitat only. On-leash dog walking would not allow dogs to roam freely or near the rocky, intertidal habitat, but if occurring in proximity to wildlife, on-leash dog walking could cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity

or to relocate entirely. Both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be negligible because shorebirds, waterbirds, and marine mammals may not be affected by dogs due to protection by the leash restriction; rocky, intertidal habitat is not located along or adjacent to on-leash areas at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Commercial dog walking in this site is uncommon, and it is unlikely that leashed dogs would gain access to the rocky, intertidal habitat. Therefore, commercial dog walking would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Lands End under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park's north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would not be allowed under voice and sight control at Lands End, some visitors may visit these adjacent parks for an off-leash dog experience. Indirect impacts on wildlife in adjacent lands from increased dog use may occur but would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking at Lands End on the Coastal Trail, on the steps to the El Camino del Mar Trail, and in the parking areas and on connecting trails. A ROLA would be established along the El Camino del Mar Trail, but in coastal scrub habitat, not coastal community habitat. This site contains no coastal dunes or beaches but rocky, intertidal habitat only. On-leash dog walking would not allow dogs to roam freely or near the rocky, intertidal habitat. Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence at the site. Therefore, alternative C impacts on coastal community wildlife would be negligible, since shorebirds and marine mammals would not likely be affected due to the upland habitat of the ROLA and the leash restriction; no observable or measurable impact on wildlife or their habitats would occur.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C since voice and sight control dog walking would be offered at Lands End under this alternative.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would allow on-leash dog walking at Lands End on the El Camino del Mar Trail and portions of the Coastal Trail (no dogs would be allowed east of the steps) as well as in the parking areas and connecting paths. This site contains no coastal dunes or beaches but rocky, intertidal habitat only. On-leash dog walking would not allow dogs to roam freely or near the rocky, intertidal habitat. Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence. Therefore, alternative D impacts on coastal community wildlife would be negligible.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Lands End under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the

negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park's north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would not be allowed under voice and sight control at Lands End, some visitors may visit these adjacent parks for an off-leash dog experience. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since the Lands End site is currently a low to moderate use area for dog walking and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and overall impacts at the site would be the same, assuming compliance: negligible.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative B was selected as the preferred alternative for Lands End. The preferred alternative would allow on-leash dog walking at Lands End on the Coastal Trail, the El Camino del Mar Trail, and the parking areas and connecting trails. This site has no coastal dunes or beaches but rocky, intertidal habitat only. On-leash dog walking would not allow dogs to roam freely or near the rocky, intertidal habitat, but if occurring in proximity to wildlife, on-leash dog walking could cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity or to relocate entirely. Both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts on wildlife as a result of the preferred alternative would be negligible because shorebirds, waterbirds, and marine mammals may not be affected by dogs due to protection from the leash restriction; rocky, intertidal habitat is not located along or adjacent to on-leash areas at the site.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely

affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible impacts on wildlife from dogs at Lands End under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands may experience increased visitation under the preferred alternative, particularly Golden Gate Park's north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would not be allowed under voice and sight control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on wildlife in adjacent lands from increased dog use may occur but would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

LANDS END PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals using rocky habitat, although on-leash dogs could still disturb roosting and feeding birds as well as marine mammals through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Ocean Beach (Snowy Plover Protection Area)

North of Stairwell 21 and South of Sloat Boulevard has a separate analysis and follows below the SPPA analysis.

Alternative A: No Action. Ocean Beach has a designated SPPA that seasonally restricts dog walking to on leash to protect the western snowy plover during its overwintering season (July 1 to the following May 15); the SPPA also provides protection for other wintering and migrant shorebirds. Current compliance

with the seasonal leash restriction (36 CFR 7.97(d)) is estimated at less than 50 percent by the NPS, and there have been multiple instances where dogs have flushed or chased shorebirds or snowy plovers (table 9) as documented in NPS monitoring reports by Park Natural Resources Division (NPS 2008d; Hatch et al. 2006, 12; Hatch et al. 2007, 4-6; Hatch et al. 2008, 2-4). At this site, harassment (flushing) by dogs and people is common during periods of peak use by migratory/wintering shorebirds (August–May) (Hatch 1996, 9; USFWS 2001, 58). At Ocean Beach, shorebird numbers are high (particularly Central Ocean Beach (Beach Watch 2009)), visitor use is moderate to high, and coastal habitat is represented by a long stretch of beach at this site. Additionally, there are significant areas of concentrations/congregations of roosting gulls and terns that are affected by off-leash dogs at this site.

Under alternative A, the seasonal restriction would continue, with dog walking under voice control allowed the remainder of the year (May 15 to July 1) in the SPPA. Since alternative A would allow voice-control dog walking on the beach outside the SPPA, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could in turn result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Ocean Beach would be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/urrounding the mammals or chasing after hauled-out mammals back into the water. Therefore, alternative A would result in continued long-term moderate to major adverse impacts on wildlife using beach/dune habitat because continued frequent and repeated disturbances to wildlife from dogs would occur, potentially limiting their use of preferred habitat. Disturbance by dogs would cause frequent responses by wildlife because the site has high shorebird abundance and diversity, further supporting the conclusion of a long-term moderate to major adverse impact in the SPPA.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7) but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely

affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate to major adverse impacts on wildlife from dogs at under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate to major, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OCEAN BEACH SPPA ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate to major adverse impacts	The seasonal leash restriction is often violated in the SPPA; dogs would continue to disturb and/or harass the birds, potentially limiting their use of preferred habitat, and to interrupt roosting or foraging behavior, which causes the expenditure of energy and could affect migration and breeding; shorebird numbers are high, visitor use is high, and coastal habitat is extensive at this site	N/A	Long-term moderate to major adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs in the SPPA, allowing on-leash dog walking only on the trail adjacent to the Great Highway. On-leash dog walking would not allow dogs to roam freely along the beach. Due to physical restraint on leash, it is highly unlikely that off-leash

dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after or disturbance and reduction of flushing from preferred areas (the SPPA). Therefore, assuming compliance, there would be no overall impact on wildlife as a result of alternative B in the SPPA because shorebirds and marine mammals may not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach. Alternative B would result in the protection of a large expanse of beach habitat and shorebirds through year-round closure of the SPPA to dogs and by physically restraining dogs on leash in other areas (along the paved Great Highway).

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. However, no overall impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. The lack of impacts on wildlife from dogs at the Ocean Beach SPPA under alternative B were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park, because it is the closest and it allows off-leash dog walking. Under alternative B dogs would not be allowed under voice and sight control. Indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

OCEAN BEACH SPPA ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and beach habitat would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would prohibit dogs in the SPPA, allowing on-leash dog walking only on the trail adjacent to the Great Highway. Due to physical restraint of dogs on-leash in other areas of the site, it is highly unlikely that dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after and disturbance and reduction of flushing from preferred areas (the SPPA). Alternative C would result in the protection of habitat and shorebirds through closure of the SPPA to dogs and by physically restraining dogs on leash in nearby areas. Assuming compliance with proposed regulations, alternative C would result in no impact on shorebirds and marine mammals in the SPPA.

No impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. The lack of impacts on wildlife from dogs at the Ocean Beach SPPA under alternative C were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these effects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative C since dogs would be allowed under voice and sight control in a ROLA on Ocean Beach (north of Stairwell 21, not in the SPPA). Therefore, no indirect impacts on wildlife in adjacent lands from increased dog use would occur.

OCEAN BEACH SPPA ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and marine mammals would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Dog walking restrictions at the Ocean Beach SPPA under alternative D would be the same as alternative B, and impacts would also be the same: no impact on wildlife.

No impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. The cumulative impacts on wildlife at Ocean Beach and the indirect impacts on wildlife in adjacent parks under alternative D would be the same as those under alternative B: negligible.

OCEAN BEACH SPPA ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and habitat would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the beach in the SPPA during all seasons. On-leash dog walking would restrain or prevent dog access to stranded marine mammals; however, activity resulting from walking dogs, such as their barking and lunging in proximity to birds on the beach, could cause birds to flee or relocate, using energy reserves unnecessarily. Impacts would be due to disturbance from on-leash dog walking and dog walkers using the beach habitat where these birds forage and rest during migration and as winter residents; dogs would potentially limit shorebird use of preferred habitat. Therefore, alternative E impacts on wildlife in the SPPA would be long term, minor, and adverse because this section of beach has a high

abundance of shorebirds and although dogs would be required to be on leash, occasional disturbances to wildlife from dogs could occur as a result of this alternative.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the SPPA under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since dog walking would be allowed throughout the site.

OCEAN BEACH SPPA ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	On-leash dogs would be allowed in the SPPA during all seasons and would disturb shorebirds and affect wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; dogs would potentially limit shorebird use of preferred habitat	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Ocean Beach SPPA. The preferred alternative prohibits dogs in the SPPA, allowing on-leash dog walking only on the trail adjacent to the Great Highway. Due to physical restraint of dogs on a leash, it is highly unlikely that dogs would access the SPPA, resulting in protection for resting and feeding shorebirds and waterbirds that may use the area year-round as well as elimination of chasing after and disturbance and reduction of flushing from preferred areas (the SPPA). The preferred alternative would result in the protection of habitat and shorebirds through closure of the SPPA to dogs and by physically restraining dogs on leash in

nearby areas. Assuming compliance with the proposed regulations, the preferred alternative would result in no impact on shorebirds and marine mammals in the SPPA.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. No permits allowing dog walkers to walk four to six dogs would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. However, no overall impact on wildlife in the SPPA would occur from commercial dog walkers because shorebirds and marine mammals would not be affected by disturbance from dogs because dogs would be prohibited on the SPPA beach.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7) but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The lack of impact on wildlife from dogs at the SPPA under the preferred alternative were considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Ocean Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impact from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands would not be expected to experience increased visitation under the preferred alternative, since dogs would be allowed under voice and sight control in a ROLA on Ocean Beach (north of Stairwell 21, not in the SPPA). Therefore, no indirect impacts on wildlife in adjacent lands from increased dog use would occur.

OCEAN BEACH SPPA PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall no impact, assuming compliance	Shorebirds and marine mammals would be protected through SPPA site closure to dogs	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Ocean Beach North of Stairwell 21 and South of Sloat Boulevard

Alternative A: No Action. Under current conditions, dogs are allowed under voice control on the beach both north of Stairwell 21 and south of Sloat Boulevard. Ocean Beach south of Sloat Boulevard has high shorebird use in a very narrow stretch of beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use due to convenient parking (NPS 2009b). Additionally, there are significant areas of concentrations/congregations of roosting gulls and terns that are affected by off-leash dogs at this site.

Since alternative A would allow voice-control dog walking on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue. This type of disturbance by dogs could result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Additionally, marine mammals that haul out or strand at Ocean Beach could be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after the mammals back into the water. Therefore, under alternative A, long-term moderate adverse impacts on wildlife would result because frequent wildlife responses to disturbance from dogs would continue to occur at the site, potentially limiting wildlife's use of preferred habitat.

Under alternative A, no permit system exists for dog walking. At Ocean Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Ocean Beach under alternative A were considered together with the effects of the projects mentioned above under alternative A for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each

alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate, and adverse.

Indirect Impacts in Adjacent Parks

The indirect impacts on wildlife in adjacent lands would be the same as those under alternative A for the Ocean Beach SPPA: no indirect impacts on wildlife in adjacent lands.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Off-leash dogs would continue to disturb and/or harass birds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes expenditure of energy and could affect migration and breeding; south of Sloat Boulevard has high shorebird use in a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use; marine mammals would occasionally be subjected to impacts from dogs on the beach	N/A	Long-term moderate adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the beach north of Stairwell 21 and south of Sloat Boulevard. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity (e.g., the adjacent SPPA) or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Ocean Beach south of Sloat Boulevard has high shorebird use in a very narrow stretch of beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term, minor, and adverse because shorebirds and waterbirds as well as marine mammals may occasionally be affected by on-leash dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative B were considered together with the effects of the projects mentioned above under alternative A for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the

adverse impacts on wildlife from alternative B; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. In addition, the impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

Indirect impacts on wildlife in adjacent lands would be the same as those under alternative B for the Ocean Beach SPPA: negligible.

**OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE B
CONCLUSION TABLE**

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; south of Sloat Boulevard has high shorebird use on a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Implementation of alternative C along these portions of Ocean Beach would establish a ROLA on the length of beach north of Stairwell 21 and would prohibit dogs on the remaining beach, located south of Sloat Boulevard. At Ocean Beach south of Sloat Boulevard, there is a high diversity and abundance of shorebirds, while the beach north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. The presence of dogs, as well as their barking and running, in the designated ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the ROLA for roosting or feeding. When dogs and dog walkers are present in the ROLA, birds using the beach in the ROLA could flee from the ROLA to other areas where dogs are not allowed, such as the nearby SPPA, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on Ocean Beach in the ROLA proposed in alternative C could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded or hauled-out animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, alternative C would have long-term moderate adverse impacts on shorebirds, gulls, and terns as well as marine mammals using beach habitat in the ROLA.

The long-term moderate adverse impacts on wildlife in the ROLA would occur only on about a quarter of the entire beach. Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs are prohibited, but off-leash dogs could occasionally to frequently disturb

shorebirds and marine mammals in the ROLA at this site. Therefore, the overall impact on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard would be long term, minor to moderate, and adverse, assuming compliance. A range is included because impacts would depend on the seasonal presence of the birds and the level of activity at the site as well as the presence of marine mammals.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The short- to long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative C were considered together with the effects of the projects mentioned above under alternative A for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative C; however, the effects from the erosion control project on shorebird habitat would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative C since dogs would be allowed under voice and sight control in a ROLA on Ocean Beach. Therefore, no indirect impacts on wildlife in adjacent lands from increased dog use would be expected.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat in the ROLA north of Stairwell 21 and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs that could bite, bark at, or clamber over marine animals		

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs are prohibited, but the ROLA encompasses about a quarter of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be required north of Stairwell 21 and dogs would be prohibited south of Sloat Boulevard. Overall impacts would be the same as alternative B: long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at Ocean Beach and the indirect impacts on wildlife in adjacent parks would be the same as those under alternative B: long-term minor adverse cumulative impacts and negligible indirect impacts in adjacent lands.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; south of Sloat Boulevard has high shorebird use in a very narrow beach and north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use	Beneficial, assuming compliance	Long-term minor adverse cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would provide a ROLA on the beach north of Stairwell 21 and dogs would be allowed on leash south of Sloat Boulevard. The presence of dogs, as well as their barking and running, in the designated ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding. It is possible that shorebirds, gulls, and terns that roost or feed along the beach could be frequently disturbed by dogs in the ROLA through dogs chasing after and barking at them, which would result in the birds fleeing to other areas where dogs are not allowed or flushing and returning and being repeatedly disturbed. Indirect impacts on wildlife in the ROLA would also occur due to wildlife avoidance of the area during periods of activity or altogether. Marine mammals stranding on Ocean Beach in the ROLA would be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded animals. Therefore,

in the ROLA at Ocean Beach, alternative E would result in long-term moderate adverse impacts on wildlife.

The long-term moderate adverse impacts on wildlife in the ROLA would occur in only a portion of the entire site. Physically restraining dogs on leash at the beach south of Sloat Boulevard would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative E would be long term and would range from minor to moderate and adverse, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under alternative E were considered together with the effects of the projects mentioned above under alternative A for the Ocean Beach SPPA. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since on-leash dog walking and dog walking under voice and sight control in a ROLA would be allowed at the site.

OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat in the ROLA north of Stairwell 21 and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals.		

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash at the beach south of Sloat Boulevard would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife; the ROLA encompasses only a portion of the beach habitat at the site; off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Ocean Beach north of Stairwell 21 and south of Sloat Boulevard. Implementation of the preferred alternative along this portion of Ocean Beach would establish a ROLA on the length of beach north of Stairwell 21 and would prohibit dogs on the remaining beach, located south of Sloat Boulevard. At Ocean Beach south of Sloat Boulevard, there is a high diversity and abundance of shorebirds, while the beach north of Stairwell 21 has relatively high shorebird use in a large area with high visitor use. The presence of dogs, as well as their barking and running, in the designated ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the ROLA for roosting or feeding. When dogs and dog walkers are present in the ROLA, birds using the beach in the ROLA could flee from the ROLA to other areas where dogs are not allowed, such as the nearby SPPA, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on Ocean Beach in the ROLA proposed in the preferred alternative could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over stranded animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Therefore, the preferred alternative would have long-term moderate adverse impacts on shorebirds, gulls, and terns as well as marine mammals using beach habitat in the ROLA.

The long-term moderate adverse impacts on wildlife in the ROLA would occur only on about a quarter of the entire beach. Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard where dogs would be prohibited, but off-leash dogs could occasionally to frequently disturb shorebirds and marine mammals in the ROLA at this site. Therefore, the overall impact on wildlife at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard would be long term, minor to moderate, and adverse, assuming compliance. A range is included because impacts would depend on the seasonal presence of the birds and the level of activity at the site, as well as the presence of marine mammals.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Ocean Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Ocean Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Ocean Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

Projects planned in or near the coastal community that may affect shorebirds include the *Ocean Beach–Great Highway Erosion Control Project*, which is developing long-term solutions to beach and bluff erosion problems at Ocean Beach along Highway 1 (City and County of San Francisco 2008, 3, 7) but could have long-term adverse effects on shorebird habitat.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The short- to long-term minor to moderate adverse impacts on wildlife from dogs at Ocean Beach north of Stairwell 21 and south of Sloat Boulevard under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from the preferred alternative; however, the effects on shorebird habitat from the erosion control project would be adverse. These beneficial and adverse effects from projects at Ocean Beach may balance out when combined. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for this alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Ocean Beach and 15 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands would not be expected to experience increased visitation under the preferred alternative since dogs would be allowed

under voice and sight control in a ROLA on Ocean Beach. Therefore, no indirect impacts would be expected on wildlife in adjacent lands from increased dog use.

**OCEAN BEACH NORTH OF STAIRWELL 21 AND SOUTH OF SLOAT BOULEVARD PREFERRED
ALTERNATIVE CONCLUSION TABLE**

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Shorebirds use the habitat in the ROLA north of Stairwell 21 and off-leash dogs could disturb and/or harass the birds, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the ROLA could be disturbed by off-leash dogs, which can bite, bark at, or clamber over marine animals		
Overall long-term minor to moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach south of Sloat Boulevard, where dogs would be prohibited, but the ROLA encompasses about a quarter of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site; impacts would depend on the seasonal presence of the birds and the level of activity at the site	Beneficial to no change, assuming compliance	Long-term minor to moderate adverse cumulative impacts No indirect impacts in adjacent lands

Fort Funston

Alternative A: No Action. Currently, dogs are allowed on the beach at Fort Funston under voice control. The beach at Fort Funston is a high visitor and dog use area, and is also used by high numbers of shorebirds, gulls, and terns. Beach Watch surveys indicate that the Thornton beach segment (which encompasses Fort Funston) shows high shorebird use (Beach Watch 2009), and park staff often observe large numbers of shorebirds when there are fewer dogs in this area of the site (NPS 2010b). A voluntary seasonal restriction (April 1 through August 15) prohibiting visitors within 50 feet of the cliff face at the north end of the beach is put in place annually to protect a colony of bank swallows nesting in the coastal bluffs. Some dogs have accessed the cliffs from the beach and from the dunes above, resulting in disturbance to the bank swallow colony (table 9); see “Special-status Species” section for more details.

Since voice-control dog walking would continue to be allowed on the beach, dog presence as well as dogs chasing after, barking at, and coming in close proximity to migrating and wintering shorebirds, gulls, and terns roosting or feeding on the beach would continue under alternative A. This type of disturbance by dogs could result in energy loss to migrating and wintering birds, potentially reducing their chances of survival along their migratory routes and reducing fitness for successful reproduction. Birds using beach and coastal bluff habitat at Fort Funston would continue to be frequently and repeatedly disturbed by dogs because the site has high visitor and dog use. In addition to birds, marine mammals that haul out or strand at Fort Funston would occasionally be affected by dogs on the beach through dogs approaching, biting,

barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water.

Additionally, dog walking under voice control would be allowed on the Fort Funston uplands through coastal dune vegetation north and south of the main parking lot. Other impacts on wildlife (besides shorebirds and waterbirds using beach habitat) as a result of dogs at this site would include disturbance, harassment, chasing after, and possible disease transmission; indirect impacts would include physical damage to habitat by dogs digging or trampling. Indirect impacts as a result of dogs include affecting bird habitat and reducing its suitability for songbirds and California quail, which have historically used habitat at Fort Funston. Dogs and dog walkers have created a myriad of informal pathways through the vegetation, resulting in continued long-term moderate adverse impacts on wildlife through fragmentation of habitat and creation of open areas that could be barriers to the movement of smaller animals.

Overall, alternative A would result in continued long-term moderate to major adverse impacts on wildlife using beach and coastal dune habitat at Fort Funston because frequent and repeated disturbances to wildlife from dogs would continue to occur, potentially limiting wildlife's use of preferred habitat at the site and continuing to degrade this habitat.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking regularly occurs at Fort Funston. Commercial dog walking would continue to contribute to the long-term moderate to major adverse impacts on wildlife. Impacts would include repeated disturbances to wildlife from dogs and the degradation of habitat.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Projects in or near the coastal community that may affect shorebirds include the Vista Grande portion of Daly City's stormwater collection system, which routes storm flows to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife

such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate to major adverse impacts on wildlife from dogs at Fort Funston under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT FUNSTON ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate to major adverse impacts	The voluntary seasonal leash restriction would continue to be often violated on the beach and dogs would continue to frequently disturb and/or harass shorebirds and potentially limit their use of preferred habitat and interrupt roosting or foraging behavior, which causes the expenditure of energy and could affect migration and breeding; shorebird numbers are high and visitor use is high at this site; marine mammals would continue to be occasionally subjected to impacts from dogs on the beach	N/A	Long-term minor to moderate adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Fort Funston trails and on the beach, with a voluntary seasonal closure (April 1 through August 15) extending 50 feet from the foot of the northernmost bluffs. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity, like the SPPA at Ocean Beach, or to relocate entirely; both actions would result in loss of preferred habitat and

unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts as a result of alternative B would be long term, minor, and adverse because shorebirds and waterbirds as well as marine mammals may occasionally be affected by on-leash dogs; upland wildlife such as birds and small mammals would also be disturbed by dogs. The level of disturbance would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Fort Funston, dogs walked by commercial dog walkers would cause the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Funston under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B since off-leash dog walking would no longer be allowed at Fort Funston. The closest park that allows off-leash dog walking is Lake Merced. However, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in these adjacent lands.

FORT FUNSTON ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; other wildlife such as birds and small mammals would also be affected by dogs; voluntary seasonal beach closure is currently in place during bank swallow nesting season	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C at Fort Funston would provide two ROLAs: one on the beach south of the beach access trail to the southern boundary of the site and one in coastal dune habitat north of the main parking lot. On-leash dog walking would be allowed on all trails at the site except the Battery Davis Trail, the Horse Trail, and the northern portion of the Coastal Trail (which is closed due to erosion). Dogs would be prohibited on the beach from the Beach Access Trail northward. The beach ROLA is a high use area and is preferred habitat for shorebirds; the presence

of dogs, as well as their barking and running, in the designated ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the ROLA for roosting or feeding. When dogs and dog walkers are present in the ROLA, birds using the beach in the ROLA could flee to other areas where dogs are not allowed, such as the northern portion of the beach or the SPPA at Ocean Beach, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on the beach at Fort Funston in the ROLA could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Existing wildlife and wildlife habitat in both of the designated ROLAs would be adversely affected by disturbance from dogs. Because of mobility, wildlife can usually avoid these areas during peak activity or habituate to these activities, but indirect impacts on wildlife in the ROLAs due to wildlife avoidance of the area during periods of activity or altogether would still affect wildlife. In addition, restoration at Fort Funston would be partially precluded by dogs in the ROLAs at the site. Therefore, alternative C would have long-term major adverse impacts on wildlife in the ROLAs at Fort Funston because these are high use areas for shorebirds and other wildlife, indicating the presence of preferred habitat despite the level of disturbance by dogs.

The long-term major adverse impacts on wildlife in the ROLAs would occur in only a portion of the entire site. Shorebirds and marine mammals would be protected at the beach north of the Beach Access Trail, where dogs would be prohibited, but the beach ROLA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site. Other wildlife, such as birds and small mammals, use the upland ROLA that supports coastal habitat and would also be disturbed by dogs. Habitat restoration would be partially precluded by dogs at the site. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, moderate, and adverse due to frequent disturbances to wildlife as a result of dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative C since off-leash dog walking would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Indirect impacts on wildlife in adjacent

lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in these lands, and even though Fort Funston is a high use site for dog walking, not all dog walkers would start visiting other parks once the new regulation is implemented.

FORT FUNSTON ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts in ROLAs	The beach ROLA is a high use area and preferred habitat for shorebirds; other wildlife use the upland ROLA that supports coastal habitat; off-leash dogs could disturb and/or harass the birds and wildlife, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLAs would be due to avoidance of the area during periods of activity or altogether; marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over the animals		
Overall long-term moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach north of the Beach Access Trail, where dogs would be prohibited, but the beach ROLA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland ROLA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D at Fort Funston would allow on-leash dog walking on the beach between the Beach Access Trail and the southern boundary of the site. North of the Beach Access Trail, dogs would be prohibited. Additionally, alternative D would provide a fenced ROLA in a previously disturbed area of coastal dune habitat north of the water fountain, but would otherwise restrict dogs to on leash on trails except for the Horse Trail, where dogs would be prohibited, and the northern portion of the Coastal Trail, which is closed because of erosion. As a result, impacts on wildlife using coastal dune habitat would be limited and restored areas would be protected. A voluntary beach seasonal closure is currently in place during bank swallow nesting season, which protects wildlife, and physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach. This may cause shorebirds, gulls, and terns using the beach habitat for roosting or feeding to relocate to portions of the beach where dogs are not allowed (the northern portion of the beach or the SPPA at Ocean Beach). It is assumed that shorebirds and other wildlife using the beach would not use habitat on the beach during periods of activity or may avoid the area completely or habituate to these activities, but loss of preferred habitat would still have an impact on wildlife. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity, or they may habituate to

these activities, but indirect impacts in the ROLA due to wildlife avoidance of the area during periods of activity or altogether would still affect wildlife. Off-leash dogs could disturb and/or harass the birds and wildlife in the ROLA, causing them to flush and return repeatedly. Therefore, alternative D would have long-term moderate adverse impacts on wildlife in the ROLA at Fort Funston due to the frequent disturbance of wildlife by dogs.

The moderate adverse impacts on wildlife in the upland ROLA would occur only in a portion of the entire site. Physically restraining dogs on leash in areas beyond the ROLA would protect shorebirds and marine mammals on the beach as well as upland wildlife in the coastal dunes, although on-leash dogs could still disturb birds and other wildlife. Additionally, the beach voluntary seasonal closure would be in place during bank swallow nesting season, which would protect other wildlife as well as bank swallows. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, minor, and adverse due to occasional disturbances to wildlife.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Funston under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D since off-leash dog walking would be limited to a ROLA at Fort Funston. In addition, some interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. However, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because even though Fort Funston is a high use site for dog walking, not all dog walkers would start visiting parks other than Fort Funston once the new regulation is implemented and it is unknown where and to what extent wildlife use habitat in these adjacent lands.

FORT FUNSTON ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in ROLA	Wildlife such as birds and small mammals use the upland ROLA, which supports coastal habitat; off-leash dogs could disturb and/or harass the birds and wildlife, causing them to flush and return repeatedly; indirect impacts on wildlife in the ROLA would be due to avoidance of area during periods of activity or altogether		

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds and other wildlife by their presence; other wildlife use the upland ROLA, which supports coastal habitat; on-leash areas make up a large portion of the site; beach voluntary seasonal closure is currently in place during bank swallow nesting season	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E at Fort Funston would establish two ROLAs: one on the beach south of the Beach Access Trail and one between the Chip Trail, the western boundary of the Habitat Corridor, and the Horse Trail, in existing coastal dune vegetation. On-leash dog walking would be allowed on trails except the Horse Trail and the northern portion of the Coastal Trail (which is closed due to erosion), as well as on the beach north of the Beach Access Trail. A voluntary seasonal restriction (April 1 through August 15) currently extends 50 feet from the cliff face to protect the bank swallow colony nesting in the coastal bluffs. For shorebirds, gulls, and terns resting and feeding on the beach, the presence of running, barking dogs in the beach ROLA would result in disturbance that could result in relocation. It is possible that shorebirds, gulls, and terns that roost or feed along the beach could be disturbed by dogs in the ROLA chasing after them and barking, which would result in the birds fleeing to other areas where dogs are not allowed or flushing and returning and being repeatedly disturbed. Even on-leash dog walking could disturb birds as a result of barking and lunging, which would force birds to relocate. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat would still indirectly affect wildlife. Although a voluntary seasonal restriction prohibiting dogs is in place, it is unlikely that shorebirds, gulls, and terns would relocate to the closed portion of the beach because it is located at the base of the cliffs, not at the waterline. For the remainder of the year, shorebirds, gulls, and terns that are present in the ROLA would be forced to relocate farther away since dogs on leash would still be allowed north of the Beach Access Trail. In addition, marine mammals on the beach at Fort Funston in the ROLA proposed in alternative E would continue to be subjected to disturbance from unleashed dogs, which can bite, bark at, or clamber over stranded or hauled-out animals. The presence of dogs in the large coastal dune ROLA corridor that would be established under this alternative would result in disturbance to wildlife as well as the continued fragmentation of coastal dune habitat. Existing wildlife and wildlife habitat in both of the designated ROLAs would continue to be disturbed. In addition, restoration at Fort Funston would be partially precluded by dogs in the ROLAs at the site. Because the beach ROLA is a high use area and is preferred habitat for shorebirds, marine mammals can be present in the beach ROLA, and other wildlife use the upland ROLA that supports coastal dune habitat, long-term major adverse impacts on wildlife would occur in the ROLAs at Fort Funston as a result of alternative E because frequent and repeated disturbances to wildlife from dogs would occur, potentially limiting wildlife use of preferred habitat at the site and continuing to degrade this habitat.

The long-term major adverse impacts on wildlife in the ROLAs would occur in a relatively large portion of the site. Frequent disturbances to wildlife from dogs would occur, potentially limiting wildlife use of preferred habitat and continuing to degrade preferred habitat at the site. Wildlife would be required to move to other locations, resulting in impacts on wildlife due to habitat loss. In addition, restoration at Fort Funston would be partially precluded by dogs in the ROLAs at the site. Therefore, assuming compliance,

alternative E would result in long-term moderate adverse impacts on wildlife at this site because dogs (both on leash and in ROLAs) would be allowed in a large area that bisects most of the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation by individual and commercial dog walkers under alternative E since off-leash dog walking would be offered in two ROLAs at Fort Funston, which would include the interior portion of Fort Funston and more than half of the beach. Therefore, no indirect impacts on wildlife in adjacent lands would occur from increased dog use.

FORT FUNSTON ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts in ROLAs	The beach ROLA is a high use area and is preferred habitat for shorebirds; other wildlife use the upland ROLA, which supports coastal dune habitat; off-leash dogs could disturb and/or harass the birds and wildlife, causing them to flush and return repeatedly; indirect impacts on wildlife in ROLAs would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which could bite, bark at, or clamber over marine animals		

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term moderate adverse impacts, assuming compliance	Physically restraining dogs on leash at the beach north of the Beach Access Trail (with a seasonal closure) would protect shorebirds and marine mammals, although on-leash dogs could still disturb shorebirds and wildlife; the beach ROLA encompasses about one-half of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland ROLA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Funston. The preferred alternative at Fort Funston would provide two ROLAs: one on the beach south of the beach access trail to the southern boundary of the site and one in coastal dune habitat north of the main parking lot. On-leash dog walking would be allowed on all trails at the site except the Battery Davis Trail, the Horse Trail, and the northern portion of the Coastal Trail (which is closed due to erosion). Dogs would be prohibited on the beach from the beach access trail northward. The beach ROLA is a high use area and is preferred habitat for shorebirds; the presence of dogs, as well as their barking and running, in the designated ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat in the ROLA for roosting or feeding. When dogs and dog walkers are present in the ROLA birds using the beach in the ROLA could flee to other areas where dogs are not allowed, such as the northern portion of the beach or the SPPA at Ocean Beach, or they may flush and return and be repeatedly disturbed. Marine mammals stranding or hauling out on the beach ROLA at Fort Funston could be subjected to disturbance from unleashed dogs, which could bite, bark at, or clamber over the animals. The presence of dogs could preclude establishment of new haul-out sites and/or breeding and pupping sites as marine mammal populations expand. Existing wildlife and wildlife habitat in both of the designated ROLAs would be adversely affected by disturbance from dogs. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but indirect impacts in the ROLAs due to wildlife avoidance of the areas during periods of activity or altogether would still affect wildlife. In addition, restoration at Fort Funston would be partially precluded by dogs in the ROLAs at the site. Therefore, the preferred alternative would have long-term major adverse impacts on wildlife because these are high use areas for shorebirds and other wildlife, indicating the presence of preferred habitat despite the level of disturbance by dogs.

The long-term major adverse impacts on wildlife in the ROLAs would occur only in a portion of the entire site. Shorebirds and marine mammals would be protected at the beach north of the Beach Access Trail, where dogs would be prohibited, but the beach ROLA encompasses about one-half of the beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach. Other wildlife, such as birds and small mammals, use the upland ROLA that supports coastal habitat and would also be disturbed by dogs. Habitat restoration would be precluded by dogs at the site. Therefore, assuming compliance, the overall impact on wildlife at Fort Funston would be long term, moderate, and adverse due to frequent disturbances to wildlife as a result of dogs.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six

dogs off leash and the permit may restrict use by time and area. Permits would be allowed for Fort Funston. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Fort Funston, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above in overall impacts; therefore, impacts from commercial dog walking would be long term, moderate, and adverse.

Cumulative Impacts. Projects and actions in and near Fort Funston were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Projects in or near the coastal community that may affect shorebirds include the Vista Grande portion of Daly City's stormwater collection system, which routes storm flows to an outfall structure at the beach below Fort Funston (City of Daly City 2010b, 3). Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term moderate adverse impacts on wildlife from dogs at Fort Funston under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be long term, minor and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within about a 10-mile radius of Fort Funston and 16 parks within about a 5-mile radius; the closest park is Lake Merced (map 27). The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under the preferred alternative since off-leash dog walking would be limited to two ROLAs at Fort Funston. In addition, interior portions of Fort Funston would no longer be open to dogs. The closest park that allows off-leash dog walking is Lake Merced. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in these lands, and even though Fort Funston is a high use site for dog walking, not all dog walkers would start visiting other parks once the new regulation is implemented.

FORT FUNSTON PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term major adverse impacts in ROLAs	The beach ROLA is a high use area and is preferred habitat for shorebirds; other wildlife use the upland ROLA, which supports coastal habitat; off-leash dogs could disturb and/or harass the birds and wildlife, causing them to flush and return repeatedly; indirect impacts on wildlife in the ROLA would be due to avoidance of area during periods of activity or altogether; marine mammals that strand or haul out in the beach ROLA could be disturbed by off-leash dogs, which can bite, bark at, or clamber over marine animals		
Overall long-term moderate adverse impacts, assuming compliance	Shorebirds and marine mammals would be protected at the beach north of the Beach Access Trail, where dogs would be prohibited, but the beach ROLA encompasses about one-half of beach habitat at the site and off-leash dogs could disturb shorebirds and marine mammals on the beach at this site as well as other wildlife in the upland ROLA; restoration would be precluded by dogs at the site	Beneficial to no change, assuming compliance	Long-term minor adverse cumulative impacts Negligible indirect impacts in adjacent lands

SAN MATEO SITES

Mori Point

Alternative A: No Action. Currently, access to the small beach area within the NPS boundary is allowed for on-leash dog walking. The site receives moderate use by people walking dogs, but the section of beach in Mori Point is very small. On-leash dog walking is also allowed on the trails at the site. Park staff

members have observed some unleashed dogs at the site; 54 leash law violations were recorded at the site in 2007/2008 (table 9).

Under alternative A, shorebirds, gulls, and terns that may roost or feed on the beach would continue to be subjected to disturbance from barking, excited dogs, even though on leash, resulting in shorebirds fleeing from one location to another on the beach or leaving the area entirely. Additionally, marine mammals that haul out or strand at the beach would occasionally be affected by dogs on the beach through dogs approaching, biting, barking at, or climbing on/surrounding the mammals or chasing after hauled-out mammals back into the water. On-leash dog walking at Mori Point would have continued long-term minor adverse impacts on wildlife along the beach within the NPS boundary because occasional disturbances from dogs would occur at this site.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that

would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Shorebirds on beach would occasionally be subjected to impacts from on-leash dogs (and off-leash dogs violating the leash law) through dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are low, visitor use is moderate, and beach habitat area is small at this site	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail and the beach (the portion owned by the NPS). On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore, assuming compliance, overall impacts on wildlife as a result of alternative B would be long term and would range from negligible to minor and adverse because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible

due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The closest parks to Mori Point are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). Lands adjacent to Mori Point may experience some increased visitation under alternative B since only the Coastal Trail would be open to dogs, resulting in negligible indirect impacts on wildlife in adjacent lands because although visitors with dogs may choose to visit a different park due to this reduced trail availability, it is unknown where and to what extent wildlife use habitat in adjacent lands.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on the beach within the NPS boundary, on the Coastal Trail, and on Old Mori Road and would result in the same impacts as alternative B: negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks are not expected to experience an increase in visitation under alternative C

since the Coastal Trail and Old Mori Road would be open to dogs, resulting in no indirect impacts on wildlife in adjacent lands.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would prohibit dogs throughout Mori Point, including on the NPS-owned portion of beach. Shorebirds, gulls, and terns that may roost or feed on the beach would be protected from disturbance related to having dogs on the beach. As a result, no impacts on shorebirds, gulls, terns, or stranded marine mammals at Mori Point would occur.

Since dogs would be prohibited from Mori Point, there would be no impact from commercial dog walking on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs combined with the negligible impacts from the past oil spill and from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. Indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at Mori Point	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the Coastal Trail, Old Mori Road, the Pollywog Path, and the beach within the

NPS boundary and would result in the same impacts as alternative B, assuming compliance: negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks are not expected to experience an increase in visitation under alternative C since most of the trails at Mori Point would be open to dogs, resulting in no indirect impacts on wildlife in adjacent lands.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on the beach within the NPS boundary, on the Coastal Trail, and on Old Mori Road. On-leash dog walking would not allow dogs to roam freely along the beach. Physically restraining dogs on leash would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and lunging/barking at roosting, resting, and feeding birds. On-leash dog walking, if occurring in proximity to wildlife, would cause birds roosting and/or feeding on the beach to flee to nearby areas of less activity or to relocate entirely; both actions would result in loss of preferred habitat and unnecessary energy expenditure by fleeing birds. Therefore,

assuming compliance, overall impacts on wildlife as a result of the preferred alternative would be long term and would range from negligible to minor and adverse because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to shorebirds by activities such as controlling invasive plant species, supporting coastal habitats, and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on coastal communities, including shorebirds. Generally, adverse impacts on shorebirds may include temporary or permanent loss of habitat and physical disturbance by construction workers or from vehicle and/or boat noise during construction; levels of impacts may include avoidance, underuse, complete abandonment, or reduction in total numbers of shorebirds at construction areas in the coastal community. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

In addition to development and restoration projects, oil spills have occurred and will likely occur in the Pacific Ocean and in San Francisco Bay and will impact coastal community wildlife. Oil spills affect birds, mammals, and fish (MMC 2007). Marine mammals such as fur seals and sea otters are extremely affected by oil on the water, as are birds that float on the surface of the water (such as scoters and grebes). On November 7, 2007, approximately 58,000 gallons of bunker fuel spilled from a container ship into the bay, resulting in the largest oil spill in the San Francisco Bay since the Cape Mohican incident in 1996. About 1,081 live birds were reported taken for rehabilitation and about 1,803 birds were reported to have been found dead as a result of this incident (USFWS 2007b, 1), although recent estimates show that bird mortality may have been as high as 6,688 individuals; a draft restoration plan is being prepared (USFWS 2009c, 1). The November 7, 2007, oil spill had short-term minor to moderate adverse effects on wildlife such as marine mammals and birds at project sites in GGNRA. For the most part, the impacts on wildlife from this spill lasted only a few weeks, especially on the sandy beaches of the park. In the long term and by the time this dog management plan/EIS is implemented, impacts on wildlife at project sites in GGNRA should be reduced to a negligible level.

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from the past oil spill and from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for

these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks are not expected to experience an increase in visitation under the preferred alternative since the Coastal Trail and Old Mori Road would be open to dogs, resulting in no indirect impacts on wildlife in adjacent lands.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect shorebirds and marine mammals on beach, although on-leash dogs could still disturb roosting and feeding birds through barking and by their presence on the beach; impact range is due to changing seasonal presence of the birds and level of activity at the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Coastal Communities

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

At most new lands, overall impacts as a result of alternative A would range from a negligible to long-term, minor, adverse impact to wildlife because shorebirds and waterbirds as well as marine mammals may not be or may be occasionally to frequently effected by on-leash dogs. On-leash dog walking would not allow for dogs to roam freely along beaches. The physical restraint of dogs by a leash would protect and reduce chasing after shorebirds and marine mammals on the beach. Even though dogs would be restricted on a leash, the presence of dogs in proximity to or barking and lunging at marine mammals or birds can cause birds to flee or relocate, using energy reserves unnecessarily and loss of preferred habitat. A range is presented to encompass the potential effects, since impacts depend on the seasonal presence of the birds and the level of activity at the site. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife. At sites where commercial dog walking is common, impacts to the coastal community wildlife from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the

cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community wildlife in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs (range depicts seasonal presence of birds and activity on site)	The physical restraint of dogs would protect and shorebirds and marine mammals on beach; dogs barking and lunging at birds can cause fleeing or relocation, causing unnecessary energy loss preferred habitat loss.	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis for wildlife resources was adopted to encompass a range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal communities such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas that support numerous wildlife species.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible

impact on coastal community wildlife. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At new lands and assuming compliance, overall impacts from private and commercial dog walkers as a result of alternatives B and C would range from a negligible to long-term, minor, adverse impact to wildlife because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. On-leash dog walking would not allow for dogs to roam freely along beaches. The physical restraint of dogs by a leash would protect and reduce chasing after shorebirds and marine mammals on the beach. Even though dogs would be restricted on a leash, the presence of dogs in proximity to or barking and lunging at marine mammals or birds can cause birds to flee or relocate, using energy reserves unnecessarily and loss of preferred habitat. A range is presented to encompass the potential effects, since impacts depend on the seasonal presence of the birds and the level of activity at the site. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community wildlife in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs (range depicts seasonal presence of birds and activity on site)	The physical restraint of dogs would protect and shorebirds and marine mammals on beach; dogs barking and lunging at birds can cause fleeing or relocation, causing unnecessary energy loss preferred habitat loss.	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Alternative D could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis for wildlife was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal communities such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas that support numerous wildlife species.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on the coastal community wildlife.

At new lands and assuming compliance, overall impacts from dog walkers as a result of alternative D would range from a negligible to long-term, minor, adverse impact to wildlife because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. On-leash dog walking would not allow for dogs to roam freely along beaches. The physical restraint of dogs by a leash would protect and reduce chasing after shorebirds and marine mammals on the beach. Even though dogs would be restricted on a leash, the presence of dogs in proximity to or barking and lunging at marine mammals or birds can cause birds to flee or relocate, using energy reserves unnecessarily and loss of preferred habitat. A range is presented to encompass the potential effects, since impacts depend on the seasonal presence of the birds and the level of activity at the site. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs (range depicts seasonal presence of birds and activity on site)	The physical restraint of dogs would protect and shorebirds and marine mammals on beach; dogs barking and lunging at birds can cause fleeing or relocation, causing unnecessary energy loss preferred habitat loss.	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and, possibly designated ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include coastal communities such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas that support numerous wildlife species.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog

walking at these sites would result in negligible impacts on wildlife. At sites where commercial dog walking is common, impacts to wildlife would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible to long-term, minor and adverse. On-leash dog walking may be permitted on beaches and on trails including those through dune habitat that access beach areas. The physical restraint of dogs in some areas of the site would protect shorebirds and other wildlife such as marine mammals but the presence of dogs barking and running (even while on a leash) would occasionally disturb wildlife, thus substantiating a long-term, minor, adverse impact. It is assumed that ROLAs would not be established within areas that support sensitive coastal wildlife so the park's desired future conditions can be attained. Even so, dogs under voice and sight control within a ROLA (i.e., beach ROLA), would affect wildlife through physical disturbance and presence. The presence of dogs as well as barking and running within the ROLA would disturb shorebirds, gulls, and terns using the beach/dune habitat for roosting or feeding. When dogs and dog walkers are present within the ROLA, birds using the beach within the ROLA could flee from the ROLA to other areas where dogs are not permitted or they may flush and return and be repeatedly disturbed. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat still indirectly affects wildlife. In addition, marine mammals that strand or haul-out within the ROLA could be disturbed by off-leash dogs that can bite, bark at, or clamber over marine animals. Therefore, within the ROLA, alternative E impacts would be long-term, moderate, and adverse to wildlife because frequent disturbances from dogs would occur but impacts depend on the seasonal presence of the birds and the level of activity at the site. Therefore, assuming compliance, overall impacts to coastal community vegetation from private and commercial dog walkers as a result of alternative E would range from negligible to long-term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. It is also important to note that no impacts to coastal wildlife are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community wildlife in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Long-term, moderate, adverse impacts within the ROLA Negligible to long-term, moderate, adverse impact; no impact at sites that prohibit dogs (range depicts seasonal presence of birds and activity on site)	The presence of dogs barking and running in the ROLA using the beach/dune habitat for roosting or feeding; Dogs could also disturb marine mammals stranded in a ROLA. The physical restraint of dogs would protect and shorebirds and marine mammals on beach; dogs barking and lunging at birds can cause fleeing or relocation, causing unnecessary energy loss preferred habitat loss. Dogs could disturb marine mammals stranded in a ROLA.	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Preferred Alternative: Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

The preferred alternative could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis for wildlife was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal communities such as coastal dunes, beaches, adjacent open water, and rocky intertidal areas that support numerous wildlife species.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal community wildlife. At sites where commercial dog walking is common, impacts to coastal community wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to coastal community wildlife from dogs walked by both commercial and private individuals are summarized below.

At new lands and assuming compliance, overall impacts from private and commercial dog walkers as a result of the preferred alternative would range from a negligible to long-term, minor, adverse impact to wildlife because shorebirds and waterbirds as well as marine mammals may not be affected or may occasionally be affected by on-leash dogs. On-leash dog walking would not allow for dogs to roam freely along beaches. The physical restraint of dogs by a leash would protect and reduce chasing after shorebirds and marine mammals on the beach. Even though dogs would be restricted on a leash, the presence of dogs in proximity to or barking and lunging at marine mammals or birds can cause birds to flee or relocate, using energy reserves unnecessarily and loss of preferred habitat. A range is presented to encompass the potential effects, since impacts depend on the seasonal presence of the birds and the level of activity at the site. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on coastal community wildlife in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Community Wildlife Impacts	Rationale	Cumulative Impacts	Impact Change Compared to Current Conditions
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs (range depicts seasonal presence of birds and activity on site)	The physical restraint of dogs would protect and shorebirds and marine mammals on beach; dogs barking and lunging at birds can cause fleeing or relocation, causing unnecessary energy loss preferred habitat loss.	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

WILDLIFE IN COASTAL SCRUB, CHAPARRAL, AND GRASSLAND COMMUNITIES

Coastal scrub, bluff scrub, chaparral, and grassland plant communities are found to some extent at many of the GGNRA sites considered in this plan/EIS, but at the more developed sites in San Francisco County only small remnants may remain (such as Crissy Field and Fort Point trail areas). As a result, only impacts on largely undeveloped park sites containing intact acreage of coastal scrub/chaparral/grassland are analyzed. These communities form a mosaic that provide habitat for many species of wildlife. Wildlife species that use these habitats and may be affected by dog management are discussed in detail in the sections below.

Alternative A: No Action

Common to All Sites. Sites currently have varying degrees of adverse impacts, as shown by levels of use and numbers of citations and incident reports related to dog activities at the site (appendix G and table 9). A detailed literature review was conducted for this plan/EIS to determine impacts on wildlife species such as birds, small mammals, and deer as a result of dogs, the results of which are summarized in the previous paragraphs titled “Impacts Common to All Alternatives.” Unrestrained dogs, because of their innate abilities as hunters, could affect wildlife by disturbing birds (low- and ground-nesting birds would be affected the most) and reptiles using roosting or sunning sites, chasing after fleeing birds and small mammals, and even on occasion capturing individuals. Dogs have a keen sense of smell and can identify burrows of reptiles (e.g., gopher snakes) and small mammals (mice, moles, voles, etc.), destroy the burrows by digging, and capture animals living in the burrows. Dogs off leash and unrestrained by voice control could also encounter coyotes in the developed areas of GGNRA (San Francisco sites) and in some of the more undeveloped and expansive areas of GGNRA, such as the Marin Headlands Trails and San Mateo sites. Dog/coyote interactions could result in injury and possibly transmission of disease to either species, as well as injury to visitors. Mountain lions are increasingly encountered in more suburban settings, and although they are not likely to be present when human and dog activity is highest in GGNRA sites with appropriate habitat, it is possible that mountain lions could interact with humans and dogs. As a result of such interaction, injury, death, or potential transfer of disease could occur. The NPS strives to provide a landscape that would benefit coyotes and mountain lions in GGNRA while minimizing the potential for encounters with dogs or humans. Because of the range and extent of these communities and the similarity of potential impacts on wildlife resulting from dog management, the discussion of impacts by alternative will be treated more specifically by site or groups of sites in the paragraphs that follow.

MARIN COUNTY SITES

Homestead Valley

Alternative A: No Action. Currently, dogs are allowed under voice control or on leash throughout the site. This site has low visitor use for dog walkers (table 9). The trails in this site are easily accessible from residential areas and Homestead Valley is adjacent to larger tracts of open land across Panoramic Highway.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Homestead Valley because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Homestead Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for

vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Homestead Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Homestead Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute cumulatively to wildlife impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Homestead Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 26). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location would allow off-leash access). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

HOMESTEAD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Homestead Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative B since off-leash dog walking would no longer be allowed at this site. Impacts on wildlife in adjacent lands from potential increased dog use would be negligible, since this is a low use site for dog walking activities and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and the impacts on wildlife would be the same: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts on wildlife in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along Homestead Fire Road; dogs would be prohibited in other areas of the site, providing protection to coastal scrub/chaparral/grassland habitat and wildlife by limiting the number of trails accessible to dogs and by restricting that access to on-leash dog walking. The LOD area would include the fire road and the 6 feet of land adjacent to the edges of the road, as described in alternative B. The habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on wildlife.

No commercial dog walking would be allowed under alternative D; therefore, there would be no impacts from commercial dog walking. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Homestead Valley under alternative D were considered together with the effects of the projects mentioned

above under alternative A. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increased visitation under alternative D since off-leash dog walking would no longer be allowed at this site. Impacts on wildlife in adjacent lands from potential increased dog use would be negligible since this is a low use site for dog walking activities and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking

activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts in adjacent lands.

HOMESTEAD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Homestead Valley. The preferred alternative would allow on-leash dog walking on Homestead Fire Road and on neighborhood connector trails that would be designated in the future. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking

and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Homestead Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking activity in Homestead Valley is low and commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Homestead Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Homestead Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Homestead Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute cumulatively to wildlife impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Homestead Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 38 parks with dog use areas within a 10-mile radius of Homestead Valley and 26 parks within a 5-mile radius; the closest parks are Old Mill Park and Plaza, which are part of the City of Mill Valley (map 26). The closest parks with off-leash dog use areas are Bayfront Park in Mill Valley and Camino Alto Open Space Preserve (fire roads in the latter location would allow off-leash access). The adjacent lands may experience some increased visitation under the preferred alternative since off-leash dog walking would no longer be allowed at this site. Impacts on wildlife in adjacent lands from potential increased dog use would be negligible since this is a low use site for dog walking activities and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

HOMESTEAD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Currently, dogs are allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by commercial dog walkers (table 9), with typically 5 to 12 dogs under voice control per commercial walker, and the trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. There are large tracts of habitat in the Alta Trail/Orchard Fire Road/Pacheco Fire Road that extend north into Muir Beach.

Under the no-action alternative, access to wildlife habitat off trails and fire roads would continue. Disturbance from dogs could include physical damage to habitat from digging or trampling, as well as dogs chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Nests of ground-nesting birds could be trampled, thus eliminating the opportunity for successful reproduction. Ground-dwelling and ground-nesting bird species such as California quail, which uses the scrub/chaparral/grassland habitat, are in decline. Birds foraging in the coastal scrub/chaparral/grassland mosaic can be flushed and forced into flight; relocating to another area uses valuable energy reserves or results in an unprotected nest, providing opportunity for predators. Time and energy that would otherwise be spent feeding (including feeding young) or protecting nests becomes lost when these birds are disturbed or chased by dogs. Small rodents and mammals may also be chased and/or captured by dogs; burrows of these animals may be crushed or dug up by dogs. Dogs also have the potential to encounter larger mammals such as deer or coyotes. Deer could be chased by dogs, resulting in loss of energy reserves and the dispersal of family units. Dog/coyote interactions could lead to altercations and even the exchange of parasites and disease because of the genetic similarities, as previously discussed. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but

the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at this park site because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor to moderate adverse impacts on wildlife. Dogs under voice control would continue to disturb wildlife in the area.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect coastal scrub at GGNRA park sites such as Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Local and statewide declines have been observed in several birds that breed in coastal scrub, most notably the California gnatcatcher, which is a federally threatened species endemic to Southern California, as well as common species such as the white-crowned sparrow (USDA 2005, 613). Any impacts on scrub/chaparral/grassland habitats, whether beneficial or adverse, will also indirectly affect wildlife species that use these habitats. The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts, such as the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009d, ix, 82), which primarily provides mitigation for impacts on the mission blue butterfly. Therefore, these projects would not likely contribute adversely to the cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (e.g., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Southern Marin Headlands project, which focused on enhancing the Coastal Trail corridor in the southern Marin Headlands (GGNPC n.d.)

The long-term minor to moderate adverse impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which allows off-leash dog use (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Alta Trail to Orchard Fire Road, on Orchard Fire Road, and on Pacheco Fire Road. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD area would include all areas adjacent to the edges of the trail/roads up to 6 feet. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts that would occur in the LOD area would encompass a reduced portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance to wildlife from dogs would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog

walkers would cause the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized below.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Pacheco and Orchard fire roads under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site. Impacts would be negligible even though Alta Trail and the fire roads are considered high use areas for commercial dog walkers, because it is unknown where and to what extent wildlife use habitat in adjacent parks.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are only a portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Impacts on wildlife from permit holders with up six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on wildlife from dogs would occur at this site.

No dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the restoration and trail rehabilitation projects combined with the negligible impacts from construction and transportation projects and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D since this alternative would not allow dogs at this site. Because it is unknown where and to what extent wildlife use habitat in adjacent lands and it is not known where these dog walkers would go, indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and overall impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at the site, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at the Alta Trail/Orchard Fire Road/Pacheco Fire Road site and the indirect impacts on wildlife in adjacent parks would be the same as those under alternative B: negligible cumulative impacts and negligible indirect impacts in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. The preferred alternative would allow on-leash dog walking on the Alta Trail to Orchard Fire Road, Orchard Fire Road, and Pacheco Fire Road. On-leash dog walking would be based on an allowed 6-foot dog leash. The LOD would include all areas adjacent to the edges of the trail/roads up to 6 feet. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts that would occur in the LOD area would encompass a reduced portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in long-term minor adverse impacts on wildlife because occasional disturbance to wildlife from dogs would result.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common on Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to overall impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be long term, minor, and adverse.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect coastal scrub at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

Coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). Local and statewide declines have been observed in several birds that breed in coastal scrub, most notably the California gnatcatcher, which is a federally threatened species endemic to Southern California, as well as common species such as the white-crowned sparrow (USDA 2005, 613). Any impacts on scrub/chaparral/grassland habitats, whether beneficial or adverse, will also indirectly affect wildlife species that use these habitats. The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts, such as the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS*, which primarily provides mitigation for impacts on the mission blue butterfly. Therefore, these projects would not likely contribute negatively to the cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (e.g., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: mitigation for the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009d, ix, 82), proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Southern Marin Headlands project, which focused on enhancing the Coastal Trail corridor in the southern Marin Headlands (GGNPC n.d.)

The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Pacheco and Orchard fire roads under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The adverse impacts resulting from construction and transportation projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which allows off-leash dog use (map 26). The adjacent lands may experience increased visitation by individual and commercial dog walkers under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site. Impacts would be negligible even though Alta Trail and the fire roads are considered high use areas for commercial dog walkers, because it is unknown where and to what extent wildlife use habitat in adjacent parks.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are only a portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Oakwood Valley

Alternative A: No Action. Currently, dogs are allowed under voice control on Oakwood Valley Fire Road and the Oakwood Valley Trail from the junction with Alta Trail, and on leash on the Oakwood Valley Trail from the trailhead to the junction with the Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 9). The trails in this site are easily accessible from residential areas and this site has sensitive coastal scrub habitat. Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail/Orchard Fire Road/Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs would also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Oakwood Valley because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed and would be limited to the Oakwood Valley fire road and trail loop in the lower section of the site. No dogs would be allowed above the junction of the fire road and trail. The LOD area would include 6 feet in each direction from the edges of the trail/road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

The long-term minor to moderate adverse impacts that would occur in the LOD area represent only a small portion of the entire site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall long-term minor adverse impacts on wildlife because occasional disturbance on wildlife would result from dogs.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking; also, voice and sight control dog walking would not be allowed at Oakwood Valley under alternative B. However, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since most of the area (road/trail) offered for dog walking would not change in alternative B.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. For alternative C, a ROLA is proposed on Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The ROLA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at Alta Trail. The ROLA would be located in a native hardwood forest and Douglas-fir/coast redwood community, and impacts in the ROLA are discussed in more detail in that section of the plan/EIS. Impacts on wildlife in the LOD area along the Oakwood Valley Trail would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a

permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A should not experience increased visitation under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative. No indirect impacts on wildlife in adjacent lands would occur.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed only along the Oakwood Valley Fire Road from Tennessee Valley Road to the junction with Oakwood Valley Trail. The LOD area would include the fire road and the 6 feet of land adjacent to

the edges of the road. Impacts on wildlife in the 6-foot LOD area would be long term, minor to moderate, and adverse. Impacts would result from the habitat in the LOD area being affected by dogs through trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, fewer trails would be available to on-leash dogs compared to all other alternatives, and this site generally receives heavy use by visitors. Therefore, assuming compliance, alternative D would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking; also, voice and sight control dog walking would not be allowed under alternative D and the Oakwood Valley Trail would be the only area offered for dog walking. However, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking would still be offered under alternative D and because it is unknown where and to what extent wildlife use habitat in adjacent parks.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on leash dog walking in the same areas as alternative C. The ROLA would have double gates at both ends (to separate this use from other visitors to the site), but unlike alternative C would have non-continuous fencing only where needed to protect sensitive habitat. Impacts from alternative E would be the same as alternative C, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts in adjacent lands.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. For alternative C, a ROLA is proposed on Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The ROLA would include double gates at both ends (to separate this use from other users of the site) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to a new gate at Alta Trail. The ROLA is located in a native hardwood forest and Douglas-fir/coast redwood community, and impacts in the ROLA are discussed in more detail in that section of the plan/EIS. Impacts on wildlife in the LOD area along the Oakwood Valley Trail would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for

vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands should not experience increased visitation under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA under this alternative. No indirect impacts on wildlife in adjacent lands would occur.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith – Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88 and includes portions of the Lagoon Trail), the Coastal, Wolf, and Miwok Loop, and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers, and there were 47 leash law violations issued in 2007/2008 (table 9). In general, in the larger tracts such as the Marin Headlands Trails, more dog walkers and their dogs will be concentrated at the trailheads and the ability of dog walkers to disperse provides a dilution that will actually spread impacts to a greater area or throughout the site. There are large tracts of coastal scrub habitat in Marin Headlands Trails that extend north into Muir Beach.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Marin Headlands Trails, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for

vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Marin Headlands Trails. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Marin Headlands Trails.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would be the most protective of the coastal scrub/chaparral habitat by prohibiting dogs throughout the Marin Headlands Trails site. Coastal scrub/chaparral/

grassland habitat, including habitat adjacent to trails and roads in the headlands, would be protected from impacts from dogs. Assuming compliance, alternative B would result in no impact on wildlife at the Marin Headlands Trails site.

Since dogs would be prohibited from the Marin Headlands Trails there would be no impact on wildlife from commercial dog walking.

Cumulative Impacts. The lack of impacts on wildlife under alternative B was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from trail rehabilitation projects combined with the negligible impacts of development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. Indirect impacts on wildlife from increased dog use in adjacent lands would be negligible since dog walking at this site is currently considered low to moderate and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in

this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife from on-leash dog walking would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice control at the Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would have the same dog walking restrictions as alternative B (dogs would be prohibited on the trails); therefore, assuming compliance, no impact on wildlife would occur as a result of alternative D.

No dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife in the Marin Headlands Trails and the indirect impacts on wildlife in adjacent parks would be the same as those under alternative B: negligible cumulative impacts and negligible indirect impacts on wildlife in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trails. Impacts on wildlife in the LOD area would be long term, moderate, and adverse due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under alternative E at the Marin Headlands Trails, on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D; trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, alternative E would result in overall long-term minor to moderate adverse impacts on wildlife because occasional to frequent disturbance to wildlife would result.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor to moderate adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on wildlife from increased dog use in adjacent lands would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor to moderate adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D; trails in this site are easily accessible from residential areas and receive heavy use by visitors	No change, assuming compliance	Negligible to long-term minor adverse cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife from on-leash dog walking would be long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as the Marin Headlands Trails. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Marin Headlands Trails.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands may experience increased visitation under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of the preferred alternative not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. Alternative A allows dogs on leash throughout Fort Baker, except that dogs are not allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use and there were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed by park staff off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum

Under the no-action alternative at this site, on-leash dogs would have access to areas adjacent to the trails/ fire roads, and off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Fort Baker, because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Fort Baker. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Fort Baker.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Loop as part of this alternative due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/fire road/grounds. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition,

resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road, the Bay Trail including Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/fire road/grounds. Leash requirements would reduce the probability that a dog would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the lodge and conference grounds and on the Bay Trail (excluding the Battery Yates Loop). On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/grounds. Impacts on wildlife caused by dogs in the areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, fewer trails would be available to on-leash dogs compared to all other alternatives, and this site generally receives heavy use by visitors. Therefore, assuming compliance, alternative D would result in negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result from dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Increased visitation in adjacent lands may occur under alternative D since on-leash dog walking would not be allowed in the Parade Ground. Individual and commercial dog walkers may choose to go to another park site that has a large area for walking dogs, and it is unknown where and to what extent wildlife use habitat in adjacent lands; therefore, indirect impacts on wildlife would be expected to be negligible.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to all other alternatives; trails generally receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail including the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/fire road/grounds. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the overall impact on wildlife at Fort Baker would be long term, minor, and adverse because occasional disturbance to wildlife would result.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Fort Baker. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Fort Baker.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; trails in this site are easily accessible from residential areas and receive heavy use by visitors	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES**Baker Beach and Bluffs to Golden Gate Bridge**

Alternative A: No Action. Currently, dogs are allowed under voice control on the beach north of the plan/EIS boundary, with on-leash dog walking required for trails leading to the beach; however, social trails exist at the site and traverse sensitive coastal scrub habitat. This site has documented low to high visitor use (varies due to weather, holidays, and weekend use) and dog walking use is considered low to moderate (table 9).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Baker Beach and Bluffs to Golden Gate Bridge because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Baker Beach and Bluffs to Golden Gate Bridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Baker Beach and Bluffs to Golden Gate Bridge.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on all trails all the way to the Golden Gate Bridge in the vicinity of Baker Beach except the Batteries to Bluffs trail and trails leading to the Batteries to Bluffs trail, as well as on the beach north of the north parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would affect only a portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Baker Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any

development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and because it is unknown where and to what extent wildlife use habitat in adjacent lands. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Baker Beach and Bluffs to Golden Gate Bridge. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at

Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible indirect impacts on wildlife in adjacent lands.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as the multi-use Coastal Trail. Dogs would be prohibited on the section of beach north of the north parking lot, approximately half of the beach, and the trails leading to the northern section of the beach. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife from dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming

compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

Some increase in visitation by dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and because it is unknown where and to what extent wildlife use habitat in adjacent parks. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on all trails in the vicinity of Baker Beach except the Batteries to Bluffs Trail and trails leading to the Batteries to Bluffs Trail, as well as on the northern portion of the beach. A ROLA would be established on the southern portion of the beach, south of the north parking lot. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area from dogs would be long term, minor, and adverse due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. The ROLA at Baker Beach and Bluffs to Golden Gate Bridge does not contain coastal scrub habitat; therefore, dog activity in the ROLA would not create any impacts on coastal scrub wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole, and the beach ROLA is not in coastal scrub habitat. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Baker Beach. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would not be expected to experience increased visitation under alternative E since voice and sight control dog walking would be allowed in a ROLA at Baker Beach and Bluffs to Golden Gate Bridge. Therefore, no indirect impacts in adjacent lands, including Area B of the Presidio, would occur as a result of alternative E.

BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area); no impact in ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs; ROLA does not contain coastal scrub habitat		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; beach ROLA is not in coastal scrub habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Baker Beach and Bluffs to Golden Gate Bridge. The preferred alternative would allow on-leash dog walking on the section of Baker Beach south of the north parking lot and on all trails leading to that section of beach, as well as the multi-use Coastal Trail. Dogs would be prohibited on the section of beach north of the north parking lot, approximately half the beach, and the trails leading to the northern section of the beach. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife caused by dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impacts on wildlife at Baker Beach and Bluffs to Golden Gate Bridge would be negligible to long term, minor, and adverse.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Baker Beach and Bluffs to Golden Gate Bridge.

Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Baker Beach and Bluffs to Golden Gate Bridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Baker Beach and Bluffs to Golden Gate Bridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Baker Beach and Bluffs to Golden Gate Bridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Baker Beach and Bluffs to Golden Gate Bridge.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Baker Beach and Bluffs to Golden Gate Bridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Baker Beach and Bluffs to Golden Gate Bridge and 20 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Baker Beach is located directly west of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking which does not allow dogs to be off-leash. Some increase in visitation by dog walkers is expected in adjacent lands, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Baker Beach. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since dog walking is a low activity at Baker Beach and because it is unknown where and to what extent wildlife use habitat in adjacent parks. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

**BAKER BEACH AND BLUFFS TO GOLDEN GATE BRIDGE PREFERRED ALTERNATIVE CONCLUSION
TABLE**

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Lands End

Alternative A: No Action. Currently, dogs are allowed under voice control at the Lands End Site, which includes the Coastal Trail and the El Camino del Mar Trail. This site has low to moderate visitor use, including visitors with dogs (table 9), and two incidents were recorded in 2007/2008 of dogs in a closed area (appendix G).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Lands End because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Lands End, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect

coastal scrub at GGNRA park sites such as Lands End. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Lands End.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The long-term minor to moderate adverse impacts on wildlife from dogs at Lands End under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

LANDS END ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas and receive heavy use by visitors	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking at Lands End on the Coastal Trail, the El Camino del Mar Trail, and the parking areas and connecting trails. On-leash

dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impact on wildlife along the land adjacent to the trails would occur in a relatively small area when compared to the site as a whole, which receives low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking in this site is uncommon, it is likely that commercial dog walking would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park's north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on wildlife from increased dog use in adjacent lands may occur but would be negligible since the Lands End site is currently a low to moderate use area for dog walking and because it is unknown where and to what extent wildlife use habitat in these adjacent parks.

LANDS END ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on the Coastal Trail at Lands End, including on the steps to the El Camino del Mar Trail, and in the parking areas and on connecting trails. Dogs would be allowed under voice and sight control in a ROLA along the El Camino del Mar Trail. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the ROLA, the existing trails, and the 6-foot corridors immediately adjacent to the trails. Impacts on wildlife would be long term, minor to moderate, and adverse in the LOD area and ROLA. Impacts would result from disruption of wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts in the LOD area and the ROLA would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site receive low to moderate use by dog walkers. Therefore, the overall impact on wildlife at Lands End would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an

impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Lands End under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C since voice and sight control dog walking would be offered in a ROLA at Lands End under this alternative.

LANDS END ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area) and ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would allow on-leash dog walking on the El Camino del Mar Trail and portions of the Coastal Trail (no dogs east of the steps), as well as on the steps to the Coastal Trail and in the parking areas and connecting trails. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Impacts from dogs in areas adjacent to the trail (LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts on wildlife adjacent to the trails in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, Lands End receives low to moderate use by dog walkers. Therefore, assuming compliance, the overall impact on wildlife at Lands End would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park's north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these adjacent parks for an off-leash dog experience. Indirect impacts on wildlife from increased dog use in adjacent lands may occur, but only at a negligible level, since the Lands End site is currently a low to moderate use area for dog walking and because it is unknown where and to what extent wildlife use habitat in adjacent lands.

LANDS END ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and ROLA and long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

LANDS END ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area) and ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative B was selected as the preferred alternative for Lands End. The preferred alternative would allow on-leash dog walking at Lands End on the Coastal Trail, the El Camino del Mar Trail, and in the parking areas and on the connecting trails. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to the trails. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts on wildlife along the land adjacent to the trails would occur in a relatively small area when compared to the site as a whole, which receives low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, trails in this site are easily accessible from residential areas and generally receive heavy use by visitors. Therefore, assuming compliance, the preferred alternative would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Lands End, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Lands End, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Lands End were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Lands End. Additionally, the implementation of habitat

restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Lands End.

As stated above, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type.

The negligible to long-term minor adverse impacts on wildlife from dogs at Lands End under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Lands End and 11 parks within about a 5-mile radius; the closest parks are Golden Gate Park—North Central Area and Golden Gate Park—South Central Area (map 27). The adjacent lands may experience increased visitation under the preferred alternative, particularly Golden Gate Park’s north and south central areas, because they are the closest dog use areas and they allow dogs to be off leash. Since dogs would no longer be allowed under voice control at Lands End, some visitors may visit these parks for an off-leash dog experience. Indirect impacts on wildlife in adjacent lands from increased dog use may occur, but they would be negligible, since the Lands End site is currently a low to moderate use area for dog walking and because it is unknown where and to what extent wildlife use habitat in these adjacent parks.

LANDS END PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible impacts in adjacent lands

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. On-leash dog walking is currently allowed on all trails and the portion of the beach owned by the NPS. This site has moderate visitor use by dog walkers and over 50 leash law violations were recorded in 2007/2008 (table 9). Although current GGNRA regulations require dogs to be leashed at Mori Point, unleashed dogs are often observed at the site.

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Mori Point because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Mori Point. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Mori Point.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and

beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (i.e., various species of butterflies, small mammals, predators, reptiles, and bird species as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a); the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984); and the *Mori Point Restoration and Trail Plan* (NPS 2006d).

The long-term minor to moderate adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts in adjacent lands would be expected under alternative A, as current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would also allow on-leash dog walking on the Coastal Trail and the beach (the portion owned by the NPS), but dogs would not be allowed on other trails or on Old Mori Road. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse since dogs would be

able to disrupt wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, alternative B would have fewer trails available to on-leash dogs compared to alternative A, and the trails generally receive low to moderate use. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative B, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wildlife in adjacent lands would be expected.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of beach owned by the NPS. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, there would be fewer trails available to on-leash dogs compared to alternative A and one more trail (Old Mori Road) compared to alternative B. The trails at this site generally receive moderate use by dog walkers. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction

actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under alternative C since some trails at this site would be closed to dogs, resulting in negligible indirect impacts on wildlife in adjacent lands because some visitors with dogs may choose to visit a different park due to these closures but it is unknown where and to what extent wildlife use habitat in these adjacent parks.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on wildlife from dogs would occur at this site.

No dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from the trail rehabilitation projects combined with the negligible impacts from any development

or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible even though dog walking is currently considered a moderate use activity at Mori Point, because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails and beach as alternative B, with the addition of Old Mori Road and the Pollywog Path. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts from dog walking in the LOD area would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under this alternative, the trails that would allow on-leash dogs and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D. In addition, the trails generally receive moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above in alternative A.

The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wildlife in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. The preferred alternative would allow on-leash dog walking on Old Mori Road, the Coastal Trail, and the portion of beach owned by the NPS. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails, the beach, and the 6-foot corridors immediately adjacent to the trails (LOD area). Impacts on wildlife in the LOD area would be long term, minor to moderate, and adverse. Impacts would result from disruption of wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, there would be fewer trails available to on-leash dogs compared to alternative A and one more trail (Old Mori Road) compared to alternative B. The trails at this site generally receive low to moderate use. Therefore, assuming compliance, the overall impact on wildlife at Mori Point would be negligible to long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Mori Point. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Mori Point.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type (i.e., various species of butterflies, small mammals, predators, reptiles, and bird species, as described in chapter 3). Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a); the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984); the *Mori Point Restoration and Trail Plan* (NPS 2006d); and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under the preferred alternative since some trails would be closed to dogs, resulting in negligible indirect impacts on wildlife in adjacent lands because visitors with dogs may choose to visit a different park due to these closures but it is unknown where and to what extent wildlife use habitat in these adjacent parks.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Milagra Ridge

Alternative A: No Action. On-leash dog walking is currently allowed on all trails and fire roads. This site has documented moderate visitor use by bicyclists, walkers, and hikers, and low to moderate visitor use by dog walkers (table 9). Although current GGNRA regulations require dogs to be leashed at Milagra Ridge, unleashed dogs have been observed at the site; 25 leash law violations were issued in 2007/2008 (table 9).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger

mammals such as deer or coyotes and interact or exchange parasites/diseases. Specifically, dog/coyote interactions have occurred at Milagra Ridge (NPS 2009b). In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Milagra Ridge because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. At Milagra Ridge, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Milagra Ridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Milagra Ridge.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), site management plans for sites in GGNRA such as Milagra Ridge, and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The long-term minor to moderate adverse impacts on wildlife from dogs at Milagra Ridge under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MILAGRA RIDGE ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B also would allow dog walking on leash on the fire road and the trail to the westernmost overlook and WWII bunker, as well as on the future Milagra Battery Trail. However, the trail loop to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on wildlife would be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts in wildlife areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, alternative B would have fewer trails available to on-leash dogs compared to alternative A, and trails generally receive low to moderate use. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is uncommon at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Milagra Ridge under alternative B were considered together with the effects of the projects mentioned

above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B since the fire road would still be open for dog walking.

MILAGRA RIDGE ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking in the same areas as alternative B and impacts would be the same: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new regulation would not have an

impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at Milagra Ridge and the indirect impacts on wildlife in adjacent parks would be the same as those under alternative B: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

MILAGRA RIDGE ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would prohibit dogs at Milagra Ridge, thus providing long-term protection of coastal scrub/chaparral/grassland habitat throughout the site. This protects not only the habitat, including interior areas, but all wildlife species that use the habitat at Milagra Ridge. Therefore, no impact would occur on wildlife at this site as a result of alternative D.

Since dogs would be prohibited from the site, there would be no impacts from commercial dog walking on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Milagra Ridge under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since this alternative would not allow dogs. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible even though dog walking is considered a high use activity at Milagra Ridge, because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MILAGRA RIDGE ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the same trails as alternative B, with the addition of a loop to the top of the hill. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and fire road and the 6-foot corridors immediately adjacent to the trails/fire road (LOD area). Impacts on wildlife from dogs in the LOD area would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under this alternative, the on-leash dog trails and the LOD area are a greater portion of the site compared to alternatives B, C, and D. In addition, the trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, assuming compliance, the overall impact on wildlife at Milagra Ridge would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts on wildlife in adjacent lands.

MILAGRA RIDGE ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; on-leash dog trails and the LOD area are a greater portion of the entire site compared to alternatives B, C, and D; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Milagra Ridge. The preferred alternative would allow dogs on leash on the fire road and the trail to the westernmost overlook and WWII bunker, as well as on the future Milagra Battery Trail. However, the trail loop to the top of the hill would not be open for dog walking in this alternative. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the fire road or trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD that would extend 6 feet out from the edges of the fire road or trails. In general, impacts on wildlife would area be limited to the existing fire road and trails and the 6-foot corridors immediately adjacent to the trails/fire road. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts in wildlife areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Additionally, the preferred alternative would have fewer trails available to on-leash dogs compared to alternative A, and trails generally receive low to moderate use. Therefore, assuming compliance, the preferred alternative would result in overall

negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would result.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Milagra Ridge, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Milagra Ridge, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Milagra Ridge were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Milagra Ridge. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Milagra Ridge.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), site management plans for sites in GGNRA such as Milagra Ridge, and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The negligible to long-term minor adverse impacts on wildlife from dogs at Milagra Ridge under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 36 parks with dog use areas within about a 10-mile radius of Milagra Ridge and 5 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative since the fire road would still be open to dog walking.

MILAGRA RIDGE PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Sweeney Ridge/Cattle Hill

Alternative A: No Action. On-leash dog walking is currently allowed on all trails at Sweeney Ridge except the Notch Trail, which is closed to dogs. Cattle Hill is currently not part of GGNRA, but unrestricted dog walking also occurs at this site. These sites have documented low to moderate visitor use by dog walkers and 55 leash law violations were recorded in 2007/2008 (table 9); therefore, off-leash dog walking is occurring along the trails of these sites.

Under the no-action alternative at these sites, off-leash dog access to wildlife and associated habitat off trails would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at these sites are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Sweeney Ridge/Cattle Hill because occasional to frequent disturbances to wildlife from dogs would occur.

Under alternative A, no permit system exists for dog walking. Commercial dog walking is uncommon at Sweeney Ridge and Cattle Hill. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Sweeney Ridge/Cattle Hill. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Sweeney Ridge/Cattle Hill.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a), and the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984).

The long-term minor to moderate adverse impacts on wildlife from dogs at Sweeney Ridge/Cattle Hill under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (map 27). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site generally receive low to moderate use	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at Sweeney Ridge/Cattle Hill, thus providing long-term protection of coastal scrub/chaparral/grassland habitat throughout the site. This protects not only the habitat, including interior areas, but all wildlife species that use the habitat at Sweeney Ridge/Cattle Hill. Therefore, no impact would occur on wildlife at these sites as a result of alternative B.

Since dog walking would not be allowed at Sweeney Ridge and Cattle Hill, commercial dog walking under alternative B would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife under alternative B was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” The beneficial effects from trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in beneficial cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly San Bruno Dog Park and Esplanade Beach, because they are the closest dog use areas. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in these adjacent parks.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, no dog walking would be allowed at Sweeney Ridge. Therefore, assuming compliance, no impact on wildlife from dogs at Sweeney Ridge would occur because dogs would be prohibited at the site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The Cattle Hill trails would allow on-leash dog walking under this alternative and these trails generally receive low to moderate use by dog walkers. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. In addition, the LOD area only makes up a small portion of the entire site. Therefore, when looking at the entire site the overall impact on wildlife at Cattle Hill would be long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge commercial dog walking under alternative C would have no impact to coastal scrub wildlife. Since commercial dog walking is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

Cumulative Impacts. The lack of impacts from dogs at Sweeney Ridge under alternative C was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects considered with the lack of impacts under this alternative would result in beneficial cumulative impacts for Sweeney Ridge. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts.

The long-term, minor, adverse impact to the coastal scrub wildlife community from dogs at Cattle Hill under alternative C were considered together with effects of the projects mentioned above under alternative A cumulative impacts. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. Cumulatively, there would be negligible impacts to the coastal scrub, chaparral, and grassland community at Cattle Hill, when added to these projects.

Indirect Impacts in Adjacent Parks

No indirect impacts to coastal scrub wildlife at adjacent lands would be expected under alternative C at Cattle Hill since trails allowing dogs would be allowed at Cattle Hill. Adjacent lands at Sweeney Ridge may experience increased visitation since dogs would no longer be allowed at this site. However, indirect

impacts to coastal scrub wildlife from increased dog use in adjacent lands would be expected to be negligible at Sweeney Ridge because it is unknown where and to what extent coastal scrub wildlife communities could be affected by dogs at adjacent lands.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact at Sweeney Ridge Cattle Hill: Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Dogs prohibited at Sweeney Ridge Cattle Hill: Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs	Sweeney Ridge: Beneficial assuming compliance	Sweeney Ridge: Beneficial cumulative impacts Sweeney Ridge: Negligible indirect impact to adjacent lands
Cattle Hill: Overall long-term minor adverse impacts, assuming compliance	Cattle Hill: Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs	Cattle Hill: Beneficial to no change, assuming compliance	Cattle Hill: Negligible cumulative impacts Cattle Hill: No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at Sweeney Ridge/Cattle Hill, there would be no impacts from commercial dog walking on wildlife.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: beneficial cumulative impacts and negligible indirect impacts.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Beneficial cumulative impacts Negligible impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. At Sweeney Ridge, alternative E would allow on-leash dog walking along Mori Ridge Trail, Sweeney Ridge Trail from Portola Discovery Site to the Notch Trail, and Sneath Lane. At Cattle Hill, dogs would be allowed on leash on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The trails at Sweeney Ridge/Cattle Hill are long, with high quality habitat directly adjacent to the trails, and the on-leash dog trails under this alternative are a greater portion of the entire site compared to alternatives B, C, and D. Additionally, Cattle Hill trails would allow on-leash dog walking under this alternative as does alternative C, and these trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. However, when considering the entire site of Sweeney Ridge and Cattle, the trails only make up a portion of the entire site. Therefore, assuming compliance, the overall impact on wildlife at Sweeney Ridge and Cattle Hill would be long term, minor, and adverse.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Sweeney Ridge and Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at Sweeney Ridge/Cattle Hill under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E, since on-leash dog walking would be allowed at both Sweeney Ridge and Cattle Hill.

SWEENEY RIDGE/CATTLE HILL ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails at this site are long with high quality habitat directly adjacent to the trails, and on-leash dog trails are a greater portion of the entire site compared to alternatives B, C, and D; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Sweeney Ridge/Cattle Hill. Under the preferred alternative, no dog walking would be allowed at Sweeney Ridge. Therefore, assuming compliance, no impact on wildlife from dogs at Sweeney Ridge would occur because dogs would be prohibited at the site. At Cattle Hill, on-leash dog walking would be allowed on the Baquiano Trail from Fassler Avenue up to and including the Farallons View Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trails. Impacts on wildlife from dogs in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse, due to trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The Cattle Hill trails would allow on-leash dog walking in this alternative and these trails generally receive low to moderate use. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. In addition, the LOD area only makes up a small portion of the entire site. Therefore, when looking at the site in its entirety, the overall impact on wildlife at Cattle Hill would be long term, minor, and adverse.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Sweeney Ridge/Cattle Hill, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since dog walking would not be allowed at Sweeney Ridge commercial dog walking under the preferred alternative would have no impact to coastal scrub wildlife. Since commercial dog walking is not common at Cattle Hill, it is likely that the new regulation would not have an impact on the number of dog walkers.

Cumulative Impacts. Projects and actions in and near Sweeney Ridge/Cattle Hill were considered for the cumulative impacts analysis (appendix K) and are similar to projects discussed previously. Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect coastal scrub at GGNRA park sites such as Sweeney Ridge/Cattle Hill. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Sweeney Ridge/Cattle Hill.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a) and the *San Bruno Elfín and Mission Blue Butterflies Recovery Plan* (USFWS 1984).

The lack of impacts from dogs at Sweeney Ridge under the preferred alternative was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects considered with the lack of impacts under this alternative would result in beneficial cumulative impacts for Sweeney Ridge. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts.

The long-term, minor, adverse impact to the coastal scrub wildlife community from dogs at Cattle Hill under the preferred alternative were considered together with effects of the projects mentioned above under alternative A cumulative impacts. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. Cumulatively, there would be negligible impacts to the coastal scrub, chaparral, and grassland community at Cattle Hill, when added to these projects.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 24 parks with dog use areas within about a 10-mile radius of Sweeney Ridge and Cattle Hill and 4 parks within about a 5-mile radius; the closest parks are the San Bruno Dog Park and Esplanade Beach in Pacifica (map 27). No indirect impacts to coastal scrub wildlife at adjacent lands would be expected under the preferred alternative at Cattle Hill since trails allowing dogs would be allowed at Cattle Hill. Adjacent lands at Sweeney Ridge may experience increased

visitation since dogs would no longer be allowed at this site. However, indirect impacts to coastal scrub wildlife from increased dog use in adjacent lands would be expected to be negligible at Sweeney Ridge because it is unknown where and to what extent coastal scrub wildlife communities could be affected by dogs at adjacent lands.

SWEENEY RIDGE/CATTLE HILL PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Sweeney Ridge: No impact Cattle Hill: Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Dogs would be prohibited at Sweeney Ridge Cattle Hill: Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs	Sweeney Ridge: Beneficial assuming compliance	Sweeney Ridge: Beneficial cumulative impacts Sweeney Ridge: Negligible indirect impact to adjacent lands
Cattle Hill: Overall long-term minor adverse impacts, assuming compliance	Cattle Hill: Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs	Cattle Hill: Beneficial to no change, assuming compliance	Cattle Hill: Negligible cumulative impacts Cattle Hill: No indirect impacts in adjacent lands

Pedro Point Headlands

Alternative A: No Action. Although this site is currently not part of GGNRA, unrestricted dog walking occurs at this site. This site has documented low to moderate visitor use, including visitors with dogs, and incidents related to dog activities at the site are not documented since the NPS does not currently own the property and it is not patrolled by park rangers (table 9).

Under the no-action alternative at this site, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and impacts would be similar to those described in detail above at Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Disturbance as a result of dogs includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Ground-dwelling and ground-nesting bird species such as California quail are especially vulnerable. Dogs also have the potential to encounter larger mammals such as deer or coyotes and interact or exchange parasites/diseases. In addition, wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; trails in this site are easily accessible from residential areas. Some of the trails at this site are long, with excellent coastal scrub habitat directly adjacent to the trails, so there could be an avoidance of these trail corridors by birds and mammals that would actually cover more than small, localized areas. Therefore, alternative A would

result in continued long-term minor to moderate adverse impacts on wildlife using coastal scrub habitat at Pedro Point Headlands because occasional to frequent disturbances to wildlife from dogs would occur.

There are currently no commercial dog walking regulations at Pedro Point Headlands. It is unknown if commercial dog walkers contribute to wildlife impacts.

Cumulative Impacts. Projects and actions in and near Pedro Point Headlands were considered for the cumulative impacts analysis (appendix K), although long-term parkwide projects such as trail rehabilitation, which can provide enhancements that improve conditions for vegetation and wildlife habitat, may only occur in the future after the park gains ownership of the property. In the future, ongoing parkwide restoration and enhancement efforts will beneficially affect coastal scrub at GGNRA park sites such as Pedro Point Headlands. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Pedro Point Headlands.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: mitigation for the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009d, ix, 82), proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), and the Pedro Point Headlands Stewardship Project (PLT 2008, 1).

The long-term minor to moderate adverse impacts on wildlife from dogs at the Pedro Point Headlands under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from future trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of Pedro Point and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica (map 27). No indirect impacts in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

PEDRO POINT HEADLANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated habitat off trails would continue; disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the trail, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trail. In general, impacts on wildlife would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

Under this alternative, the long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, alternative B would result in overall negligible to long-term minor adverse impacts on wildlife because occasional disturbance to wildlife would occur.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at the Pedro Point Headlands under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from future trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that

would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B since on-leash dog walking would be allowed at Pedro Point Headlands.

PEDRO POINT HEADLANDS ALTERNATIVE B CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Like alternative B, alternative C would allow on-leash dog walking on the Coastal Trail, and impacts on wildlife would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and no indirect impacts in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site; trail generally receives low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impact on wildlife from dogs at this site would occur.

Since dogs would not be allowed at this site under alternative D, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The lack of impacts on wildlife from dogs at the Pedro Point Headlands under alternative D was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Montara State Beach and Esplanade Beach, because they are the closest dog use areas. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since it is unknown where and to what extent wildlife use habitat in adjacent park sites.

PEDRO POINT HEADLANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Like alternative B, alternative E would allow on-leash dog walking on the Coastal Trail and impacts would be the same, assuming compliance: long term, minor to moderate, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site would be the same those under alternative B: negligible cumulative impacts and no indirect impacts in adjacent lands.

PEDRO POINT HEADLANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Pedro Point Headlands. The preferred alternative would allow on-leash dog walking on the Coastal Trail. On-leash dog walking is based on an allowed 6-foot dog leash. Since dog walkers may walk along the edge of the trails, dogs would then have access to the adjacent land 6 feet in all directions, resulting in an LOD area that would extend 6 feet out from the edges of the trail. In general, impacts on wildlife would be limited to the existing trail and the 6-foot corridors immediately adjacent to the trail. Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical constraint. Impacts on wildlife in areas adjacent to the trail (6-foot corridor or LOD area) would be long term, minor to moderate, and adverse since dogs would be able to disrupt wildlife habitat through digging, trampling, dog waste, and nutrient addition. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife.

The long-term minor to moderate adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the preferred alternative would result in an overall negligible to long-term minor adverse impact on wildlife because occasional disturbance to wildlife would occur.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Pedro Point Headlands, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Pedro Point Headlands, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Pedro Point Headlands were considered for the cumulative impacts analysis (appendix K), although long-term parkwide projects such as trail rehabilitation, which can provide enhancements that improve conditions for vegetation and wildlife habitat, may only occur in the future after the park gains ownership of the property. In the future, ongoing

parkwide restoration and enhancement efforts will beneficially affect coastal scrub at GGNRA park sites such as Pedro Point Headlands. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Pedro Point Headlands.

As stated previously, coastal scrub habitat in California is threatened by habitat loss, fragmentation, and degradation (USDA 2005, 613). The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit coastal scrub/chaparral/grassland communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts. Because the mission blue butterfly inhabits coastal scrub/chaparral/grassland communities, projects that would benefit and enhance mission blue butterfly habitat would also benefit wildlife species that inhabit this community type. Such projects include the following: proposed fire management policies of the *Fire Management Plan* (NPS 2005a), the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984), the *Pedro Point Headland Stewardship Project* (PLT 2008), and the Martini Creek watershed assessment (San Mateo County) (CCC 2008).

The negligible to long-term minor adverse impacts on wildlife from dogs at the Pedro Point Headlands under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from future trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 14 parks with dog use areas within about a 10-mile radius of Pedro Point and 2 parks within about a 5-mile radius; the closest parks are Montara State Beach and Esplanade Beach in Pacifica (map 27). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative since on-leash dog walking would be allowed at Pedro Point Headlands.

PEDRO POINT HEADLANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trail and the LOD area are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Coastal Scrub, Chaparral, and Grassland Wildlife

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

At new lands, overall impacts as a result of alternative A would range from a negligible to long-term, minor, adverse impact to wildlife. On-leash dog walking would not allow for dogs to roam freely in coastal scrub, chaparral, and/or grassland habitats. In general, impacts to wildlife would be limited to the existing trail and the 6 foot corridor immediately adjacent to the trails. Leash requirements would reduce the probability that a dog will disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife due to physical restraint. Due to mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs indirectly affects wildlife. Therefore, overall impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats from private and commercial dog walkers as a result of alternative A would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife. At sites where commercial dog walking is common, impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts from dogs on wildlife utilizing coastal scrub, chaparral, and/or grassland habitats in adjacent lands would range from no indirect impacts on wildlife if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species and/or habitat exist at the site.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on coastal scrub, chaparral, and/or grassland wildlife. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At new lands, overall impacts as a result of alternatives B and C would range from a negligible to long-term, minor, adverse impact to wildlife. On-leash dog walking would not allow for dogs to roam freely in coastal scrub, chaparral, and/or grassland habitats. In general, impacts to wildlife would be limited to the existing trail and the 6 foot corridor immediately adjacent to the trails. Leash requirements would reduce the probability that a dog will disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife due to physical restraint. Due to mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs indirectly affects wildlife. Therefore, assuming compliance, overall impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats from private and commercial dog walkers as a result of alternatives B and C would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts from dogs on wildlife utilizing coastal scrub, chaparral, and/or grassland habitats in adjacent lands would range from no indirect impacts on wildlife if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or

- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Alternative D could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal scrub/chaparral/grassland habitat which support numerous wildlife species including CNPS-listed plant species.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on coastal community wildlife. Private dog walkers would be allowed up to three dogs.

At new lands, overall impacts as a result of alternative D would range from a negligible to long-term, minor, adverse impact to wildlife. On-leash dog walking would not allow for dogs to roam freely in coastal scrub, chaparral, and/or grassland habitats. In general, impacts to wildlife would be limited to the existing trail and the 6 foot corridor immediately adjacent to the trails. Leash requirements would reduce the probability that a dog will disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife due to physical restraint. Due to mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs indirectly affects wildlife. Therefore, assuming compliance, overall impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats from private and commercial dog walkers as a result of alternative D would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife utilizing coastal scrub, chaparral, and/or grassland habitats in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and, potentially, ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Alternative E could also close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include communities such as coastal scrub, chaparral, and grassland areas that support numerous wildlife species.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking at these sites would result in a negligible impact on wildlife. At sites where commercial dog

walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible to long-term, minor and adverse. On-leash dog walking may be permitted in coastal scrub, chaparral, and grassland habitats. The physical restraint of dogs in some areas of the site would protect birds and other wildlife such as mammals but the presence of dogs barking and running (even while on a leash) would occasionally disturb wildlife, thus substantiating a long-term, minor, adverse impact. It is assumed that ROLAs would not be established within areas that support sensitive wildlife so the park's desired future conditions can be attained. Even so, dogs under voice and sight control within a ROLA, would affect wildlife through physical disturbance and presence. The presence of dogs as well as barking and running within the ROLA would disturb birds using the habitat for roosting or feeding. When dogs and dog walkers are present within the ROLA, birds using the habitat within the ROLA could flee from the ROLA to other areas where dogs are not permitted or they may flush and return and be repeatedly disturbed. Because of mobility, wildlife can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat still indirectly affects wildlife. Therefore, within the ROLA, alternative E impacts would be long-term, moderate, and adverse to wildlife because frequent disturbances from dogs would occur but impacts depend on the seasonal presence of the birds and other wildlife as well as the level of activity at the site. Therefore, assuming compliance, overall impacts to wildlife that use coastal scrub, chaparral, and grassland vegetation from private and commercial dog walkers as a result of alternative E would range from negligible to long-term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. It is also important to note that no impacts to coastal scrub, chaparral, and grassland wildlife are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Long-term, moderate, adverse impacts in the ROLA	The presence of dogs barking and running in the ROLA would disturb roosting or feeding birds; wildlife preferred habitat could be lost from this disturbance	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A
Negligible to long-term, moderate, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat; dogs barking and running in the ROLA would disturb birds and other wildlife		

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

The preferred alternative could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include coastal scrub/chaparral/grassland habitat which support numerous wildlife species including CNPS-listed plant species.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact

on wildlife that use coastal scrub/chaparral/grassland habitat. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts on wildlife that use coastal scrub/chaparral/grassland habitat by dogs walked by both commercial and private individuals are summarized below.

At new lands, overall impacts as a result of the preferred alternative would range from a negligible to long-term, minor, adverse impact to wildlife. On-leash dog walking would not allow for dogs to roam freely in coastal scrub, chaparral, and/or grassland habitats. In general, impacts to wildlife would be limited to the existing trail and the 6 foot corridor immediately adjacent to the trails. Leash requirements would reduce the probability that a dog will disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife due to physical restraint. Due to mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs indirectly affects wildlife. Therefore, assuming compliance, overall impacts to wildlife utilizing coastal scrub, chaparral, and/or grassland habitats from private and commercial dog walkers as a result of the preferred alternative would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use coastal scrub/chaparral/grassland habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Coastal Scrub, Chaparral, and Grassland Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

WILDLIFE IN WETLANDS AND AQUATIC COMMUNITIES

GGNRA contains both freshwater wetlands and coastal (estuarine) wetlands. Vegetation in these wetlands is composed of herbaceous plant species that support wildlife species. Wetlands are located at Rodeo

Beach/South Rodeo Beach (Rodeo Lagoon and Rodeo Lake), Muir Beach (lagoon), Crissy Field, and Mori Point. In general, dogs would be prohibited from accessing wetland areas at all locations in GGNRA, but violations of these closures have been documented (table 9).

MARIN COUNTY SITES

Muir Beach (Lagoon)

Alternative A: No Action. The lagoon at Muir Beach is a small tidal water body fringed by wetland vegetation. A wetland restoration project is currently ongoing at the site, and the lagoon was restored in 2009 to provide enhanced habitat at the lagoon. Dog walking is currently allowed on leash or under voice control at Muir Beach. The lagoon is currently closed to people and dogs, although it has been observed that closures at this site have been violated (appendix G). The area is considered moderate to high use even though the lagoon is small in size compared to other lagoons at GGNRA. In addition, there is no physical barrier to prevent dogs from accessing the lagoon, and dogs gain access to the lagoon and surrounding wetland habitat at Muir Beach on an almost daily basis (NPS 2010b). The voice-control area of Muir Beach encompasses the entrance channel of Redwood Creek and is located immediately adjacent to the shoreline of the lagoon. Surveys found bird diversity and use of the lagoon to be low, which could be attributed to dog use of the site; bird numbers are low and visitor use is high at this site.

Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife at this site; specifically, waterbirds that use the restored lagoon are occasionally to frequently subjected to impacts from on-leash and voice-control dogs through dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat. A few individuals of the species in a small, localized area could be affected and reproductive success could be indirectly affected. A range is presented because the impact would depend on the time of year and intensity of use of the site by dogs and wildlife.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Redwood Creek and Muir Beach lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that have cumulatively provided beneficial effects to wetlands include the *Muir Beach Wetland and Creek Restoration Project*; the lagoon was restored in 2009 to provide a functional, resilient ecosystem while also providing habitat for special-status species and reducing flooding on Pacific Way. Similarly, the NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009l). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor to moderate adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Muir Beach, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor to moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Lagoon closures have been violated; shorebirds, wading birds, and waterbirds that use the restored lagoon would occasionally to frequently be subjected to impacts from on-leash and voice-control dogs barking at, chasing after, and being in proximity to roosting or feeding birds; bird numbers are low and visitor use is high at this site; range is presented because the intensity of use (by dogs and wildlife) is dependent on the time of year	N/A	Long-term minor to moderate adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, the protection of wetland habitat would occur through requiring on-leash dog walking in other areas of the site since the lagoon is currently closed to people and dogs. As part of the restoration plan at this site, post-and-cable fencing would be installed between the tidal lagoon and Muir Beach to discourage visitors from accessing the lagoon, but the fencing would not physically exclude dogs from the area. If dogs are physically restrained on leash and deterred by a fence at this site, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife at this site because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B. Voice-control dog walking would no longer be allowed at Muir Beach under this alternative; however, dogs would still be allowed on the site on leash; therefore, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physically restraining dogs on leash would not allow access to the lagoon or its shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog

walking activity is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible indirect impacts in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physically restraining dogs on leash would not allow access to the lagoon or its shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would be prohibited at the Muir Beach site except for on-leash dog walking in the parking lot and on the Pacific Way Trail leading to the parking lot, which supports some adjacent wetland/aquatic habitat. The lagoon is currently closed to people and dogs. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife at this site; even though dogs would not be allowed in proximity to the lagoon and only along the trail, on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Mount Tamalpais State Park, because it is the closest dog use area. Since dog walking would not be allowed on the beach at Muir Beach, indirect impacts on wildlife in adjacent lands from increased dog use would occur. Impacts would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be prohibited at the Muir Beach site except for the parking lot and the Pacific Way Trail, which supports some adjacent wetland/aquatic habitat	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the Pacific Way Trail, in the parking area, and on the boardwalk/path to the beach, and dog walking under voice and sight control would be allowed in a ROLA at the south end of the beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat). The lagoon is currently closed to people and dogs, and physical restraint of dogs on leash and compliance in the ROLA would not allow dog access to the lagoon, its shorelines, or wetland habitat adjacent to trails used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife at this site because on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	The lagoon is closed to dogs; physical restraint of dogs on leash and compliance in ROLA would not allow dogs access to the lagoon, its shorelines, or wetland habitat adjacent to trails used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. Under the preferred alternative, dogs would be prohibited at the Muir Beach site except for on-leash dog walking in the parking lot and on the Pacific Way Trail leading to the parking lot, which supports some adjacent wetland/aquatic habitat. The lagoon is currently closed to people and dogs. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife at this site; even though dogs would not be allowed in proximity to the lagoon and only along the trail, on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife through barking and by their presence.

Alternative C was selected as the preferred alternative for permits for all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Redwood Creek and Muir Beach lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that have cumulatively provided beneficial affects to wetlands include the *Muir Beach Wetland and Creek Restoration*; the tidal lagoon was restored in 2009 to provide a functional, resilient ecosystem while also providing habitat for special status species and reducing flooding on Pacific Way. Similarly, NPS and the California State Lands Commission formulated the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009I; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009I). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory

waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Muir Beach; when combined, these projects would balance out, resulting in negligible impacts. Therefore, these negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). The adjacent lands may experience increased visitation under the preferred alternative. Since dog walking would not be allowed on the beach at Muir Beach, indirect impacts on wildlife in adjacent lands from increased dog use would occur. Impacts would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible impacts, assuming compliance	Dogs would be prohibited at the Muir Beach site except for the parking lot and the Pacific Way Trail, which supports some adjacent wetland/aquatic habitat	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Rodeo Beach/South Rodeo Beach (Rodeo Lagoon)

Alternative A: No Action. Dogs are currently required to be either on leash or under voice control when at Rodeo Beach/South Rodeo Beach. Rodeo Lagoon is currently closed to people and dogs for overall resource protection. The NPS has restricted people and their pets from accessing the lagoon and its shoreline. However, there is no physical barrier to prevent dogs from accessing the lagoon. Shorebird numbers are high at this site and the area receives moderate to high use by dog owners/beachgoers. Park

staff members have estimated that they observe dogs in the lagoon at least once a week, and on a daily basis during good weather (Merkle 2010c; NPS 2010b).

Under the no-action alternative, dogs along the shoreline and in the lagoon could continue to affect water-dependent reptile, amphibian, and fish species. Specifically, egg masses and individual species could be affected directly through trampling or indirectly by increased turbidity (sedimentation) if dogs access the lagoon or its shorelines. Bird species that could be affected include waterbirds (pelicans, grebes, ducks, cormorants, gulls), wading birds (herons and egrets), and shorebirds. River otters also use habitat at the lagoon and could be affected by presence of dogs. Impacts would generally be the result of dog presence, dogs chasing after birds, and noise disruptions from barking; dogs frequently play and run around in the shallow water of the lagoon and inlet. Therefore, alternative A would result in continued long-term moderate adverse impacts on wildlife at Rodeo Lagoon because shorebirds, wading birds, and waterbirds such as pelicans that use the lagoon would frequently be subjected to impacts from on-leash and voice-control dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat and affecting their reproductive success.

Under alternative A, no permit system exists for dog walking. At Rodeo Beach/South Rodeo Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009l). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term moderate adverse impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, moderate, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term moderate adverse impacts	Historically, dogs have gained access to the closed lagoon at least once a week, and during good weather, on a daily basis; shorebirds, wading birds, and waterbirds such as pelicans that use the lagoon would frequently be subjected to impacts from on-leash and voice-control dogs barking at, chasing after, and being in proximity to roosting or feeding birds; shorebird numbers are high and visitor use is moderate to high at this site	N/A	Long-term moderate adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs, and on-leash dog walking would be allowed in adjacent areas of this site. Additionally, a concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. If dogs are physically restrained on leash at this site and deterred by a fence, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impact on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impact from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, since dogs under voice control would no longer be allowed under alternative B and because this park is the closest dog use area that allows dogs off leash. However, indirect impacts on wildlife in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physically restraining dogs on leash would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Dogs would be required to be on leash on the footbridge to the beach, but would be allowed under voice and sight control in a ROLA on North Rodeo Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat). Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. Therefore, assuming compliance, alternative C would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative C since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the ROLA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the beach in areas north of the footbridge and on the footbridge to the beach. Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. If dogs are physically restrained on leash at this site and deterred by a fence, they should not gain access to the lagoon or its shorelines. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience some increase in visitation by individual and commercial dog walkers under alternative D, particularly Remington Dog Park, since dogs under voice and sight control would not be allowed under alternative D and this park is the closest dog use area that allows dogs off leash. Indirect impacts on wildlife in adjacent lands from potential increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physically restraining dogs on leash would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would include a ROLA on North Rodeo Beach that would extend from the ocean to the crest of the beach (which is coastal community wildlife habitat, not wetland and aquatic wildlife habitat), with on-leash dog walking required from the crest of the beach east to the fence planned for installation near the lagoon shoreline. Alternative E is the only action alternative that would allow on-leash dog access to the south side of the lagoon on the Lagoon Trail. The lagoon is currently closed to people and dogs. The installation of the fence along the beach side of Rodeo Lagoon would discourage visitors from accessing the lagoon, but would not physically exclude dogs from this area. Although this alternative includes a ROLA, the addition of a fence as deterrent and compliance with regulations as well as on-leash requirements would result in protection of wildlife using wetland vegetation surrounding Rodeo Lagoon. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife species because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in

negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the ROLA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Rodeo Beach/South Rodeo Beach. Dogs would be allowed to be on leash on the footbridge to the beach, but then dogs would be allowed under voice and sight control in a ROLA on North Rodeo Beach (which is coastal community wildlife habitat, not wetland and aquatic wildlife habitat). Rodeo Lagoon and Rodeo Lake is currently closed to people and dogs. A concurrent NPS project includes the installation of a post-and-cable fence along the beach side of Rodeo Lagoon to discourage visitors from accessing the lagoon, though it would not physically exclude dogs from this area. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife using the lagoon and lake and surrounding habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Rodeo Beach/South Rodeo Beach. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Rodeo Beach/South Rodeo Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Rodeo Beach/South Rodeo Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall

benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009l). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach) which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Rodeo Beach/South Rodeo Beach under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Rodeo Beach/South Rodeo Beach; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 27 parks with dog use areas within about a 10-mile radius of Rodeo Beach/South Rodeo Beach and 9 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative since voice and sight control dog walking would be allowed in a ROLA under this alternative.

RODEO BEACH/SOUTH RODEO BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lagoon is closed to dogs; physical restraint of dogs on leash and compliance in the ROLA would not allow dogs access to Rodeo Lagoon or along shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith – Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88 and includes portions of the Lagoon Trail), the Coastal, Wolf, and Miwok Loop, and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers and there were 19 leash law violations issued in 2007/2008 (table 9). The Marin Headlands Trails area supports wetland vegetation around Rodeo Lake and extensive areas of wetlands in the valley bottom along Rodeo Valley Trail.

Under the no-action alternative, dogs along the shorelines of the wetlands and in Rodeo Lake could continue to affect water-dependent reptile, amphibian, and fish species. Specifically, egg masses and individual species could be affected directly through trampling or indirectly by increased turbidity (sedimentation) if dogs access the lake or wetland shorelines. Bird species that could be affected by the presence of dogs include aquatic bird species (grebes, ducks, cormorants, gulls, waterfowl), wading birds (herons and egrets), and shorebirds. Impacts would generally be the result of dog presence, dogs chasing after birds, and noise disruptions from barking. Dogs have gained access to Rodeo Lake and affected wildlife through barking and chasing after; wildlife species that use areas of wetlands in the valley bottom along Rodeo Valley Trail should not be affected by dogs since dogs would not be allowed in the vicinity of this trail.

Alternative A would result in continued long-term minor adverse impacts on wildlife at Marin Headlands Trails because shorebirds, wading birds, and waterbirds that use the lake would occasionally be disturbed by on-leash and voice-control dogs barking at, chasing after, and being in proximity to roosting or feeding birds, potentially limiting their use of preferred habitat.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife species that use wetland vegetation.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay) that restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009l; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009l). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources and wildlife within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there would be no net loss of wetland acreage, functions, or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor adverse impacts on wildlife from dogs at Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Dogs would continue to gain access to Rodeo Lake and birds would occasionally be subjected to impacts by dogs through barking and chasing after; wildlife using areas of wetlands in the valley bottom along Rodeo Valley Trail should not be affected by dogs since dogs would not be allowed in the vicinity of this trail	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs at this site would occur.

Since dogs would not be allowed at the Marin Headlands Trails, no impacts on wildlife species that use wetland vegetation would occur from commercial dog walkers.

Cumulative Impacts. The lack of impacts on wildlife from dogs under alternative B was considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. Cumulatively, alternative B would have negligible impacts on wildlife at this park site when added to other past, present, or foreseeable future actions at and around this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. However, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife species that use wetland vegetation could be affected by dogs at this adjacent park.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin

Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation. Rodeo Lake is currently closed to dogs and the closure in combination with physically restraining dogs on leash would not allow access in Rodeo Lake or along wetland shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, alternative C would result in negligible impacts on wildlife using the lake and other wetland habitats at the site because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife species that use wetland vegetation.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice control at Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife using wetland vegetation could be affected by dogs at this adjacent park.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lake is closed to dogs and physically restraining dogs on leash would not allow access in habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands and could be used by shorebirds, wading birds, waterbirds, and other wildlife	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs at this site would occur.

Since dogs would not be allowed at the Marin Headlands Trails, no impacts on wildlife species that use wetland vegetation would occur from commercial dog walkers.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible to long-term minor adverse indirect impacts on wildlife species that use wetland vegetation in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible to long-term minor adverse indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation. Rodeo Lake is currently closed to dogs, and physically restraining dogs on leash would not allow dogs access to Rodeo Lake or along wetland shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife using the lake and surrounding wetland habitat because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence. Even though alternative E would allow more dog access at the site, the difference in dog use between alternatives E and C is not considered large enough to cause a change in the intensity of the impact relative to the area of the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife using wetland vegetation.

Cumulative Impacts. The negligible impacts on wildlife from dogs under alternative E were considered together with the effects of the projects mentioned above under alternative A “Cumulative Impacts.” Cumulatively, alternative E would have negligible impacts on wildlife species that use wetland vegetation at this park site when added to other past, present, or foreseeable future actions at and around this park site.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife species that use wetland vegetation could be affected by dogs at this adjacent park.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash and closing Rodeo Lake would protect wildlife in wetlands along Rodeo Lake and along the Rodeo Valley Trail Corridor, which also supports wetland habitat	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for the Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow dog access only on these perimeter trails in the Marin Headlands Trails, while preserving and maintaining the integrity of interior habitat. The valley bottom along Rodeo Valley Trail Corridor is adjacent to extensive areas of freshwater vegetation and the Miwok Trail is adjacent to Rodeo Lake, which supports shoreline wetland vegetation. Rodeo Lake is currently closed to dogs, and this closure in combination with physically restraining dogs on leash would not allow dogs access to Rodeo Lake or along wetland shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife using the lake and other wetland habitats at the site because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife species that use wetland vegetation.

Cumulative Impacts. Projects and actions in and near Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation

projects at Rodeo Lagoon and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009i; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009i). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008).

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources and wildlife within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

As stated previously, the loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Marin Headlands Trails; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands may experience increased visitation. This increase would be a result of the preferred alternative not allowing dogs under voice and sight control at Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and because it is unknown where and to what extent wildlife using wetland vegetation could be affected by dogs at these adjacent parks.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Rodeo Lake is closed to dogs, and physically restraining dogs on leash would not allow dogs access to habitat off trail along the Rodeo Valley Trail Corridor, which supports wetlands and could be used by shorebirds, wading birds, waterbirds, and other wildlife	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

SAN FRANCISCO COUNTY SITES

Crissy Field

Common to All Alternatives. Impacts from dogs as a result of the two different definitions of the Crissy Field WPA (the 36 CFR 7.97(d) definition for alternative A and the Warming Hut to approximately 900 feet east of the former Coast Guard Pier definition for alternatives B–E) will be the same for all alternatives. Even though the WPA would be expanded for alternatives B–E, this change would not influence the overall impacts analysis at this site because it would neither increase nor decrease the impacts at Crissy Field described in the paragraphs that follow. Further explanation of these two definitions can be found in the “Current Regulations and Policies” section of chapter 2.

Alternative A: No Action. Both freshwater and tidal wetlands are present at Crissy Field. From 1998 through 2000, a restoration project reestablished an 18-acre tidal marsh with a narrow fringe of salt marsh vegetation that links with San Francisco Bay at Crissy Field. Freshwater wetlands are located in swales created in the dunes at Crissy Field and primarily consist of cattails and willow species. The tidal marsh is a high use area for birds, and the area is fenced and is currently closed to people and dogs. The park has documented the highest (within Crissy Field site) year-round bird densities in the Crissy Marsh, with slightly lower densities in the dune swale and rear dune; bird species richness has been reported at its highest in the wetland, with slightly less richness in the beach and nearshore areas (Ward and Ablog 2006, 25–26 and 92–93). Migrating ducks, shorebirds, California brown pelicans, and diving birds such as cormorants, as well as resident gulls and wading birds, feed or rest in the tidal marsh at Crissy Field. Despite protection of the restored tidal marsh by fencing and prohibiting dogs in the WPA (where the tidal marsh occurs), dogs under voice control can gain access at low tide to the marsh through the tidal inlet that allows exchange of water between the marsh and San Francisco Bay. Generally, birds that use the marsh are not subjected to disturbance from dogs except at the tidal inlet. However, the park has documented that dogs go under the bridge into Crissy Marsh and access the flood shoal areas along the marsh and chase birds; further, a western grebe was killed at the Crissy Field site by a dog that accessed the marsh at this location (Merkle 2010e, 1).

This site has documented moderate to high visitor use and moderate to high numbers of dog walkers (table 9). There were 487 leash law violations at Crissy Field, 17 recorded incidents of dogs in a closed area, and 3 incidents of dogs disturbing wildlife in the WPA in 2007/2008 (table 9 and appendix G). Dogs gaining access to the marsh can disturb birds by chasing after them and generally by their activity level and by barking. Birds can relocate to avoid dogs, but in doing so they expend energy necessary to maintain conditions for migration, reproduction, and general health. Birds on the open water of the marsh are susceptible to impacts from dogs swimming in the marsh (which has been observed by park staff) and are also susceptible to chasing after and harassment by dogs if roosting on land.

Alternative A would result in continued long-term minor adverse impacts on wildlife associated with the restored marsh at Crissy Field because birds would occasionally be subjected to impacts from on-leash and voice-control dogs that gain access to the marsh. Impacts would occur from dogs barking at, chasing after, and being in proximity to roosting or feeding birds.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking occurs regularly at Crissy Field. Commercial dog walking would continue to contribute to the long-term minor adverse impacts on wildlife. Commercial dog walkers with multiple dogs under voice control would impact wildlife by barking at, chasing after, and being in close proximity to feeding and roosting birds.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which *restored 560 acres of pastures to wetlands* of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009I; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009I). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a haul-out site (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The long-term minor adverse impacts on wildlife from dogs at Crissy Field under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add adversely to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Crissy Field, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the

cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 35 parks with dog use areas within about a 10-mile radius of Crissy Field and 22 parks within about a 5-mile radius; the closest park is Mountain Lake Park (map 27). In addition, Crissy Field is located directly north of Area B of the Presidio; Area B is subject to the Presidio Trust's regulations on dog walking, which do not allow dogs to be off-leash. No indirect impacts on wildlife species that use wetland and aquatic habitats in adjacent lands, including Area B of the Presidio, would be expected under alternative A since there would be no change in current conditions at the site.

CRISSY FIELD ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	The tidal marsh is a high use area for shorebirds, wading birds, and waterbirds and is fenced and protected from dogs, although dogs have been observed in the marsh; these birds would occasionally be subjected to impacts from on-leash and voice-control dogs that gain access to the marsh through barking and chasing after and by proximity to roosting or feeding birds; visitor use is high at this site	N/A	Long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Dogs are currently prohibited at the tidal marsh at Crissy Field and in the WPA and would be required to be on leash in the rest of the site. Physically restraining dogs on leash would not allow dog access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife. Therefore, alternative B would result in negligible impacts on wildlife using the restored tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Crissy Field, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized in the previous paragraph.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

Some increase in visitation by individual and commercial dog walkers is expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since off-leash dog walking would no longer be allowed at Crissy Field; therefore, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative B, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physically restraining dogs on leash would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. The addition of a ROLA on Central Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat) and another ROLA on Crissy Airfield in alternative C would allow dog walking under voice and sight control. On-leash dog walking would be required for the remainder of the site and physically restraining dogs on leash would not allow access to marsh, which is currently closed to people and dogs, or shorelines (including the WPA). Therefore, assuming compliance, alternative C would result in negligible impacts on wildlife species using the tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative C since ROLAs would be provided on both the airfield and Central Beach.

CRISSY FIELD ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in the marsh; physical restraint of dogs on leash and compliance in the ROLAs would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would prohibit dogs on all beaches, but would establish a ROLA on the western section of Crissy Airfield (which consists of manicured lawn, not wetland and aquatic wildlife habitat). Dogs would be physically restrained on leash in all other areas of Crissy Field and not allowed on beaches (including the WPA). In addition, people and dogs are currently prohibited in the tidal marsh. Therefore, assuming compliance, alternative D would result in negligible impacts on wildlife using the tidal marsh and surrounding habitat because on-leash dogs could still disturb wildlife through barking and by their presence.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife. Private dog walkers would be allowed to walk one to three dogs.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative D were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

Some increase in visitation by individual and commercial dog walkers would be expected in adjacent lands that were identified under alternative A, especially parks that allow off-leash dog walking on beaches, since this activity would no longer be allowed on the beach at Crissy Field. However, dogs under voice and sight control would be allowed on half of Crissy Airfield. Indirect impacts on wildlife in adjacent lands would be expected under alternative D, but only at a negligible level because it is unknown where and to what extent wildlife use habitat in adjacent parks. However, no indirect impacts on wildlife in Area B of the Presidio would be expected under alternative D, since this area does not have beaches and does not allow off-leash dog walking.

CRISSY FIELD ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in the marsh; physical restraint of dogs on leash and compliance in ROLA would not allow dogs access to the marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the promenade, on East Beach, and in the WPA. Dogs would be under voice and sight control in two ROLAs established on Crissy Airfield and Central Beach (ROLAs do not include wetland and aquatic wildlife habitat). Dogs and people are currently not allowed in the tidal marsh. Therefore, assuming compliance, alternative E would result in negligible impacts on wildlife species because on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as in the previous paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Crissy Field under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under alternative E since ROLAs would be provided on the airfield and on Central Beach.

CRISSY FIELD ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physical restraint of dogs on leash and compliance in the ROLAs would not allow dogs access to marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Crissy Field. The addition of one ROLA on Central Beach (which includes coastal community wildlife habitat, not wetland and aquatic wildlife habitat) and one on Crissy Airfield in the preferred alternative would allow dog walking under voice and sight control. On-leash dog walking would be required for the remainder of the site and physically restraining dogs on leash would not allow access to marsh, which is currently closed to people and dogs, or shorelines (including the WPA). Therefore, assuming compliance, the preferred alternative would result in negligible impacts on wildlife species using the tidal marsh because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. In a ROLA, permit holders may walk one to six dogs off leash and the permit may restrict use by time and area. Permits would be allowed at Crissy Field. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Crissy Field, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized in the above paragraph; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Projects and actions in and near Crissy Field were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Crissy Field and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats. Specific examples of projects and plans that will cumulatively provide beneficial affects to wetlands include the *Giacomini Wetland Restoration Project* (Marin County, near Tomales Bay), which restored 560 acres of pastures to wetlands of increased complexity and diversity of vegetation and aquatic habitats (NPS 2009I; NPS and CSLC 2007). This project also dramatically increased habitat for California black rail, as well as other aquatic species such as waterfowl, shorebirds, fish, and seals (NPS 2009I). The Gulf of the Farallones National Marine Sanctuary has proposed the *Bolinas Lagoon Ecosystem Restoration Project* (near Stinson Beach), which will benefit wildlife species that currently use Bolinas Lagoon, including 245 species of birds, such as migratory waterfowl and shorebirds, as well as fish, invertebrates, and harbor seals, which use the site for pupping grounds and as a

haul-out site (GFNMS Working Group 2008). Beginning in 1997, efforts to remediate and restore Crissy Field included the removal of hazardous waste and the re-creation of the 18-acre tidal marsh.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Doyle Drive Project* (Presidio Parkway 2008) will impact or have the potential to negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Crissy Field under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Crissy Field; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands, including Area B of the Presidio, would be expected under the preferred alternative, since ROLAs would be provided on both the airfield and Central Beach.

CRISSY FIELD PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in marsh; physical restraint of dogs on leash and compliance in the ROLAs would not allow dogs access to marsh or shorelines used by shorebirds, wading birds, waterbirds, and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

SAN MATEO COUNTY SITES

Mori Point

Alternative A: No Action. Currently, dogs must be on leash on the trails at Mori Point. Dogs are prohibited at the four freshwater ponds at the site. Because of the presence of the California red-legged frog and the San Francisco garter snake at Mori Point wetlands, an NPS restoration project has created

four ponds to enhance the freshwater wetland habitat and to provide foraging habitat for the San Francisco garter snake (NPS 2009b). The project included associated wetland vegetation plantings, educational signs, and fences around the ponds and wetland habitat to prevent impacts on the California red-legged frog. Despite the educational signs and fences that have been placed around the ponds and wetland habitat at Mori Point, dogs have occasionally been observed in the ponds.

Alternative A would result in negligible to long-term minor adverse impacts on wildlife species using wetlands at Mori Point because birds and other wildlife species would occasionally be subjected to impacts from off-leash dogs that gain access to the ponds and associated habitat. Impacts would result from dogs barking at, chasing after, and being in proximity to roosting or feeding birds or other wildlife. A range is presented to encompass the potential effects, since impacts would depend on the seasonal presence of the birds and the level of activity at the site.

Under alternative A, no permit system exists for dog walking. At Mori Point, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats.

The Sharp Park Golf Course, located in Pacifica in San Mateo County (adjacent to Mori Point), has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Plans at the golf course range from restoration to entirely natural habitat to minor modifications that would improve habitat connectivity for frogs and snakes.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) could negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible to long-term minor adverse impacts on wildlife from dogs at Mori Point under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from wetland restoration/creation projects should reduce some of the adverse impacts on wildlife from alternative A. However, the impacts resulting from any development projects at or in the vicinity of GGNRA and the loss of more than 90 percent of California's original wetlands may add to the cumulative impacts on wildlife, even though wetland mitigation has contributed to reducing impacts on wildlife. Since there would be a combination of beneficial and adverse effects from projects in and around Mori

Point, when combined, these projects would balance out, resulting in negligible impacts. Therefore, the cumulative analysis for this park site will mainly focus on the results of the impact analysis for each alternative. Cumulative impacts on wildlife under this alternative would be expected to be negligible to long term, minor, and adverse.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). No indirect impacts in adjacent lands would be expected under alternative A as current dog walking conditions would not change.

MORI POINT ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Negligible to long-term minor adverse impacts	Dogs have occasionally been observed in fenced ponds; birds and other wildlife using pond habitat would infrequently be subjected to impacts from on-leash dogs (and off-leash dogs violating the leash law) barking at, chasing after, and being in proximity to wildlife; visitor use is moderate at this site	N/A	Negligible to long-term minor adverse cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on the Coastal Trail and the beach (the portion owned by the NPS), but dogs would not be allowed on Old Mori Road, which is adjacent to the freshwater ponds. Therefore, assuming compliance, alternative B would result in negligible impacts on wildlife because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative B were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to Mori Point, the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). These parks may experience some increased visitation under alternative B since Old Mori Road and the Pollywog Path would be closed to dogs, resulting in negligible indirect impacts on wildlife

in adjacent lands, since visitors with dogs may choose to visit a different park due to these closures but it is unknown where and to what extent wildlife use habitat in these adjacent lands.

MORI POINT ALTERNATIVE B CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, dog walking restrictions would be the same as alternative B, except dogs would be allowed on leash on Old Mori Road, which passes by the freshwater ponds that prohibit dogs. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, alternative C would result in negligible impacts on wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative C were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative C since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wildlife in adjacent lands would be expected.

MORI POINT ALTERNATIVE C CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife from dogs would occur at this site.

Since dogs would not be allowed at Mori Point, no impacts on wildlife species that use wetland vegetation would occur from commercial dog walkers.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Mori Point under alternative D was considered together with the effects of the projects mentioned above in alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the lack of impacts from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, since this alternative would not allow dogs. Indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wildlife use habitat in adjacent lands.

MORI POINT ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking on the Coastal Trail and the portion of beach owned by the NPS, as well as on Old Mori Road, which is located adjacent to the freshwater ponds, and the Pollywog Path, which ends near the creek and riparian habitat. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, alternative E would result in negligible impacts on

wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Mori Point under alternative E were considered together with the effects of the projects mentioned above under alternative A. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from alternative E would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A would probably not experience any increased visitation under alternative E, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wildlife in adjacent lands would be expected.

MORI POINT ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Mori Point. Dogs would be allowed on leash on Old Mori Road, which passes by the freshwater ponds that prohibit dogs, as well as on the Coastal Trail and the portion of beach allowed by the NPS. Physically restraining dogs on leash would not allow dog access to the ponds or shorelines used by wading birds, waterbirds, and other wildlife. To protect the ponds and California red-legged frog habitat, an exclusionary fence that effectively keeps visitors and dogs from accessing these wetland areas exists at the site. Therefore, the preferred alternative would result in negligible impacts on wildlife using the ponds at Mori Point because on-leash dogs could still disturb roosting and feeding birds and other wildlife through barking and by their presence.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk

more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Mori Point, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Mori Point, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Mori Point were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site. Many wetland restoration/creation projects have been completed or are proposed in GGNRA and beyond the boundaries of the park. Impacts resulting from completed, ongoing, and future restoration/creation projects at Mori Point and projects beyond the park boundaries will generally provide an overall benefit to wetland and tidal marsh habitats.

The Sharp Park Golf Course, located in Pacifica in San Mateo County (adjacent to Mori Point), has a wetland complex, consisting of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel, which provides important habitat for the San Francisco garter snake and California red-legged frog (SFRPD 2009). Plans at the golf course range from restoration to entirely natural habitat to minor modifications that would improve habitat connectivity for frogs and snakes.

Additional actions have had or have the potential to have adverse effects on wetlands at or in the vicinity of GGNRA sites. Larger, more regional development projects, like the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) could negatively affect wetland resources within and beyond park boundaries. However, wetland impacts from the implementation of these and other proposed projects in the area should be sufficiently offset by mitigation, project by project, such that there should be no net loss of wetland acreage, functions, or values.

The loss of more than 90 percent of California's original wetlands is the largest loss of any state in the nation and is directly related to economic development (NOAA 2010a, 1). The *Clean Water Act* and the state's coastal wetlands statute have succeeded in reducing the rate of wetland loss in California, but development pressures remain a threat (NOAA 2010a, 1). Therefore, projects that protect or degrade wetlands and aquatic habitats will have a cumulative effect, whether beneficial or adverse, on wildlife species that inhabit wetlands.

The negligible impacts on wildlife from dogs at Mori Point under the preferred alternative were considered together with the effects of the projects mentioned above. There would be a combination of beneficial and adverse effects from projects in and around Mori Point; when combined, these projects would balance out, resulting in negligible impacts. These negligible impacts combined with the negligible impacts from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 23 parks with dog use areas within about a 10-mile radius of Mori Point and 3 parks within about a 5-mile radius; the closest parks are Esplanade Beach in Pacifica and the San Bruno Dog Park (map 27). The adjacent lands would probably not experience any increased visitation under the preferred alternative, since visitors would be allowed to continue to walk dogs at this site; therefore, no indirect impacts on wildlife in adjacent lands would be expected.

MORI POINT PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Dogs would be prohibited in ponds; physically restraining dogs on leash would not allow dogs access to ponds or shorelines used by birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds through barking and by their presence	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Wetland and Aquatic Habitats

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife utilizing wetland resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetlands or aquatic habitats and wildlife even if a trail is developed or previously located adjacent to a wetland or aquatic habitat. The physical restraint of dogs would protect wetland and aquatic resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds by barking and their presence. If dogs gain access to these communities, impacts to wildlife within the area could be elevated to a long-term, minor, adverse impact. Therefore, overall impacts to wildlife that use wetland and aquatic vegetation from private and commercial dog walkers as a result of alternative A would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use wetland and aquatic vegetation. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers and would range from negligible to long-term, minor, and adverse.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use wetland and aquatic vegetation in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species and/or habitat exist at the site.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wetlands and aquatic wildlife. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetlands or aquatic habitats and wildlife even if a trail is developed or previously located adjacent to a wetland or aquatic habitat. The physical restraint of dogs would protect wetland and aquatic resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use wetland and aquatic vegetation from private and commercial dog walkers as a result of alternatives B and C would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use wetland and aquatic vegetation in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLES

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Alternative D could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include wetlands and aquatic habitats that support many wildlife species.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on wetlands and aquatic wildlife. Private dog walkers would be allowed up to three dogs.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetlands or aquatic habitats and wildlife even if a trail is developed or previously located adjacent to a wetland or aquatic habitat. The physical restraint of dogs would protect wetland and aquatic resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use wetland and aquatic vegetation from dog walkers as a result of alternative D would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use wetland and aquatic vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public

transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and, potentially, ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include wetlands and aquatic habitat that support numerous wildlife species and could be affected by dog activities.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use wetland and aquatic habitats. At sites where commercial dog walking is common, impacts to wildlife that use wetland and aquatic habitats would be similar to impacts from other dog walkers. Overall impacts to wildlife that use wetland and aquatic habitats from dogs walked by both commercial and private individuals are summarized below

It is assumed that ROLAs would not be established within sensitive wetland or aquatic habitat so the park's desired future conditions can be attained. Even so, dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats. At most new lands and assuming compliance, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetlands or aquatic habitats and wildlife even if a trail is developed or previously located adjacent to a wetland or aquatic habitat; the restricted control of walking a dog on a leash would minimize access to these areas. The physical restraint of dogs would protect water bodies and surrounding wetland and/or aquatic vegetation as well as wildlife. Therefore, assuming compliance, overall impacts to wetland and aquatic vegetation from private and commercial dog walkers as a result of alternative E would range from negligible to long-term, moderate, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. The physical restraint of dogs and compliance in ROLA would not allow access to wetlands, shorelines, or wetland habitat adjacent to trails used by shorebirds,

wading birds, waterbirds, and other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife by barking and their presence. It is also important to note that no impacts to wetland and aquatic vegetation are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use wetland and aquatic habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, moderate, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat; dogs barking and running in the ROLA would disturb birds and other wildlife	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

The preferred alternative could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is

expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site. It is entirely possible that new lands managed by GGNRA could include wetlands and aquatic habitats that support many wildlife species.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use wetland and aquatic habitat. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use wetland and aquatic habitat from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive wetlands or aquatic habitats and wildlife even if a trail is developed or previously located adjacent to a wetland or aquatic habitat. The physical restraint of dogs would protect wetland and aquatic resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use wetland and aquatic vegetation from private and commercial dog walkers as a result of the preferred alternative would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use wetland and aquatic habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use wetland and aquatic habitat in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Wetland and Aquatic Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from high quality and preferred habitat	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

WILDLIFE IN THE NATIVE HARDWOOD FOREST AND DOUGLAS-FIR/COAST REDWOOD COMMUNITY

In the planning area at GGNRA, native hardwood forest exists at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker. The Douglas-fir/coast redwood community is found sporadically in portions of Homestead Valley and in Oakwood Valley, but outside the area accessed by dogs, and is therefore not discussed further in this section with reference to these sites. The native hardwood forest or Douglas-fir/coast redwood communities exist at Oakwood Valley, Alta Trail/Orchard Fire Road/Pacheco Fire Road, and Fort Baker, and impacts on the wildlife species that inhabit these communities at these sites are discussed in more detail in the paragraphs that follow.

As previously discussed in chapter 3, a variety of wildlife species, such as woodland birds (passerines such as chestnut-backed chickadee, flycatchers, warblers, woodland hawks, and owls) and small mammals (shrews, squirrels, and dusky-footed wood rat), use the woodland habitats at GGNRA. Other animals such as deer, coyote, and bobcat, often found in more open habitat, can use woodlands as protected cover and resting areas. Birds in woodlands primarily use the canopy and middle-level forest but may nest and forage in the herbaceous understory and on the ground. Mammals would be found mainly at ground level in this habitat.

MARIN COUNTY SITES

Alta Trail/Orchard Fire Road/Pacheco Fire Road

Alternative A: No Action. Dogs are currently allowed under voice control or on leash on the trails and roads from Marin City to Oakwood Valley. These areas experience high use by dog walkers (table 9), especially commercial dog walkers, with typically 5 to 12 dogs under voice control per commercial walker.

Under the no-action alternative, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue, and occasional disturbance would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. These impacts would be considered long term, minor, and adverse because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site.

Under alternative A, no permit system exists for dog walking. However, commercial dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road is common, with commercial dog walkers often having 5 to 12 dogs under voice control at one time. Commercial dog walking would continue to create long-term minor adverse impacts on wildlife. Dogs under voice control would continue to disturb the natural habitat of wildlife.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect native hardwood forests at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban

Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts. Therefore, these projects would not likely contribute to the cumulative impacts.

The long-term minor adverse impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the restoration and trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The adverse impacts resulting from construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be expected to be negligible due to mitigation that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed on the Alta Trail to Orchard Fire Road, on Orchard Fire Road, and on Pacheco Fire Road. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally

disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife.

The long-term minor adverse impacts from the high use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since the percentage of commercial dog walkers is considered high at Alta Trail/Orchard Fire Road/Pacheco Fire Road, dogs walked by commercial dog walkers would constitute the majority of the adverse impacts on wildlife from dogs at the site. Overall impacts on wildlife from dogs walked by both commercial and private individuals are summarized above.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative B, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site, but impacts would be negligible. Although Alta Trail and the fire roads are considered high use areas for commercial dog walkers, it is unknown where and to what extent wildlife use habitat in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and overall impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at the Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers: negligible.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, assuming compliance, no impact on wildlife would occur.

Since dogs would not be allowed at this site, no impacts on wildlife species that use native hardwood forests would occur from commercial dog walkers.

Cumulative Impacts. The lack of impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under alternative D was considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation by individual and commercial dog walkers under alternative D, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking would no longer be allowed at this site, but impacts would be negligible since although Alta Trail and the fire roads are considered high use areas for commercial dog walkers, it is unknown where and to what extent wildlife use habitat in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would not be allowed at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/ Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative B, and overall impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail/Orchard Fire Road/Pacheco Fire Road. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail/Orchard Fire Road/Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers, as summarized above; therefore, impacts from commercial dog walking would be negligible.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Under the preferred alternative, on-leash dog walking would be allowed on the Alta Trail to Orchard Fire Road, on Orchard Fire Road, and on Pacheco Fire Road. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Therefore, wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still considered an impact on wildlife.

The long-term minor adverse impacts from the high use of dog walking in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. The overall impact on wildlife from on-leash dog walking at Alta Trail, Orchard Fire Road, and Pacheco Fire Road would be negligible.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed for Alta Trail, Orchard Fire Road, and Pacheco Fire Road. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is common at Alta Trail, Orchard Fire Road, and Pacheco Fire Road, impacts on wildlife would be expected from this user group. Impacts on wildlife from commercial dog walkers would be similar to impacts from other dog walkers: negligible.

Cumulative Impacts. Projects and actions in and near Alta Trail and Orchard and Pacheco fire roads were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect native hardwood forests at GGNRA park sites such as Alta Trail and Orchard and Pacheco fire roads. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Alta Trail, Orchard Fire Road, and Pacheco Fire Road.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts. Therefore, these projects would not likely contribute negatively to the cumulative impacts on wildlife.

The negligible impacts on wildlife from dogs at Alta Trail and Orchard and Pacheco fire roads under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the trail rehabilitation projects combined with the negligible impacts from any construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Alta Trail, Orchard Fire Road, and Pacheco Fire Road and 19 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito, which permits off-leash dog use (map 26). The adjacent lands may experience increased visitation by individual and commercial dog walkers under the preferred alternative, particularly Remington Dog Park, because it is the closest dog use area. Visitation may increase in adjacent lands since dog walking under voice control would no longer be allowed at this site, but impacts would be negligible. Although Alta Trail and the fire roads are considered high use areas for commercial dog walkers, it is unknown where and to what extent wildlife use habitat in adjacent lands.

ALTA TRAIL/ORCHARD FIRE ROAD/PACHECO FIRE ROAD PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Oakwood Valley

Alternative A: No Action. Under alternative A under alternative A, dogs are currently allowed under voice control or on leash on the Oakwood Valley Fire Road and Oakwood Valley Trail from junction with Fire Road to junction with Alta Trail, and on leash on the Oakwood Valley Trail from trailhead to junction with Oakwood Valley Fire Road. These areas experience high use by hikers, runners, bicyclists, and horseback riders and moderate use by dog walkers (table 9).

Under the no-action alternative, off-leash dog access to wildlife and associated habitat off trails and fire roads would continue and occasional disturbance would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. Impacts on wildlife at Oakwood Valley would be long term, minor, and adverse because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site.

Under alternative A, no permit system exists for dog walking. At Oakwood Valley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect native hardwood forests at GGNRA park

sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute to cumulative impacts.

The long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any construction projects at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

OAKWOOD VALLEY ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance includes physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitute a very small portion of entire site	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Under alternative B, on-leash dog walking would be allowed and would be limited to the Oakwood Valley Road and trail loop in the lower section of the site. No dogs would be allowed above the junction of the road and trail. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edge of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Physically restraining dogs on leash in the Oakwood Valley site would protect habitat off trail as well as wildlife. Chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife

behavior. Wildlife would be occasionally affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts from the high use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Even though this habitat and supporting wildlife constitutes a very small portion of entire site, it is considered important native wildlife habitat. Assuming compliance, the overall impact on wildlife from on-leash dog walking at Oakwood Valley would be negligible to long term, minor, and adverse.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Increased visitation would be expected since voice and sight control dog walking would not be allowed under alternative B. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since most of the area (road/trails) offered for dog walking would not change and because it is unknown where and to what extent wildlife use habitat in adjacent parks.

OAKWOOD VALLEY ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife would be occasionally affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site but is considered important native wildlife habitat	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. For alternative C, a ROLA is proposed along Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The ROLA would include double gates at both ends (to reduce dog escapes) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on the Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to the new gate at Alta Avenue. In general, impacts would be limited to the ROLA, existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD area and ROLA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. The ROLA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. In addition, the ROLA fencing may also prevent wildlife from using the trail at night and when dogs are not present. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area and ROLA, alternative C would result in long-term minor to moderate adverse impacts on wildlife using native hardwood forest and Douglas-fir/coast redwood habitat at Oakwood Valley.

The long-term minor to moderate adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the entire site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be negligible to long term, minor, and adverse.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog

walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have negligible impacts on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A should not experience increased visitation under alternative C, since voice and sight control dog walking would be allowed under this alternative. No indirect impacts on wildlife in adjacent lands would occur.

OAKWOOD VALLEY ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD areas) and in ROLAs	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife in LOD areas and ROLAs would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs; ROLAs would concentrate dogs and noise as well as elevating the amount of dog waste and scent marking, leading to avoidance of the surrounding area by wildlife		

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site; LOD areas and ROLAs are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed along the Oakwood Valley Fire Road from Tennessee Valley Road to the junction with Oakwood Valley Trail. The LOD area would include the fire road and the 6 feet of land adjacent to the road. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Physically restraining dogs on leash in the Oakwood Valley site would protect habitat off trail as well as wildlife. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife and wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Even though this habitat and supporting wildlife constitutes a very small portion of the site, it is considered important native wildlife habitat. Assuming compliance, the overall impact on wildlife from on-leash dog walking at Oakwood Valley would be negligible to long term, minor, and adverse.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife at the site.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. The beneficial effects from the trail rehabilitation projects along with the negligible impacts from any construction actions and the negligible to long-term minor adverse impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Remington Dog Park, because it is the closest dog use area and this park allows off-leash dog walking. Voice and sight control dog walking would not be allowed under alternative D, and the Oakwood Valley Fire Road would be the only area offered for dog walking. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible since it is unknown where and to what extent wildlife use habitat in adjacent parks.

OAKWOOD VALLEY ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife would be occasionally affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site but is considered important native wildlife habitat; the LOD area is a small portion of the entire site.	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C, though unlike alternative C the ROLA would have non-continuous fencing only where needed. Overall impacts from alternative E would be the same as alternative C, assuming compliance: long term, minor to moderate, and adverse in the LOD area and ROLA and negligible to long term, minor, and adverse overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an

impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same as those under alternative B: negligible cumulative impacts and negligible impacts in adjacent lands.

OAKWOOD VALLEY ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area) and in ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife in LOD area and ROLA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs; the ROLA would concentrate dogs and noise as well as elevating amount of dog waste and scent marking, leading to avoidance of the surrounding area by wildlife		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the entire site; LOD areas and ROLAs are a small portion of the entire site	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. For alternative C, a ROLA is proposed along Oakwood Valley Fire Road to the junction with the Oakwood Valley Trail. The ROLA would include double gates at both ends (to reduce dog escapes) and continuous fencing to protect sensitive habitat. On-leash dog walking is proposed on the Oakwood Valley Trail from the junction with the Oakwood Valley Fire Road to the new gate at Alta Trail. In general, impacts would be limited to the ROLA, existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD area and ROLA would be occasionally to frequently

affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. The ROLA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. In addition, the ROLA fencing may also prevent wildlife from using the trail at night and when dogs are not present. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area and ROLA, the preferred alternative would result in long-term minor to moderate adverse impacts on wildlife using native hardwood forest at Oakwood Valley.

The long-term minor to moderate adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Oakwood Valley would be negligible to long term, minor, and adverse.

All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Oakwood Valley, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Oakwood Valley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Oakwood Valley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation can provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect native hardwood forest at GGNRA park sites such as Oakwood Valley. Additionally, the implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could impact Oakwood Valley.

The implementation of current and future projects both in GGNRA and beyond park boundaries could have a cumulative impact on the wildlife species that inhabit native hardwood forest communities. Generally, construction projects that affect this community require project-specific mitigation measures to address impacts; therefore, these projects would not likely contribute negatively to cumulative impacts.

The negligible to long-term minor adverse impacts on wildlife from dogs at Oakwood Valley under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 31 parks with dog use areas within about a 10-mile radius of Oakwood Valley and 22 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands should not experience increased visitation under the preferred alternative, since voice and sight control dog walking would be allowed under this alternative. No indirect impacts on wildlife in adjacent lands would occur.

OAKWOOD VALLEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area) and in ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife in LOD area and ROLA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs; the ROLA would concentrate dogs and noise as well as elevating the amount of dog waste and scent marking, leading to avoidance of the surrounding area by wildlife		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site; LOD areas and ROLAs are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Fort Baker

Alternative A: No Action. Currently, on-leash dog walking is allowed throughout Fort Baker, except that dogs are not allowed on the Chapel Trail or the pier. This site experiences moderate visitor use and low dog walking use, and there were 57 violations of the leash law in 2007/2008 (table 9). Dogs have been observed off leash at the Parade Ground, Drown Fire Road, Battery Yates, and behind the Bay Area Discovery Museum (NPS 2006g).

Under alternative A, impacts on wildlife would include physical damage to habitat or nests and burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, and ground-nesting birds. Wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs. Because native hardwood forests and the wildlife associated with this habitat constitute only a small portion of the site, the impacts would be considered long term, minor, and adverse under alternative A.

Under alternative A, no permit system exists for dog walking. At Fort Baker, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to wildlife by activities such as controlling invasive plant species and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on wildlife species that inhabit native hardwood forests. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The long-term minor adverse impacts on wildlife from dogs at Fort Baker under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from the projects provided by the Park Stewardship Programs should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT BAKER ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife and associated habitat off trails and fire roads would continue; occasional disturbance includes physical damage to habitat or nests/ burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would allow on-leash dog walking on Drown Fire Road, the Bay Trail (not including Battery Yates Loop), the Lodge/Conference Center Grounds, and the Parade Ground. Dogs would not be allowed on the Battery Yates Trail or the Battery Yates Loop as part of this alternative, due to the presence of mission blue butterfly habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be negligible. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common in this area, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative B were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative B, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE B CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the entire site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking on Drown Fire Road, the Bay Trail including Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife. The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be negligible.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative c would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative c, since on-leash dog walking would be allowed at the site.

FORT BAKER ALTERNATIVE C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would be allowed on the Lodge and Conference Center grounds and on the Bay Trail (excluding the Battery Yates Loop), but dogs would be prohibited in the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail/grounds. Physically restraining dogs on leash would protect habitat and wildlife off trail, and chasing after wildlife would be eliminated, but on-leash dogs would still infrequently disturb wildlife behavior. Impacts in areas adjacent to the trail/ground would be long term, minor, and adverse as adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition. Because of mobility, wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole, and this habitat and supporting wildlife constitutes a very small portion of the site. Physically restraining dogs on leash would protect habitat off trail as well as wildlife;

chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence. Assuming compliance, the overall impact on wildlife at Fort Baker would be negligible.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Baker under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from the Park Stewardship Programs combined with the negligible impacts from any construction actions and the negligible impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

Indirect impacts on wildlife in adjacent lands may occur under alternative D, since on-leash dog walking would not be allowed in the Parade Ground. Some individual and commercial dog walkers may choose to go to another park site that has a large area for walking dogs. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since it is unknown where and to what extent wildlife use habitat in adjacent parks.

FORT BAKER ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would have the same dog walking restrictions as alternative C and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible overall.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative E, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative C: negligible cumulative impacts and no impacts in adjacent lands.

FORT BAKER ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Baker. The preferred alternative would allow on-leash dog walking on Drown Fire Road, the Bay Trail including the Battery Yates Loop, the Lodge/Conference Center Grounds, and the Parade Ground. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, and displacement to another location is still an impact on wildlife.

The long-term minor adverse impacts from dogs in the LOD area would occur in a relatively small area when compared to the site as a whole; therefore, the overall impact on wildlife at Fort Baker would be

negligible. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and by their presence.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. Permits would be allowed at Fort Baker. Impacts on wildlife from permit holders with up to six dogs off leash would be expected to increase under this alternative; however, impacts would not be expected to increase enough to cause a change in the threshold level. Since commercial dog walking is not common at Fort Baker, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Baker were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Park Stewardship Programs provide indirect benefits to wildlife by activities such as controlling invasive plant species and restoring habitats.

Development or construction actions at or in the vicinity of GGNRA sites have had or may have the potential to have adverse impacts on wildlife species that inhabit native hardwood forests. Even though these efforts both within and beyond park boundaries would affect vegetation and wildlife, mitigation for these projects would reduce the potential for impacts.

The negligible impacts on wildlife from dogs at Fort Baker under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from the Park Stewardship Programs along with the negligible impacts from any construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 26 parks with dog use areas within about a 10-mile radius of Fort Baker and 2 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under the preferred alternative, since on-leash dog walking would be allowed at the site.

FORT BAKER PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be occasionally affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of the site	Beneficial, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

New Lands: Wildlife in the Native Hardwood Forest and Douglas-fir/Coast Redwood Community

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, dogs may be allowed at new lands under alternative A. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife resources exist at the site within native hardwood and/or Douglas fir-coast redwood habitat.

At new lands, the impacts to wildlife from allowing on-leash dog walking would be negligible because the physical restraint of dogs would protect vegetation off-trail and it is assumed that the area affected would be relatively small compared to total park area. The physical restraint of dogs would protect habitat off-trail as well as wildlife; chasing after wildlife would be eliminated although on-leash dogs can still disturb wildlife through barking and their presence. Therefore, the overall impact to wildlife that use native hardwood or Douglas fir-coast redwood habitat from on-leash private dog walking and commercial dog walking as a result of alternative A would be negligible. It is also important to note that no impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitat are expected to occur at sites that are closed to or proposed for closure to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use native hardwood or Douglas fir-coast redwood habitat. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers and would be negligible.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the

cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use native hardwood or Douglas fir-coast redwood habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use native hardwood or Douglas fir-coast redwood habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; dogs can displace wildlife from preferred habitat and affect wildlife by barking, chasing after, and proximity to roosting	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if wildlife that use native hardwood or Douglas fir-coast redwood resources exist at the site.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use native hardwood or Douglas fir-coast redwood habitat. At sites where

commercial dog walking is common, impacts to this habitat from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitat from dogs walked by both commercial and private individuals are summarized below.

At new lands, the impacts to wildlife from allowing on-leash dog walking would be negligible because the physical restraint of dogs would protect vegetation off-trail and it is assumed that the area affected would be relatively small compared to total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. The physical restraint of dogs would protect habitat off-trail as well as wildlife; chasing after wildlife would be eliminated although on-leash dogs can still disturb wildlife through barking and their presence. Therefore, assuming compliance, the overall impact to wildlife that use native hardwood or Douglas fir-coast redwood habitat from on-leash private dog walking and commercial dog walking as a result of alternatives B and C would be negligible. It is also important to note that no impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitat are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use native hardwood or Douglas fir-coast redwood habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use native hardwood or Douglas fir-coast redwood habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint of dogs would protect wildlife and would minimize access; dogs could still disturb roosting and feeding birds by barking and their presence	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based

management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include wildlife that use native hardwood or Douglas fir-coast redwood habitats.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on wildlife that use native hardwood or Douglas fir-coast redwood habitats. Private dog walkers would be allowed up to three dogs.

At new lands, the impacts to wildlife from allowing on-leash dog walking would be negligible because the physical restraint of dogs would protect vegetation off-trail and it is assumed that the area affected would be relatively small compared to total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. The physical restraint of dogs would protect habitat off-trail as well as wildlife; chasing after wildlife would be eliminated although on-leash dogs can still disturb wildlife through barking and their presence. Therefore, assuming compliance, the overall impact to wildlife that use native hardwood or Douglas fir-coast redwood habitat from on-leash dog walking as a result of alternative D would be negligible. It is also important to note that no impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitat are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use native hardwood or Douglas fir-coast redwood habitat in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use native hardwood or Douglas fir-coast redwood habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint of dogs would protect wildlife and would minimize access; dogs could still disturb roosting and feeding birds by barking and their presence	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and potentially ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if wildlife that use native hardwood or Douglas fir-coast redwood habitats exist at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the

new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use native hardwood or Douglas fir-coast redwood habitats from commercial dog walkers. At sites where commercial dog walking is common, impacts to these habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitats from dogs walked by both commercial and private individuals are summarized below.

It is assumed that ROLAs would not be established within sensitive native hardwood or Douglas fir-coast redwood habitats so the park's desired future conditions can be attained. Even so, dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats. Adjacent habitat would be affected by dogs through trampling, digging, excreta and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, thus substantiating a long-term minor adverse impact to wildlife within the ROLA and in adjacent areas. However, at most new lands and assuming compliance, the impacts to wildlife from allowing on-leash dog walking would be negligible. If dogs are physically restrained by a leash, they should not gain access to nearby habitat and should not affect wildlife in native hardwood or Douglas fir-coast redwood forests. Therefore, assuming compliance, overall impacts to wildlife from dog walkers as a result of alternative E would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. It is also important to note that no impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitats are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife in native hardwood or Douglas fir-coast redwood forests in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use native hardwood or Douglas fir-coast redwood forest habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
<p>Conclusion:</p> <p>Long-term, minor, adverse impact in ROLA and adjacent areas</p> <p>Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs</p>	<p>Dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats</p> <p>Physical restraint of dogs would protect wildlife and would minimize access; dogs could still disturb roosting and feeding birds by barking and their presence</p>	<p>Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands</p> <p>No indirect impact to negligible indirect impact at adjacent lands</p>	N/A

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. However, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive habitats exist at the site. It is entirely possible that new lands managed by GGNRA could include wildlife that use native hardwood or Douglas fir-coast redwood habitats.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use native hardwood or Douglas fir-coast redwood forest habitat. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use native hardwood or Douglas fir-coast redwood forest habitat from dogs walked by both commercial and private individuals are summarized below.

At new lands, the impacts to wildlife from allowing on-leash dog walking would be negligible because the physical restraint of dogs would protect vegetation off-trail and it is assumed that the area affected would be relatively small compared to total park area. When compliance is assumed at the new lands, it is expected that owners would be in close contact with their dogs and presumably would be likely to comply with cleanup regulations. The physical restraint of dogs would protect habitat off-trail as well as wildlife; chasing after wildlife would be eliminated although on-leash dogs can still disturb wildlife through barking and their presence. Therefore, assuming compliance, the overall impact to wildlife that use native hardwood or Douglas fir-coast redwood habitat from on-leash private dog walking and commercial dog walking as a result of the preferred alternative would be negligible. It is also important to note that no impacts to wildlife that use native hardwood or Douglas fir-coast redwood habitat are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use native hardwood or Douglas fir-coast redwood forest habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use native hardwood or Douglas fir-coast redwood forest habitat in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Native Hardwood Forest and Douglas-fir / Coast Redwood Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint of dogs would protect wildlife and would minimize access; dogs could still disturb roosting and feeding birds by barking and their presence	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

WILDLIFE IN RIPARIAN FOREST AND STREAM CORRIDORS

Wildlife using riparian habitat along wetlands, streams, and creeks in GGNRA include amphibians, reptiles, birds, and mammals that require the specialized habitat associated with stream corridors for all or part of their life. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. The sites in GGNRA that possess riparian habitat that supports wildlife species include: Easkoot Creek at Stinson Beach, Redwood Creek at Muir Beach in Marin County, Marin Headlands Trails along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing, and Lobos Creek at Baker Beach. The area at the Lobos Creek inlet that supports riparian vegetation is generally not used by visitors with dogs and is not affected by this plan/EIS (NPS 2009b).

At Easkoot Creek, the creek is densely vegetated with riparian plant species and generally difficult to access. Therefore, impacts on riparian vegetation as a result of alternatives A through E at both Lobos Creek at Baker Beach and Easkoot Creek at Stinson Beach would be negligible and are not discussed further in this section. Below and discussed in more detail include the following sites: Muir Beach (Redwood Creek) and Marin Headlands Trails (along the Rodeo Valley Trail Corridor from Rodeo Beach to Capehart Housing).

MARIN COUNTY SITES

Muir Beach (Redwood Creek)

Alternative A: No Action. Redwood Creek and the trail associated with the creek are currently closed to dogs by the NPS to protect sensitive habitat and wildlife species that occur in the watershed, including migrating salmonids (see “Special-status Species” section for a detailed discussion of impacts on coho salmon and steelhead trout). The park has closed the Redwood Creek area, including the trail along Redwood Creek and at the creek crossing near Muir Beach, to people and dogs. Off-leash dogs have frequently been observed in Redwood Creek despite these closures (appendix G). A post-and-cable fence installed by the NPS between lower Redwood Creek and the lagoon, also currently closed to dogs, is intended to discourage visitors from accessing the water; however, it does not physically exclude dogs or visitors from the area (NPS 2010b). Water-dependent amphibians and reptiles found in Redwood Creek that may be affected by current conditions include Pacific tree frogs, California newts, and California giant salamanders.

Under the no-action alternative, if dogs gain access to Redwood Creek they could affect amphibians/reptiles by fouling water with dog waste, trampling plants (habitat) along the water/wetland edges, and disturbing sediment and causing turbidity that can smother egg masses, or by injuring or causing direct mortality to egg masses or individual species in the creek. Other wildlife species, such as birds and small mammals, because of their mobility can usually avoid areas where dogs are present during peak activity or habituate to these activities, but loss of preferred habitat would still indirectly affect wildlife. Off-leash dogs could also chase wildlife, and nesting birds on the ground or in low vegetation could have nests destroyed by dogs wandering off the trail. Therefore, alternative A would result in continued long-term minor adverse impacts on wildlife species at Redwood Creek.

Under alternative A, no permit system exists for dog walking. At Muir Beach, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach.

Additional specific projects that may benefit wildlife in riparian forest and stream corridor habitats include the following: the *Muir Beach Wetland and Creek Restoration Project*, which aims to restore a

functional, self-sustaining ecosystem at the tidal lagoon and includes wetland, riparian, and aquatic components to re-create habitat; the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project (NPS 2002c, 7), which helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored riparian habitat and the floodplain at the GGNRA Banducci site; the *Coho and Steelhead Restoration Project* (NPS 2010n, 1), which focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds and includes assessments of coho salmon and steelhead abundance and distribution, and the development and implementation of a fish and habitat restoration and monitoring plan; and the *Redwood Creek Watershed: Vision for the Future* project (NPS 2003d, 8), which included identification of issues and values in the watershed and desired future conditions for watershed resources.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, such as the GGNRA *Long-range Transportation Plan Update* (NPS 2008i). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a, 342-343). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a, 94-101). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a, 343), which could ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MUIR BEACH ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Redwood Creek closures have been violated by off-leash dogs; wildlife, especially aquatic species, that use the creek and associated riparian habitat along the Pacific Way Trail would occasionally be subjected to impacts from on-leash and voice-control dogs through barking and chasing after, wildlife avoidance of areas, and aquatic impacts when dogs gain access to the creek, such as fouling water with dog waste, trampling vegetation, disturbing sediment and causing turbidity, or injuring or causing direct mortality to eggs or individual species in the creek	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B requires on-leash dog walking on the Pacific Way Trail, the parking area, boardwalk/path to beach, and the beach itself. The lagoon and creek are currently closed to dogs and people. On-leash dog walking is based on an allowed 6-foot dog leash. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which would indirectly affect wildlife. Therefore, long-term minor adverse impacts on habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would occur.

Because the trails and the LOD area represent a small portion of the Muir Beach site, the overall impacts would be negligible to long term, minor, and adverse, assuming compliance. There would be fewer trails available to on-leash dogs compared to alternative A, and these trails generally receive low to high use by dog walkers. Because dogs would be physically restrained and the regulations would be enforced, habitat and wildlife at Redwood Creek would be protected. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative B, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs per person with no permit required. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative B would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative B were considered together with the effects of the projects mentioned above

under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative B. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B because voice-control dog walking would no longer be allowed at Muir Beach under this alternative. However, dogs would still be allowed on the site on leash; therefore, indirect impacts on wildlife in adjacent lands from increased dog use would be expected to be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MUIR BEACH ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the site; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would have the same dog walking restrictions as alternative B, and impacts would be the same, assuming compliance: long term, minor, and adverse in the LOD area and negligible to long term, minor, and adverse overall.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on

the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. Under alternative C, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible indirect impacts in adjacent lands.

MUIR BEACH ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the site; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Under alternative D, on-leash dog walking would only be allowed on Pacific Way Trail and the parking area, and not on the beach or paths to the beach. On-leash dog walking is based on an allowed 6-foot dog leash. Currently, the entire length of the Pacific Way Trail is adjacent to the riparian forest habitat; restoration of the Pacific Way Trail will move it even closer to the riparian habitat. Currently the lagoon and creek are closed to dogs. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of trails. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Assuming compliance, overall negligible to long-term minor adverse impacts on wildlife would occur as a result of alternative D because impacts on wildlife would be limited to a small area when compared to the size of the entire site and because fewer trails would be available to on-leash dogs compared to alternative A. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior.

Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

No commercial dog walking would be allowed under alternative D; therefore, commercial dog walking would have no impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative D were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative D. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D since dog walking would not be allowed on Muir Beach. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in the adjacent lands.

MUIR BEACH ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. At Muir Beach, the Pacific Way Trail, the parking area, and the boardwalk/path to the beach would be open for on-leash dog walking. The portion of the beach south of the access path would be a designated ROLA and would be open to dogs under voice and sight control, but would not be located in riparian habitat. Currently the lagoon and creek are closed to dogs. On-leash dog walking is based on an allowed 6-foot dog leash. Currently, the entire length of the Pacific Way Trail is adjacent to the riparian forest habitat; restoration of the Pacific Way Trail will move it even closer to the riparian habitat. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of trails. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Because the trails and the LOD area represent a small portion of the Muir Beach site, the overall impacts would be negligible to long term, minor, and adverse. There would be fewer trails available to on-leash dogs compared to alternative A, and these trails generally receive low to high use by dog walkers. Because dogs would be physically restrained and the regulations would be enforced, habitat and wildlife at Redwood Creek would be protected. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

No indirect impacts on wildlife in adjacent lands would be expected under alternative E since on-leash and voice and sight control dog walking would be allowed at the site.

MUIR BEACH ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative D was selected as the preferred alternative for Muir Beach. Under the preferred alternative, on-leash dog walking would only be allowed on the Pacific Way Trail and the parking area, and not on the beach or paths to the beach. On-leash dog walking is based on an allowed 6-foot dog leash. Currently, the entire length of the Pacific Way Trail is adjacent to the riparian forest habitat; restoration of the Pacific Way Trail will move it even closer to the riparian habitat. The lagoon and creek are currently closed to dogs. Physically restraining dogs on leash would protect habitat and wildlife off trail by eliminating chasing after wildlife. However, dogs could still disturb wildlife behavior. Habitat and the associated wildlife located in the 6-foot area adjacent to the trail/path (LOD area) would receive long-term minor adverse impacts related to the presence of dogs affecting the quality and availability of habitat and causing displacement of wildlife in the vicinity of trails. Because of mobility, wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Assuming compliance, overall negligible to long-term minor adverse impacts on wildlife would occur as a result of the preferred alternative because impacts on wildlife would be limited to a small area when compared to the size of the entire site and because fewer trails would be available to on-leash dogs compared to alternative A. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Alternative C was selected as the preferred alternative for permits at all sites. All dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash,

with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Muir Beach, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking is not common at Muir Beach, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Cumulative Impacts. Projects and actions in and near Muir Beach were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as Muir Beach. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact Muir Beach.

Additional specific projects that may benefit wildlife in riparian forest and stream corridor habitats include the following: the *Muir Beach Wetland and Creek Restoration Project*, which aims to restore a functional, self-sustaining ecosystem at the lagoon and includes wetland, riparian and aquatic components to re-create habitat; the *Lower Redwood Creek Interim Flood Reduction Measures and Floodplain/Channel Restoration* project, which helped to reduce flooding on Pacific Way in Muir Beach, maintained passage for federally threatened fish in Redwood Creek, and restored riparian habitat and the floodplain at the GGNRA Banducci site; the *Coho and Steelhead Restoration Project*, which focuses on Pine Gulch, Redwood, Olema, and Lagunitas creeks and their watersheds and includes assessments of coho salmon and steelhead abundance and distribution, as well as the development and implementation of a fish and habitat restoration and monitoring plan; and the *Redwood Creek Watershed: Vision for the Future* project, which included identification of issues and values in the watershed and desired future conditions for watershed resources.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, such as the GGNRA *Long-range Transportation Plan Update* (NPS 2008i). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which could ultimately affect the fisheries in the stream.

The negligible to long-term minor adverse impacts on wildlife from dogs at Muir Beach under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts

would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 30 parks with dog use areas within about a 10-mile radius of Muir Beach and 21 parks within about a 5-mile radius; the closest park is Mount Tamalpais State Park (map 26). The adjacent lands may experience increased visitation under the preferred alternative. Although dog walking would not be allowed on Muir Beach, indirect impacts on wildlife in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MUIR BEACH PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; trails and the LOD area are a small portion of the site; fewer trails would be available to on-leash dogs compared to alternative A; trails generally receive low to moderate use	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Marin Headlands Trails

Alternative A: No Action. Currently, on-leash dog walking is allowed along portions of the Coastal Trail (Hill 88 to Muir Beach), the Battery Smith – Guthrie Fire Road Loop, North Miwok Trail, County View Road, and South Rodeo Beach Trail. Dog walking under voice control (or on leash) is allowed along other portions of the Coastal Trail (Golden Gate Bridge to Hill 88 and includes portions of the Lagoon Trail), the Coastal, Wolf, and Miwok Loop, and the Old Bunker Fire Road Loop. These trails experience low to moderate use by dog walkers; there were 47 leash law violations issued and 28 incidents of dogs in closed areas recorded in 2007/2008 (table 9 and appendix G). Riparian forest occurs along portions of the Lagoon Trail and the Rodeo Valley Trail is adjacent to riparian forest for much of the length of Rodeo Valley; these areas make up a fair portion of the entire site. Voice-control dog walking currently occurs along the Lagoon Trail and part of the Rodeo Valley Trail.

Alternative A would result in continued long-term minor to moderate adverse impacts on wildlife using the riparian community. Off-leash dog access to wildlife and associated riparian habitat along the Lagoon Trail would continue and occasional to frequent disturbance would occur, including physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, amphibians, and ground-nesting birds; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative A, no permit system exists for dog walking. At Marin Headlands Trails, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, specifically the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* and the *GGNRA Long-range Transportation Plan Update* (NPS 2008i). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the *GGNRA Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the *GGNRA Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level, and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which could ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative A were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative A. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). No indirect impacts on wildlife in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

MARIN HEADLANDS TRAILS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts	Off-leash dog access to wildlife and associated riparian habitat along the Rodeo Valley Trail Corridor and the Lagoon Trail would continue; these areas make up a fair portion of the entire site; disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife; wildlife may also be displaced from high quality habitat that is degraded by the presence of dogs	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the site, which includes the trails throughout the Marin Headlands. Riparian communities and stream corridors, including habitat adjacent to trails and roads of the headlands, would be protected from dog impacts, resulting in no impact on wildlife using riparian communities at Marin Headlands Trails, assuming compliance.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the riparian community would occur from commercial dog walkers.

Cumulative Impacts. Under alternative B, the lack of impacts on wildlife from dogs at the Marin Headlands Trails was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from trail rehabilitation projects combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Remington Dog Park, because it is the closest dog use area. This increase would be a result of alternative B not allowing dogs at the Marin Headlands Trails. Indirect impacts on wildlife from increased dog use in adjacent lands would be negligible because it is unknown where and to what extent wildlife use habitat in adjacent parks.

MARIN HEADLANDS TRAILS ALTERNATIVE B CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Alternative C would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. The Rodeo Valley Trail Corridor parallels riparian habitat for its entire length. Although only a portion of this trail is currently open to dogs, under alternative C, an additional section in riparian habitat will be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor adverse impacts. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lower Rodeo Valley Trail Corridor, the overall impacts, assuming compliance, would be expected to be long term, minor, and adverse. The LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site, and alternative C would actually have more trail length available in this habitat compared to alternative A, but compliance is assumed. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative C were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative C. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative C not allowing dogs under voice and sight control at the Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wildlife use habitat in adjacent parks.

MARIN HEADLANDS TRAILS ALTERNATIVE C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; LOD area and the Rodeo Valley Trail Corridor and Lagoon Trail (North) make up a fair portion of the entire site; alternative C would have more trail length in this habitat available for dog walking compared to alternative A, assuming compliance	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Most Protective of Resources/Visitor Safety. Alternative D would prohibit dogs on trails throughout the Marin Headlands. Riparian communities and stream corridors, including habitat adjacent to trails and roads of the headlands, would be protected from dog impacts, resulting in no impact on wildlife using riparian communities at Marin Headlands Trails, assuming compliance.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the riparian community would occur from commercial dog walkers.

Cumulative Impacts. Under alternative D, the cumulative impacts on wildlife at this park site and indirect impacts on wildlife in adjacent lands would be the same those under alternative B: negligible cumulative impacts and negligible impacts on wildlife in adjacent lands.

MARIN HEADLANDS TRAILS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impacts, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Most Dog Walking Access/Most Management Intensive. Alternative E would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, the Old Bunker Fire Road Loop, the Battery Smith-Guthrie Fire Road Loop, and the Coastal Trail Bike Route. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. Physically restraining dogs on leash would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. The Rodeo Valley Trail Corridor parallels riparian habitat for its entire length. Although only a portion of this trail is currently open to dogs, under alternative E, an additional section in riparian habitat will be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor adverse impacts.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lower Rodeo Valley Trail Corridor, the overall impacts, assuming compliance, would be expected to be long term, minor, and adverse. The LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site and alternative E would actually have more trail length available in this habitat compared to alternative A, but compliance is assumed. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

Cumulative Impacts. The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under alternative E were considered together with the effects of the projects mentioned above under alternative A. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from alternative E. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative E, particularly Remington Dog Park, because it is the closest dog use area that allows off-leash dog walking. This increase would be a result of alternative E not allowing dogs under voice control at the Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wildlife use habitat in adjacent parks.

MARIN HEADLANDS TRAILS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; LOD area and Rodeo Valley Trail Corridor and entire Lagoon Trail Loop (North and South) make up a fair portion of the entire site; alternative E would have more trail length in this habitat available for dog walking compared to alternative A, assuming compliance	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Marin Headlands Trails. The preferred alternative would allow on-leash dog walking along the Lower Rodeo Valley Trail Corridor, several trails including the Lagoon Trail, Miwok Trail, and Rodeo Valley Trail, the Battery Smith-Guthrie Fire Road Loop, and the Old Bunker Fire Road Loop. This alternative would allow on-leash dog access only on these perimeter trails in the Marin Headlands, while preserving and maintaining the integrity of interior habitat. On-leash dog walking is based on an allowed 6-foot dog leash. The LOD area would include 6 feet in each direction from the edges of the trail. The Rodeo Valley Trail Corridor parallels riparian habitat for its entire length. Although only a portion of this trail is currently open to dogs, under the preferred alternative, an additional section in riparian habitat will be opened to on-leash dogs when the multi-use trail is completed with a bridge at Capehart Housing in upper Rodeo Valley. The habitat and associated wildlife in the LOD area would be affected by dogs through trampling, digging,

dog waste, and nutrient addition, resulting in a long-term minor adverse impact in the LOD area and overall. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs, which is an indirect impact on wildlife.

Under the preferred alternative, all dog walkers, including commercial dog walkers, would be allowed to walk one to three dogs with no permit required. At some sites, any dog walker, commercial or private, could obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits allowing dog walkers to walk four to six dogs would be allocated at Marin Headlands Trails, so individual and commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Marin Headlands Trails, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

Given the amount of riparian habitat and wildlife species that could be impacted along the LOD area and Lower Rodeo Valley Trail Corridor, the overall impacts assuming compliance would be expected to be long term, minor, and adverse. The LOD area and Lower Rodeo Valley Trail Corridor make up a fair portion of the entire site and the preferred alternative would actually have more trail length in this habitat available for dog walking compared to alternative A, but compliance is assumed. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, but on-leash dogs could still disturb wildlife behavior. Wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs.

Cumulative Impacts. Projects and actions in and near the Marin Headlands Trails were considered for the cumulative impacts analysis (appendix K). The following is a discussion of projects that have had, are currently having, or have the potential to have effects on wildlife at or in the vicinity of this site.

Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide improvements and enhancements that reduce erosion, improving conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts, such as GGNRA natural resource stewardship programs and the *Marin Countywide Plan* (County of Marin 2007), can also beneficially affect riparian forest and stream corridors at GGNRA park sites such as the Marin Headlands Trails. The GGNRA Maintenance Division conducts many ongoing operations throughout GGNRA that include but are not limited to road, trail, and stormwater system maintenance. The implementation of habitat restoration and projects funded by the Wildland/Urban Interface Initiative on private lands could also impact the Marin Headlands Trails.

Generally, construction and development projects that affect the riparian forest and stream corridor communities require project-specific mitigation measures to address impacts on these communities and their wildlife, specifically the GGNRA *Long-range Transportation Plan Update* (NPS 2008i) and the *Marin Headlands/Fort Baker Improvement and Transportation Management Plan/EIS* (NPS 2009d). Therefore, these projects would not likely contribute to negative cumulative impacts. In addition to construction and development projects, implementation of some of the proposed fire management policies of the GGNRA *Fire Management Plan* may affect riparian areas and stream corridors through vegetation removal, although non-emergency fire management actions would not take place within 100 feet of riparian areas (NPS 2005a). Work in riparian and streamside areas for the GGNRA *Fire Management Plan* would be carefully managed to ensure that impacts are mitigated to an acceptable level and cumulative impacts would be long term and beneficial due to restoration of riparian habitat associated with this project (NPS 2005a). Loss of riparian vegetation could lead to elevated water temperatures, reducing the ability of the water to hold dissolved oxygen (NPS 2005a), which could ultimately affect the fisheries in the stream.

The long-term minor adverse impacts on wildlife from dogs at the Marin Headlands Trails under the preferred alternative were considered together with the effects of the projects mentioned above. The beneficial effects from trail rehabilitation projects should reduce some of the adverse impacts on wildlife from the preferred alternative. The impacts resulting from any development or construction actions at or in the vicinity of GGNRA would add little to the cumulative impacts on wildlife, since those impacts would be negligible due to mitigation for these projects that would reduce the potential for impacts. Therefore, cumulative impacts on wildlife under this alternative would be expected to be negligible.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 28 parks with dog use areas within about a 10-mile radius of the Marin Headlands Trails and 18 parks within about a 5-mile radius; the closest park is Remington Dog Park in Sausalito (map 26). The adjacent lands may experience increased visitation under the preferred alternative. This increase would be a result of the preferred alternative not allowing dogs under voice control at the Marin Headlands Trails. Indirect impacts on wildlife in adjacent lands from increased dog use would be negligible, since not all dog walkers would leave the Marin Headlands Trails to visit other sites and it is unknown where and to what extent wildlife use habitat in adjacent parks.

MARIN HEADLANDS TRAILS PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs		
Overall long-term minor adverse impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs could still disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs; LOD area and the Rodeo Valley Trail Corridor and Lagoon Trail (North) make up a fair portion of the entire site; alternative C would have more trail length in this habitat available for dog walking compared to alternative A, but compliance is assumed	Beneficial to no change, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

New Lands: Riparian Forest and Stream Corridor Wildlife

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife utilizing riparian and stream resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access riparian and stream habitats and wildlife even if a trail is developed or previously located adjacent to these habitats. The physical restraint of dogs would protect riparian and stream resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use riparian and stream vegetation from private and commercial dog walkers as a result of alternative A would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife. At sites where commercial dog walking is common, impacts to the riparian and stream community wildlife from commercial dog walkers would be similar to impacts from other dog walkers and would be negligible.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use riparian and stream habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use riparian and stream habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include riparian forest and stream corridors that support numerous wildlife species and could be affected by dog activities. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. Therefore, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife using riparian and stream areas. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access riparian and stream habitats and wildlife even if a trail is developed or previously located adjacent to these habitats. The physical restraint of dogs would protect riparian and stream resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use riparian and stream vegetation from private and

commercial dog walkers as a result of alternatives B and C would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use riparian and stream vegetation in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use that use riparian and stream habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Alternative D could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include riparian forest and stream corridors that support numerous

wildlife species and could be affected by dog activities. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. Therefore, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on riparian and stream habitat wildlife. Private dog walkers would be allowed up to three dogs.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access riparian and stream habitats and wildlife even if a trail is developed or previously located adjacent to these habitats. The physical restraint of dogs would protect riparian and stream resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use riparian and stream vegetation from dog walkers as a result of alternative D would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use riparian and stream vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use riparian and stream habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15 which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and potentially ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include riparian forest and stream corridors that support numerous wildlife species and could be affected by dog activities. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. Therefore, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers and commercial dog walking at these sites under alternative E would have a negligible impact on riparian and stream habitats. At sites where commercial dog walking is common, impacts to wildlife that use riparian and stream habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use riparian and stream habitats from dogs walked by both commercial and private individuals are summarized below.

It is assumed that ROLAs would not be established within sensitive riparian or stream habitats so the park's desired future conditions can be attained. Even so, dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats. Adjacent habitat would be affected by dogs through trampling, digging, excreta and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, thus substantiating a long-term minor adverse impact within the ROLA

and in adjacent areas. However, at most new lands and assuming compliance, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access sensitive riparian or stream habitats and wildlife even if a trail is developed or previously located adjacent to a riparian and stream habitats. If dogs are physically restrained by a leash, they should not gain access to stream corridors and should not affect wildlife in riparian forests. Therefore, assuming compliance, overall impacts to wildlife that use riparian and stream habitats from private and commercial dog walkers as a result of alternative E would range from negligible to long-term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. The physical restraint of dogs and compliance in ROLA would not allow access to streams, or habitat adjacent to trails used by birds or other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife by barking and their presence. It is also important to note that no impacts to wildlife that use riparian and stream habitat are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use riparian and stream habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use riparian and stream habitats in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Long-term, minor, adverse impact in ROLA and adjacent areas	Dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands	N/A
Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds; ROLA location and compliance would protect riparian wildlife	No indirect impact to negligible indirect impact at adjacent lands	

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once

open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

The preferred alternative could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include riparian forest and stream corridors that support numerous wildlife species and could be affected by dog activities. Riparian habitat often supports a high diversity of wildlife species and can provide movement corridors for these species. Therefore, it is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

Alternative C was selected as the preferred alternative for permits at all sites including new lands. All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use riparian and stream habitats. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use riparian and stream habitats from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access riparian and stream habitats and wildlife even if a trail is developed or previously located adjacent to these habitats. The physical restraint of dogs would protect riparian and stream resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use riparian and stream vegetation from private and commercial dog walkers as a result of preferred alternative would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use riparian and stream habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to

negligible impacts because it is unknown where and to what extent wildlife would use riparian and stream habitats in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Riparian Forest and Stream Corridor Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

WILDLIFE IN OTHER CONIFEROUS COMMUNITIES

Fort Miley

Alternative A: No Action. Dogs under voice control are currently allowed in both East and West Fort Miley; much of the West Fort Miley site is paved and the primary dog-accessible location at East Fort Miley is the open area north of NPS maintenance and picnic areas. East Fort Miley is primarily Monterey cypress with some wetland/riparian vegetation around the fringes; the area is dominated by older stands of cypress, which were densely planted (NPS 2006i). This site has documented moderate to high visitor use (mostly picnickers), low numbers of dog walkers, and low numbers of citations and incident reports related to dog activities at the site (table 9).

Under alternative A, since dogs would continue to be allowed off leash, it is likely that dogs would enter areas off the trail and picnic areas that support the growth of existing vegetation. A large portion of the site is developed and only a small portion of the entire site supports coniferous vegetation in areas that are open to dogs. However, alternative A would result in continued long-term minor adverse impacts on wildlife using the coniferous community. Off-leash dog access to wildlife and associated coniferous habitat would continue and occasional disturbance to upland wildlife species would occur, including physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing small mammals, reptiles, amphibians, and ground-nesting birds.

Under alternative A, no permit system exists for dog walking. At Fort Miley, commercial dog walking is uncommon. Therefore, commercial dog walking would have negligible impacts on wildlife.

Cumulative Impacts. Projects and actions in and near Fort Miley were considered for the cumulative impacts analysis (appendix K). Long-term parkwide projects such as trail rehabilitation performed as part of Park Stewardship Programs provide enhancements that improve conditions for vegetation and wildlife habitat. Ongoing parkwide restoration and enhancement efforts can also beneficially affect vegetation at GGNRA park sites such as Fort Miley. As part of a U.S. Department of Veterans Affairs project, a new parking structure for the San Francisco Veterans Administration Medical Center (SFVAMC) patient and visitor parking would be constructed immediately to the west of East Fort Miley (USVA 2010, 10). However, the environmental assessment (EA) for the project determined that due to the disturbed nature

of the site and its relatively small size, no long-term impacts to vegetation or wildlife were anticipated. Therefore, the long-term minor adverse impacts on wildlife from dogs at Fort Miley under alternative A were considered together with the beneficial effects of the projects mentioned above. Cumulatively, there would be negligible impacts on wildlife from alternative A when added to other past, present, or foreseeable future actions at and around this park site.

Indirect Impacts in Adjacent Parks

In lands adjacent to GGNRA, there are 61 parks with dog use areas within about a 10-mile radius of East and West Fort Miley and 22 parks within about a 5-mile radius; the closest parks are Golden Gate Park—Dog Training Area, Golden Gate Park—Southwest Corner, and Mountain Lake Park (maps 24 and 25). No indirect impacts in adjacent lands would be expected under alternative A since there would be no change in current conditions at the site.

FORT MILEY ALTERNATIVE A CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts	Off-leash dog access to wildlife would continue; these areas make up a small portion of the entire site; occasional disturbance would include physical damage to habitat or nests/burrows from digging or trampling, as well as chasing after and even capturing wildlife	N/A	Negligible cumulative impacts No indirect impacts in adjacent lands

N/A = not applicable.

Alternative B: NPS Leash Regulation. Alternative B would prohibit dogs at the site, which includes the trails throughout the Marin Headlands. Therefore, no impacts on wildlife from dogs at this site would occur because dog use would be eliminated. Wildlife disturbance would no longer occur at Fort Miley.

Since dogs would be prohibited from this site, no impacts on wildlife species that use the coniferous community would occur from commercial dog walkers.

Cumulative Impacts. Under alternative B, the lack of impacts on wildlife from dogs at the Fort Miley was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative B would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative B, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on wildlife in adjacent lands from increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY ALTERNATIVE B CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative C: Emphasis on Multiple Use, Balanced by County. Under alternative C, on-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trail. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs would still occasionally disturb wildlife behavior. Wildlife may avoid habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife.

Under alternative C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative C would have a negligible impact on wildlife.

At Fort Miley, the long-term minor adverse impacts from the use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Fort Miley would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Miley under alternative C were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the negligible impacts on wildlife from alternative C would result in negligible cumulative impacts on wildlife.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative C, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on wildlife in adjacent lands from increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY ALTERNATIVE C CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid habitat that is degraded by the presence of dogs		
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid areas that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative D: Overall Most Protective of Resources/Visitor Safety. Under alternative D, dogs would not be allowed at this site. Therefore, no impacts on wildlife from dogs at this site would occur, because dog use would be eliminated. Wildlife disturbance would no longer occur at Fort Miley.

Since dogs would not be allowed on the trails at Fort Miley, there would be no impact from commercial dog walkers to wildlife.

Overall, no impact on wildlife would result from the new dog regulations under alternative D.

Cumulative Impacts. Under alternative D, the lack of impacts on wildlife from dogs at the Fort Miley was considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the lack of impacts on wildlife from alternative D would result in negligible cumulative impacts on wildlife.

Indirect Impacts in Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under alternative D, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on wildlife in adjacent lands from increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY ALTERNATIVE D CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
No impact, assuming compliance	Dogs would be prohibited at the site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

Alternative E: Overall Most Dog Walking Access/Most Management Intensive. Under alternative E, on-leash dog walking would be allowed on the road in West Fort Miley. A ROLA would be established in the eastside trail corridor in East Fort Miley, adjacent to the coniferous community. In general, impacts would be limited to the ROLA, existing trails, and the 6-foot corridors immediately adjacent to the trails (LOD area). Leash requirements would reduce the probability that dogs would disturb birds (Lafferty 2001a, 1955, 1961) and chase and/or harass other wildlife, due to physical restraint on leash. However, the habitat in the LOD area would be affected by dogs through trampling, digging, dog waste, and nutrient addition, resulting in long-term minor to moderate adverse impacts on wildlife in the LOD area. Wildlife in the LOD area and ROLA would be occasionally to frequently affected by dogs and wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs. The ROLA may also lead to avoidance of the surrounding area by wildlife due to the concentration of dogs and noise as well as the elevated amount of dog waste and scent marking. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from habitat that is degraded by the presence of dogs would indirectly affect wildlife. Therefore, in the LOD area and ROLA, alternative C would result in long-term minor to moderate adverse impacts on wildlife using the coniferous community at Fort Miley.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under alternative E would have a negligible impact on wildlife.

In Fort Miley, the long-term minor to moderate adverse impacts from dogs in the LOD area and ROLA would occur in a relatively small area when compared to the site as a whole, and the wildlife and supporting habitat constitute a small portion of the entire site. Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife, and chasing after wildlife would be eliminated, but on-leash dogs would still occasionally disturb wildlife; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from high quality habitat that is degraded by the presence of dogs. Therefore, assuming compliance, the overall impact on wildlife at Fort Miley would be negligible to long term, minor, and adverse.

Cumulative Impacts. The negligible to long-term minor adverse impacts on wildlife from dogs at Fort Miley under alternative E were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the impacts on wildlife from alternative E would result in negligible cumulative impacts on wildlife.

Indirect Impacts on Adjacent Parks

No indirect impacts on adjacent lands would be expected under alternative E, since dog walking under voice and sight control would be offered at the site. Visitors looking for this experience would not have to leave this park site to experience dog walking under voice and sight control.

FORT MILEY ALTERNATIVE E CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor to moderate adverse impacts in 6-foot corridor adjacent to trail (LOD area) and in ROLA	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife in LOD area and ROLA would be occasionally to frequently affected by dogs and may avoid and/or be displaced from habitat that is degraded by the presence of dogs; ROLA would concentrate dogs and noise as well as elevating the amount of dog waste and scent marking, leading to avoidance of the surrounding area by wildlife		
Overall negligible to long-term minor adverse impacts, assuming compliance	Physically restraining dogs in on-leash areas would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid trail corridors that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat constitutes a very small portion of entire site; LOD area and ROLA areas are a small portion of the site	Beneficial to no change, assuming compliance	Negligible cumulative impacts No indirect impacts in adjacent lands

Preferred Alternative. Alternative C was selected as the preferred alternative for Fort Miley. on-leash dog walking would be allowed in a trail corridor created on the east side of East Fort Miley. On-leash dog walking is based on an allowed 6-foot dog leash. In general, impacts would be limited to the existing trails and the 6-foot corridors immediately adjacent to both sides of the trail. The LOD area would include 6 feet in each direction from the edges of the trail. Impacts on wildlife in the LOD area would be long term, minor, and adverse; adjacent habitat used by wildlife would be affected by dogs through trampling, digging, dog waste, and nutrient addition. Chasing after wildlife would be eliminated but on-leash dogs

would still occasionally disturb wildlife behavior. Wildlife may avoid habitat that is degraded by the presence of dogs, and displacement to another location is an impact on wildlife.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At some sites, any dog walker, commercial or private, can obtain a permit to walk more than three dogs on leash, with a limit of six dogs. However, no permits would be allocated at Fort Miley, so individual or commercial dog walkers would only be allowed to walk one to three dogs on leash per person. Since commercial dog walking activity is not common at Fort Miley, it is likely that the new regulation would not have an impact on the number of dog walkers. Therefore, commercial dog walking under the preferred alternative would have a negligible impact on wildlife.

At Fort Miley, the long-term minor adverse impacts from the use of dogs in the LOD area would occur in a relatively small area when compared to the site as a whole. Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated, although on-leash dogs could still disturb wildlife through barking and their presence. The overall impact on wildlife from on-leash dog walking at Fort Miley would be negligible.

Cumulative Impacts. The negligible impacts on wildlife from dogs at Fort Miley under the preferred alternative were considered together with the effects of the projects mentioned above in alternative A. The beneficial effects from projects described above combined with the negligible impacts from any development or construction actions and the negligible impacts on wildlife from the preferred alternative would result in negligible cumulative impacts on wildlife.

Indirect Impacts on Adjacent Parks

The adjacent lands identified under alternative A may experience increased visitation under the preferred alternative, particularly Golden Gate Park – North Central and South Central Areas, because they are the closest dog use areas and they allow off-leash dogs. Therefore, indirect impacts on wildlife in adjacent lands from increased dog use would occur, but only at a negligible level, since dog walking is considered a low use activity at Fort Miley.

FORT MILEY PREFERRED ALTERNATIVE CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Long-term minor adverse impacts in 6-foot corridor adjacent to trail (LOD area)	Adjacent habitat would be affected by dogs through trampling, digging, dog waste, and nutrient addition; wildlife may avoid habitat that is degraded by the presence of dogs		

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Overall negligible impacts, assuming compliance	Physically restraining dogs on leash would protect habitat off trail as well as wildlife; chasing after wildlife would be eliminated but on-leash dogs would still infrequently disturb wildlife behavior; wildlife may avoid areas that allow on-leash dog walking and be displaced from habitat that is degraded by the presence of dogs; this habitat and supporting wildlife constitutes a very small portion of entire site	Beneficial, assuming compliance	Negligible cumulative impacts Negligible indirect impacts in adjacent lands

New Lands: Other Coniferous Community Wildlife

Alternative A: No Action. For new lands that come under the management of GGNRA, alternative A would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Therefore, on-leash dog walking would be allowed at new lands under alternative A.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive coniferous resources exist at the site.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access coniferous habitats and wildlife even if a trail is developed or previously located adjacent to these habitats due to the leash restriction. The physical restraint of dogs would protect coniferous resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use coniferous vegetation from private and commercial dog walkers as a result of alternative A would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Under alternative A, no permit system would exist for dog walking. At sites where commercial dog walking is not common, it is likely that this alternative would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife. At sites where commercial dog walking is common, impacts to the coniferous community wildlife from commercial dog walkers would be similar to impacts from other dog walkers and would be negligible.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that coniferous habitat in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use coniferous habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE A CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximity to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternatives B and C. For new lands that come under the management of GGNRA, alternatives B and C would manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternatives B and C would allow on-leash dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Because it is unknown what types of lands and what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include coniferous habitat that support wildlife species that could be affected by dog activities. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

Under alternatives B and C, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife using coniferous areas. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access coniferous habitats and wildlife even if a trail is developed or previously located adjacent to these habitats due to the leash restriction. The physical restraint of dogs would protect coniferous resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use coniferous vegetation from private and commercial dog walkers as a result of alternatives B and C would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use coniferous vegetation in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use coniferous habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVES B AND C CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Alternative D: Most Protective of Resources. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

Alternative D could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include coniferous habitats that support wildlife species and could be affected by dog activities. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

No commercial dog walking would be allowed under alternative D; therefore commercial dog walking would have no impact on coniferous habitat wildlife. Private dog walkers would be allowed up to three dogs.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access coniferous habitats and wildlife even if a trail is developed or previously located adjacent to these habitats due to the leash restriction. The physical restraint of dogs would protect coniferous resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use coniferous vegetation from dog walkers as a result of alternative D would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use coniferous vegetation in adjacent lands from increased dog use would be negligible because it is unknown where and to what extent wildlife would use coniferous habitat in these unknown adjacent lands.

NEW LANDS ALTERNATIVE D CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands Negligible indirect impact at adjacent lands	N/A

Alternative E: Most Dog Walking Access/ Most Management Intensive. For new lands that come under the management of GGNRA, alternative E would initially manage these lands under existing NPS regulations as described in 36 CFR 2.15, which forbids possession of a pet in a public building, public

transportation vehicle, location designated as a swimming beach, or any structure or area closed to pets by the superintendent. Alternative E would allow dog walking unless the following conditions were triggered:

- impedes the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- creates an unsafe or unhealthful environment for visitors or employees, or
- impedes or interferes with park programs or activities, or
- triggers the compliance-based management strategy's process for closure.

Additionally, new lands may be opened to voice and sight control if:

- Off-leash dog use existed before acquisition, and
- one year baseline data is collected through the compliance-based management strategy's monitoring program, and
- compliance-based management strategy not triggered (primary or secondary management responses).

Alternative E would allow on leash dog walking and potentially ROLAs at new lands managed by GGNRA as long as it would not impede attainment of the park's desired future conditions. Also, alternative E could close areas to on leash dog walking if it would impede attainment of the park's desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include coniferous habitat that supports wildlife species and could be affected by dog activities. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

Under alternative E, all dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers and commercial dog walking at these sites under alternative E would have a negligible impact on coniferous habitats. At sites where commercial dog walking is common, impacts to wildlife that use coniferous habitats from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that use coniferous habitats from dogs walked by both commercial and private individuals are summarized below.

It is assumed that ROLAs would not be established within sensitive coniferous habitats so the park's desired future conditions can be attained. Even so, dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats. Adjacent habitat would be affected by dogs through trampling, digging, excreta and nutrient addition; wildlife may avoid and/or be displaced from high quality habitat that is degraded by the presence of dogs, thus substantiating a long-term minor adverse impact within the ROLA and in adjacent areas. However, at most new lands and assuming compliance, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access coniferous habitats and wildlife even if a trail is developed or previously located adjacent to coniferous habitats due to the leash restriction. Therefore, assuming compliance, overall impacts to wildlife that use coniferous habitats from private and commercial dog walkers as a result of alternative E would range from negligible to long-

term, minor, and adverse to encompass a range of potential effects at newly acquired lands under management by GGNRA. The physical restraint of dogs and compliance in ROLA would not allow access to coniferous habitat adjacent to trails used by birds or other wildlife; on-leash dogs could still infrequently disturb roosting and feeding birds and other wildlife by barking and their presence. It is also important to note that no impacts to wildlife that use coniferous habitat are expected to occur at sites that are currently closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use coniferous habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible impacts because it is unknown where and to what extent wildlife would use coniferous habitats in these unknown adjacent lands.

NEW LANDS ALTERNATIVE E CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Long-term, minor, adverse impact in ROLA and adjacent areas Negligible to long-term, minor, adverse impact; no impact at sites that prohibit dogs	Dogs within a ROLA would be confined to a smaller area, potentially increasing the impacts to the adjacent natural habitat and vegetation and affecting wildlife that use these habitats Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds; ROLA location and compliance would protect wildlife in coniferous habitats	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A

Preferred Alternative. Alternative D was selected as the preferred alternative. New lands would be closed to dog walking unless opened by the GGNRA Compendium, as evaluated by criteria below. The “closed unless opened” approach is the reverse of 36 CFR 2.15. Only on-leash dog walking would be considered at new lands. New lands would not be considered for voice and sight control (ROLAs). Once open to on-leash, compliance-based management strategies apply. Areas could be opened to on-leash dog walking if opening the area would not:

- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- impede or interfere with park programs or activities.

The preferred alternative could close areas that allow on leash dog walking to areas that prohibit dogs if the presence of on leash dogs would impede attainment of the park’s desired future conditions. Because it is unknown what types of lands and in what locations may come under GGNRA management in the future, a conservative approach to the impact analysis was adopted to encompass the range of possibilities from acquiring urban lands previously developed to acquiring intact, preserved lands. It is entirely possible that new lands managed by GGNRA could include coniferous habitat that supports wildlife species and could be affected by dog activities. It is expected that all new lands would be surveyed prior to designating an area either open or closed to dogs to determine if sensitive wildlife species exist at the site.

All dog walkers, including commercial dog walkers, would be allowed up to three dogs with no permit required. All dogs must be on a leash. At sites where commercial dog walking is not common, it is likely that the new regulation would not have an impact on the number of dog walkers resulting in a negligible impact on wildlife that use riparian and stream habitats. At sites where commercial dog walking is common, impacts to wildlife from commercial dog walkers would be similar to impacts from other dog walkers. Overall impacts to wildlife that coniferous habitats from dogs walked by both commercial and private individuals are summarized below.

At most new lands, the impacts from allowing on-leash dog walking would be negligible because dogs would not be able to access coniferous habitats and wildlife even if a trail is developed or previously located adjacent to these habitats due to the leash restriction. The physical restraint of dogs would protect coniferous resources as well as wildlife and would minimize access to these areas but on-leash dogs could still disturb roosting and feeding birds and other wildlife by barking and their presence. Therefore, assuming compliance, overall impacts to wildlife that use coniferous habitat from private and commercial dog walkers as a result of preferred alternative would be negligible. It is also important to note that no impacts to wildlife are expected to occur at sites that are closed to or proposed for closure to dogs.

Cumulative Impacts. Because it is unknown what new land locations may come under GGNRA management in the future, the cumulative impacts analysis for new lands would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands.

Indirect Impacts on Adjacent Parks

It is unknown what parks (including dog use areas) would be located adjacent to new lands not yet acquired by GGNRA. Adjacent lands could range from urban lands previously developed to preserved lands. Indirect impacts on wildlife that use coniferous habitats in adjacent lands would range from no indirect impacts on wildlife from dogs if there is no change in current conditions at the site to negligible

impacts because it is unknown where and to what extent wildlife would use coniferous habitats in these unknown adjacent lands.

NEW LANDS PREFERRED ALTERNATIVE CONCLUSION TABLE

Other Coniferous Community Wildlife Impacts	Rationale	Impact Change Compared to Current Conditions	Cumulative Impacts
Conclusion: Negligible impact; no impact at sites that prohibit dogs	Physical restraint would reduce the likelihood of dogs disturbing and chasing after/harassing birds and other wildlife; on-leash dogs could still disturb roosting and feeding birds	Results would be similar to the cumulative impact analysis that was completed for park sites that are located in proximately to the new lands No indirect impact to negligible indirect impact at adjacent lands	N/A