



# Trail Management Plan and Draft Environmental Assessment

Cabrillo National Monument, California  
April 2019

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## SUMMARY

The purpose of the Cabrillo National Monument Trail Management Plan / Environmental Assessment is to guide trail management, investment in trail infrastructure, and visitor use of the trail system for the next 25 years. The plan is needed to improve and diversify recreational opportunities, improve connectivity between features of interest, reduce visitor-created trails, eliminate unsustainable routes, and protect park resources. The plan's many goals include ensuring trails lie lightly on the land and require little maintenance, providing a diversity of visitor experiences and opportunities to understand the monument's significance, and improving pedestrian circulation as an alternative to vehicle-based visitation.

In addition to a "no-action" alternative (a continuation of current management), two "action" alternatives were identified and assessed. Alternative 1 (the preferred alternative) proposes the development of new trails to improve the visitor experience and pedestrian circulation. These trails include a paved *Roadside Coastal Trail* that would parallel the lower portion of Cabrillo Road and function as a sidewalk; the *Bayside to Coastal Trail* connecting the Bayside Trail with the Tidepools and Coastal Trail; and the *Bunker Spur* that would provide visitor access from the Bayside Trail to a historic military structure. Cabrillo Road would be closed to vehicles during peak visitation events to reduce congestion at the tidepools. Under alternative 2, no new trails would be constructed and Cabrillo Road would be closed to vehicle traffic during the summer and other peak visitation periods. During those periods, the road would be used as a multiuse trail for open to hiking, bicycling, and other uses as identified per the park compendium. Several actions would occur under both alternatives 1 and 2, including improvements to existing trails such as restoring vegetation along denuded sections, minor reroutes and realignments, modification of trail surfaces and water bars, and improved signage. Several potential plan alternatives were considered but dismissed from further analysis (e.g., closing one lane of Cabrillo Road to vehicular traffic and designating it as a multiuse trail; making the Bayside Trail a loop trail; and constructing other new trail segments). For a variety of reasons, dismissed alternatives did not meet the purpose and need of the plan, would entail unacceptable resource impacts or safety concerns, and/or contribute to congestion.

Under the preferred alternative, the construction of new trails and other actions would disturb up to 0.44 acres of soils, although about 0.51 acres of existing visitor-created trails would be restored by decompacting soils and implementing erosion control measures. Similarly, although up to 0.44 acres of habitat would be lost to trail construction and other actions, about 0.51 acres would be restored resulting in a net habitat gain in the park. In conjunction with the implementation of mitigation measures, there would be little overall change to species composition and function of vegetation communities. Although construction of the *Bunker Spur Trail* would result in 0.01 acres of permanent habitat loss for the coastal California gnatcatcher, overall beneficial impacts to gnatcatcher habitat would result from restoration of visitor-created trails on the eastern half of the park. Beneficial impacts to the visitor experience would result from trail construction and measures intended to improve circulation, visitor safety, and access to key points of interest. Overcrowding and congestion at the tidepools area would be reduced. No direct impacts are anticipated on the park's historic military structures from proposed trail development, although limited adverse impacts could result from visitor use, erosion, and natural deterioration. The National Park Service (NPS) would continue to monitor and protect these structures and other cultural resources under existing laws and policies.

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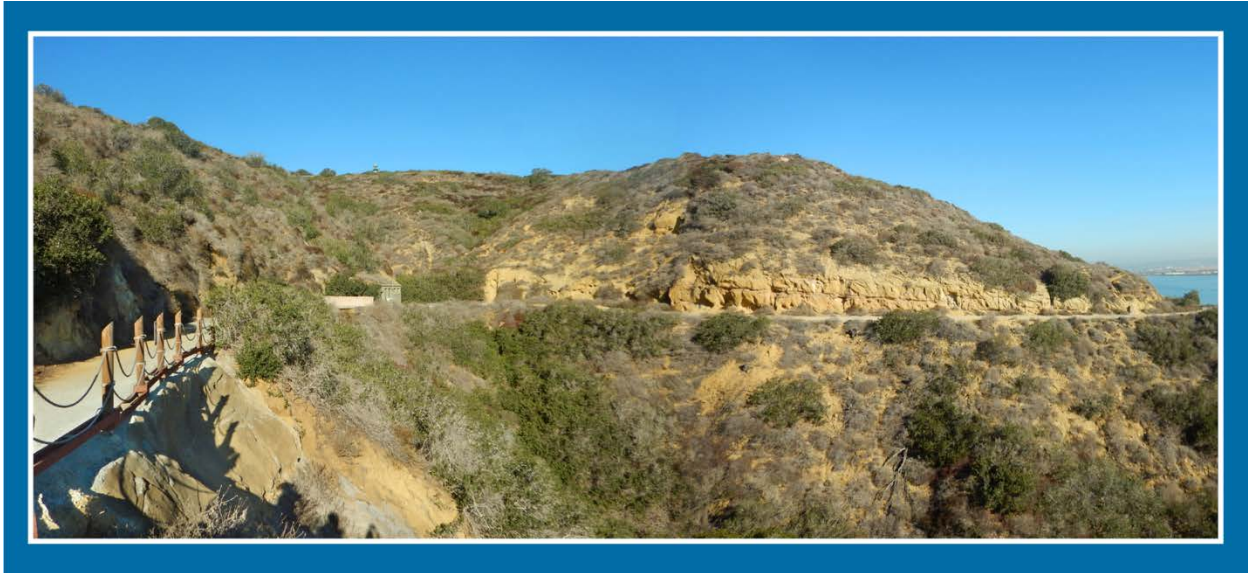
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## **CHAPTER 1: PURPOSE AND NEED**

### **BACKGROUND**

Cabrillo National Monument is a 160-acre unit of the national park system within the city limits of San Diego, California. It is located on the southern end of Point Loma, a narrow, 6-mile-long peninsula at the entrance to San Diego Bay. The monument was established by Presidential Proclamation in 1913 to commemorate Juan Rodriguez Cabrillo's 1542 voyage of exploration. The monument offers commanding views of San Diego and its bay and adjacent cities to the north, east, and south; Mexico to the far south; and the Pacific Ocean to the west. The monument is bordered by Naval Base Point Loma on the north, northeast, and south; the City of San Diego Point Loma Wastewater Treatment Plant on the northwest; and the US Coast Guard Point Loma Light Station on the southwest. The monument is visited by more than one million people each year and is an important part of San Diego's tourism economy.

### **PROJECT PURPOSE, NEED, AND GOALS**

The purpose of the trail management plan is to guide trail management, investment in trail infrastructure, and visitor use of the trail system for the next 25 years. The plan is needed to

- improve and diversify recreation opportunities,
- improve connectivity between features of interest,
- reduce visitor-created trails,
- eliminate unsustainable routes, and
- protect park resources.

The goals for the plan are to ensure that the Cabrillo trail system

- is sustainable, meaning each trail lies lightly on the land, will last a long time, and needs little maintenance;
- offers experiences for a diversity of visitors and improves accessibility where feasible;
- does not have unnecessary duplication or redundancy;
- provides opportunities for visitors to understand what makes the park significant;
- protects park resources and limits impacts from trail use;
- is designed and managed in such a way as to limit impacts to scenic views;
- improves pedestrian circulation and offers alternatives to vehicle-based visits;
- is part of a larger network that fosters inter-park opportunities for visitors;
- is managed in collaboration with partners and other agencies;
- is within the park's personnel and budgetary resources; and
- provides opportunities for visitors to have immersive experiences at one of the best-preserved, publically available, mainland tidepool ecosystems in Southern California.

This environmental assessment was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations for the implementation of NEPA (40 CFR § 1500-1508), DOI regulations for the implementation of NEPA, (43 CFR §46), and the NPS Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-Making*).

## **IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS**

Impact topics represent resources that could be affected, either beneficially or adversely, by implementing any of the proposed alternatives. The National Park Service (NPS) used an interdisciplinary review process, existing studies and data, and public comments to determine which resources would likely be affected by this project. The following topics are carried forward for further analysis in this environmental assessment:

- Soils
- Habitat
- Species of Concern
- Visitor Use and Experience
- Historic Military Structures

## **IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS**

The following impact topics are not analyzed because they do not exist in the analysis area; would not be affected by the proposal or the likelihood of impacts are not reasonably expected; or there would be no measurable effects from the proposal with the application of mitigation measures.

## Impact Topics

**Acoustic Environment and Soundscapes.** The development of a sustainable trail system would not contribute to long-term impacts on the acoustic environment and soundscapes at the park because no motorized use would be allowed and because there are already numerous human influences on the area soundscape, e.g., harbor traffic, boats, planes, and helicopters. Any construction associated with implementing the alternatives, e.g., hauling material or operating equipment, could result in dissonant sounds, but such sounds would be localized and of very short duration, typically less than two weeks in any given spot. After completion of construction, visitor use would commence on trails, but the voices of visitors would not meaningfully alter existing soundscapes. Therefore, acoustic environment and soundscapes was dismissed as an impact topic.

**Air Resources.** Construction activities, including operating equipment and hauling materials, could result in temporarily increased vehicle exhaust and emissions as well as inhalable particulate matter. Development of the Roadside Coastal Trail would include grading, excavation, and site preparation that would result in the generation of fugitive dust, PM10, and exhaust emissions from construction equipment. After grading, exhaust emissions would be generated by the construction equipment used to pour the concrete. However, the increase would be too slight to quantify, and visibility would not be impacted. Air quality in the park would therefore not be measurably affected by the action alternatives.

**Archeological Resources.** The trails proposed in this plan would cause very limited ground disturbance, typically less than a few inches deep. Although the trails would lead visitors to or near historic military structures, no other significant archeological resources have been identified along the routes of new trails or proposed rerouted segments of existing trails. All areas proposed for new trail development or improved alignments would be archeologically assessed to ensure that significant sites, should they be identified, are avoided by construction disturbance or are appropriately mitigated. Because there is little likelihood that known or presently unidentified archeological resources could be adversely impacted, the potential impacts on archeological resources resulting from current project actions are dismissed from further analysis in this document.

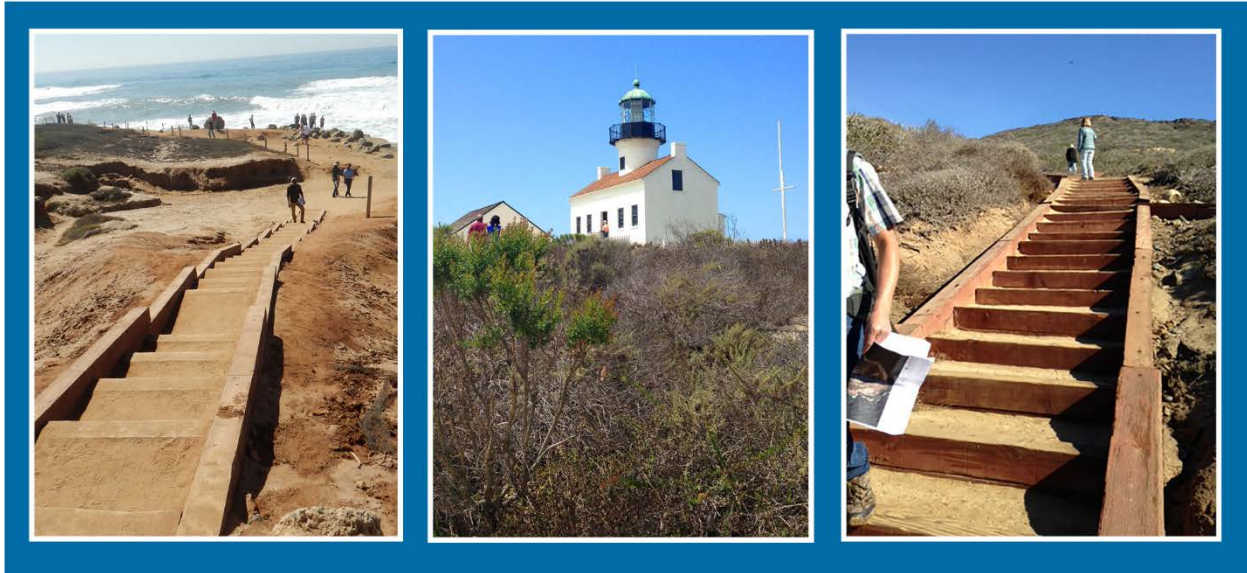
**Wetlands.** The project area is not within or adjacent to any wetland, freshwater seep, or floodplain. Therefore, wetlands was dismissed as an impact topic. Statements of findings for wetlands will not be prepared.

**Wildlife.** The Point Loma Peninsula is home to a wide variety of native wildlife, including mammals, birds, amphibians, and reptiles. The park supports 12 species of reptiles and amphibians, at least 15 species of mammals, and an abundance of invertebrate species (Atkinson et al. 2003). A multitude of bird species have been identified at the park (Edwards 2002, Madden-Smith et al. 2012). Resident species use the native vegetation for nesting habitat, while migrants use this area of the Point Loma Peninsula as a stopover along their migratory route. NPSpecies, the National Park Service biodiversity database, provides a full species list for Cabrillo National Monument.

Construction activities could potentially disturb wildlife and would result in some loss of habitat, but adverse impacts would be very minimal because 1) construction would last less than a few weeks in any given spot; 2) some areas where trails are proposed are already highly disturbed; 3) motorized use would not be allowed; and 4) because suitable habitat is found throughout the park and region. During construction, some animals may temporarily relocate outside the project area, but no long-term adverse effect upon local populations would be expected.

Natural areas surrounding new trail corridors would remain in their current condition and would continue to offer habitat for wildlife. In addition, many actions in the alternatives, including the closing/restoration of user-created trails and better delineation of existing trails, would result in habitat gain for wildlife.

While impacts on wildlife from visitor use of new trails would exist, these impacts would be limited because human activity would be confined to a narrow corridor along the new trail system and because motorized use would not be allowed. None of the impacts would affect wildlife at the population level. Therefore, the topic of wildlife was dismissed from further consideration. If new wildlife species were listed as threatened or endangered, the National Park Service would reinitiate consultation with the US Fish & Wildlife Service (USFWS) on potential effects on newly listed species.



## CHAPTER 2: ALTERNATIVES

### INTRODUCTION

This environmental assessment analyzes a no-action alternative and two action alternatives for the trail management plan. The elements of these alternatives are described in detail in this chapter. The no-action alternative would continue current management and provides a basis for comparing the other alternatives. The action alternatives present different approaches to address the purpose and need for the plan as described in chapter 1. The alternatives presented in this section were derived from the recommendations of an interdisciplinary planning team and through feedback from the public during the external scoping process. This chapter also describes alternatives or alternative elements that were considered but dismissed from further consideration.

### NO-ACTION ALTERNATIVE

The no-action alternative represents current conditions and is also a baseline for comparing the action alternatives. Under this alternative, the park would continue to manage trails without a comprehensive plan for a balanced and sustainable trail system. The park lacks a current trail management plan, which was identified by the Cabrillo National Monument General Management Plan as needed to connect “appropriate points of interest (cultural and natural resources and scenic overlooks) in an environmentally sensitive trail system requiring minimal maintenance” (1996). The existing trail system would continue to be provided, and no changes in allowed trail uses would occur (table 1). All trails would be managed according to their specified trail class. A map of the existing trail system is included below (see figure 1). During peak visitation, such as special events or holidays, Cabrillo Road would be closed to vehicles and used as a multiuse trail to alleviate congestion at the tidepools. The closures would be several hours in length and used only when crowding reaches, or is expected to reach, peak levels. Park staff will continue to manage road closures to allow access to Naval Base Point Loma, the City of San Diego Point Loma Wastewater Treatment Plant, and the US Coast Guard Point Loma Light Station. A sign would be posted instructing drivers to drive slowly and give a wide berth to pedestrians and cyclists.

Table 1. Existing Trails, Trail Class, and Distance

Existing Trail Name	Trail class*	Mileage	Feet
Coastal Trail – paved sidewalk at P-Lot 3	5	0.03	169
Coastal Trail	3	0.41	2,177
Coastal Trail – 1st section north of tidepools parking lot	5	0.05	244
Coastal Trail - spur to Roadside Coastal Trail	3	0.03	169
Staircase spur on Coastal Trail	3	0.04	213
Paved Loop at Lighthouse	5	0.17	876
Bayside Trail – eastern section	3	0.70	3,697
Bayside Trail – western section	5	0.43	2,284
Event Bluff Trail	3	0.13	670
Cabrillo Statue Trail	5	0.03	163
Kelp Forest and Whale Overlook Trail	5	0.19	1,021
Kelp Forest and Whale Overlook Trail Spur	5	0.02	125
<b>TOTAL LENGTH</b>	<b>-</b>	<b>2.24</b>	<b>11,808</b>

\*Please see appendix C for descriptions of the trail classes.

## ACTIONS COMMON TO ALL ACTION ALTERNATIVES

The following actions would occur under alternatives 1 and 2.

Improvements to existing trails include:

- The Event Bluff Trail would be narrowed with post and rope and managed as a class 3 trail. Denuded areas along the trail would be restored to natural conditions. Space would be provided to accommodate up to 100 people for special events such as weddings.
- The Bayside Trail would be managed as a class 4 trail. Accessibility would be improved through the following actions:
  - The trail surface would be improved by adding additional material such as crushed gravel to make the trail tread firm and stable and reduce obstacles.
  - Improvements to water bars could include the addition of ramps or partial removal of water bars to allow trail users to pass over or through water bars, while still promoting drainage.
  - Trailhead signage at the entrance to both the paved and aggregate surface segments of the trail would be improved. Details on trail condition and difficulty would be illustrated on the signs, including trail length, surface type, typical and maximum running and cross slopes, and typical and minimum tread width.
- Based on resource conditions, the tidepools access point would be slightly rerouted to avoid an undercut shelf. This reroute would not be initiated until warranted by tidal erosion.





FIGURE 1. MAP OF THE NO-ACTION ALTERNATIVE

- The Coastal Trail would be managed as a class 3 trail and improved through the following actions:
  - The spur-trail at the searchlight structure would be formalized.
  - The trail would be better delineated using post and rope, rocks, or other techniques.
  - Wayfinding signs would be added and/or improved in areas where the trail tread is unclear or where there are multiple choices in the route because of visitor-created trails.
  - The staircase-spur that provides northern coastal access would be improved through replacement of the staircase, drainage improvements, and/or a minor reroute.
- A new ABA accessible crosswalk would be set in the visitor center parking lot to enhance pedestrian circulation and safety. This would entail modifying paint, losing a few parking spaces, and formalizing visitor-created trails through the vegetation-islands in the parking lot (see figure 2).

**Maintenance of trails.** Trail maintenance would be carried out according to the specified trail class; for example, class 4 trails will be more frequently maintained than class 2 trails.

**Restoration.** Approximately 9,600 linear feet of existing visitor-created trails in the monument would be restored to natural conditions. Trails to be closed would be obscured and blocked from public access to avoid continued use. Temporary educational/closure signs may also be placed to discourage use. Once closed, trails would be revegetated as necessary. The extent of revegetation efforts would depend on the specific conditions for each route. Natural recovery by native plant species is preferable to planting or seeding; however, planting or seeding would be used as necessary to prevent unacceptable erosion or resist competition from nonnative invasive species.

**Alignments for trails.** The new trail alignments shown on the alternative maps are based on GIS analysis and limited field surveys. Final alignments would be determined on the ground that could result in minor adjustments to the trail locations shown on the alternative maps. Before construction activities begin, the final alignments would be reviewed by the park's natural and cultural resources experts to ensure impacts to sensitive resources are avoided or minimized.

#### **Temporary closures.**

- The park would use temporary trail closures on a case-by-case basis to protect trails, improve visitor safety, and reduce negative resource impacts.
- Park staff will continue to manage Cabrillo Road closures to allow access to Naval Base Point Loma, the City of San Diego Point Loma Wastewater Treatment Plant, and the US Coast Guard Point Loma Light Station. A sign would be posted instructing drivers to drive slowly and give a wide berth to pedestrians and cyclists.

**Phased implementation.** New trail development would take place as funding and resources allow. The implementation schedule would be developed after this planning effort was completed. Over time, the implementation schedule could be modified based on funding, the availability of resources (equipment, trail crews, etc.), and whether user groups and organizations can partner/assist with trail development and restoration efforts.

**Road use.** The road would open to bicycling and other uses as identified per the park compendium.





FIGURE 2. PARKING LOT CROSSWALK DESIGN

## ALTERNATIVE 1

Approximately 4,920 linear feet of new trails would be developed to improve the visitor experience and pedestrian circulation. New trail development would be balanced with resource protection. During peak visitation, such as special events or holidays, Cabrillo Road would be closed to vehicles and used as a multiuse trail to alleviate congestion at the tidepools. The closures would be several hours in length and used only when crowding reaches, or is expected to reach, peak levels. This alternative also includes all actions described in the section “Common to All Action Alternatives.” A map of the existing trail system, proposed new trails under alternative 1, and trail improvements common to all action alternatives is included below (see figure 3).

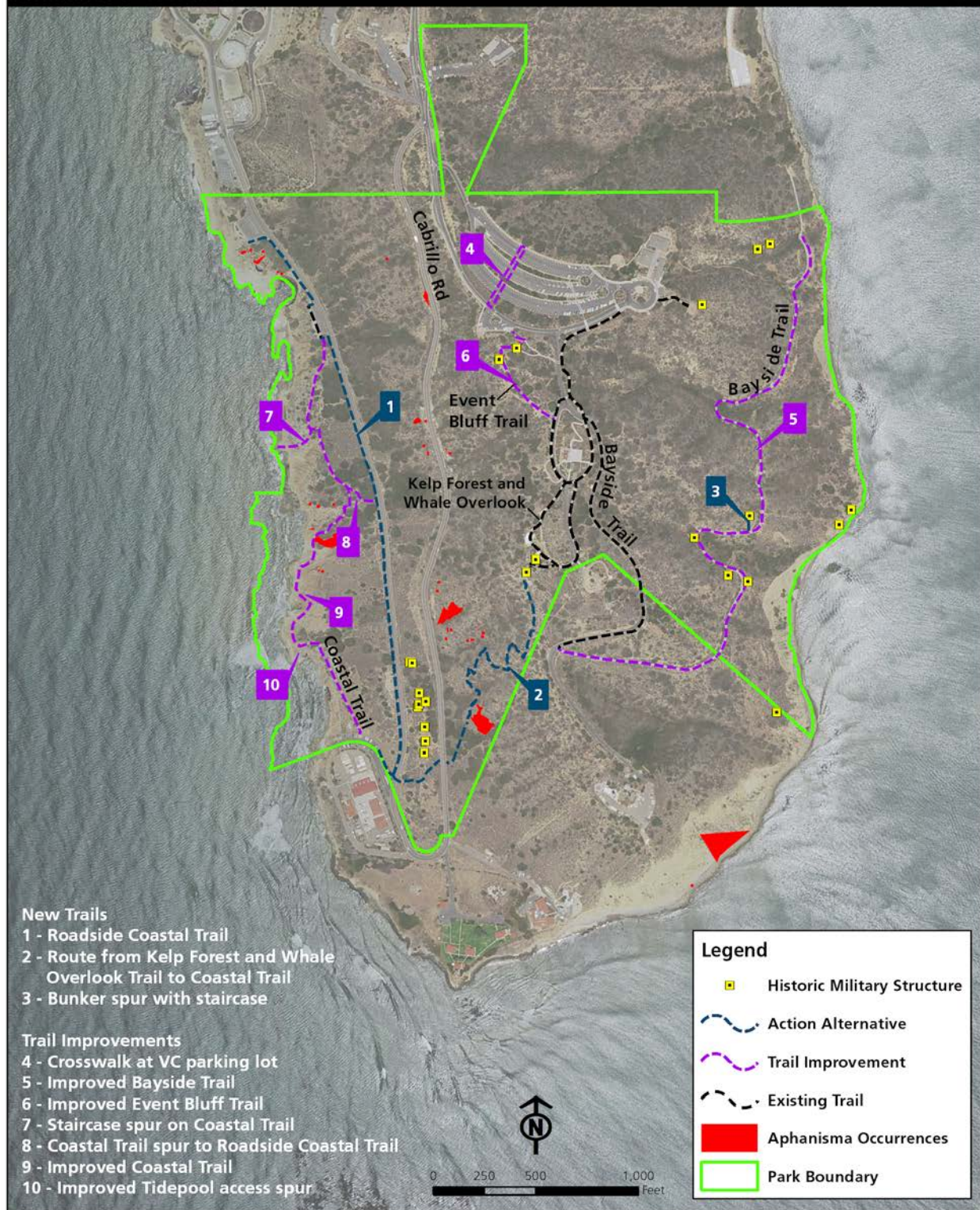
The following new trails would be opened:

**The Roadside Coastal Trail (approximately 2,740 linear feet, class 4).** This trail is depicted as Route 1 on figure 3 and would be open to hikers. This paved trail would parallel the lower portion of Cabrillo Road and function as a sidewalk separated from the roadway by curbing. Separating pedestrians and vehicles in this popular zone of the monument would improve visitor circulation and safety. The existing paved walkway would be used at parking lot 2. Near parking lot 3, there is a narrow corridor (approximately 94 inches) for the trail. The trail may be narrower at this location (class 3) and may require safety improvements such as railing or post and rope. The park will design this trail for ABA accessibility where feasible.

**Bayside to Coastal Trail (approximately 2,090 linear feet, class 2).** This trail is depicted as Route 2 on figure 3 and would be open to hikers. This trail would connect the Kelp Forest and Whale Overlook to the Bayside Trail and the Coastal Trail. Several switchbacks would be required, and the landings on these switchbacks would be widened into passing / rest areas. Three rest benches would be constructed where terrain allows. The trail would also provide access from the tidepools parking area to the Panama Gun Mount. Trail signs would be very low profile and consistent with the height of landscape vegetation. Signs would include wayfinding arrows and information on proper trail etiquette and trail condition and difficulty level.

**Bunker Spur (approximately 90 linear feet, class 3).** This trail is depicted as Route 3 on figure 3 and would be open to hikers. This spur trail would leave the Bayside Trail and provide access to an old Navy bunker known as Searchlight Shelter #19. It would enhance interpretive opportunities in the monument.





**FIGURE 3. MAP OF EXISTING TRAILS, PROPOSED NEW TRAILS IN ALTERNATIVE 1, AND TRAIL IMPROVEMENTS**

## INDICATORS AND THRESHOLDS

Indicators, thresholds, monitoring protocols, management strategies, and mitigation measures would be implemented as a result of this planning effort and are described below. Indicators would be applied to both action alternatives described within this plan. Indicators translate goals and objectives of the Cabrillo National Monument Trail Management Plan into measurable attributes (e.g., linear extent of visitor-created trails) that when tracked over time, evaluate change in resource or experiential conditions. These are critical components of monitoring the success of the trail plan and are considered common to all action alternatives. Thresholds represent the minimum acceptable condition for each indicator and were established by considering qualitative descriptions of the goals and objectives, data on existing conditions, relevant research studies, professional judgement of staff from management experience, and scoping on public preferences.

The planning team arrived at the following indicator topics that would translate the desired conditions into measurable attributes that could be tracked over time: Invasive Species (table 2); Deterioration of Trail Condition (table 3); Visitor-Created Trails (table 4); Damage to Historic Sites and Cultural Resources (table 5); and Crowding, Conflicts, and Congestion at the Tidepools (table 6).

**Table 2. Invasive Species**

Indicator
Presence or absence of invasive species proximate to hardened or paved surfaces.
Threshold
No new occurrences of invasive species proximate to hardened or paved surfaces.
Rationale for Indicator and Threshold
Trails are a vector for movement of invasive species and facilitate a corridor for movement. Knowing that the number of invasive species may increase because of reasons beyond the National Park Service's control, the rationale for this indicator is linked specifically to visitor-caused invasive species proximate to hardened or paved surfaces. The no tolerance threshold is important to the potential introduction of invasive species that are potentially ecosystem-modifying species. There is a great need to keep the spread as small as possible with immediate action from park staff at the earliest detection.
Monitoring
Monitoring will occur through existing vegetation monitoring plots.
Management Strategies and Mitigation Measures
<ul style="list-style-type: none"> <li>▪ Immediately remove invasive species.</li> <li>▪ Educate visitors related to invasive species (e.g., identification, on-site impacts) and possible vectors associated with visitor use (e.g., airport, on the plane, at rental car areas, at park).</li> <li>▪ Encourage visitors to report invasive species occurrence to park staff.</li> <li>▪ Restrict off-trail travel.</li> <li>▪ Increase trail maintenance.</li> <li>▪ Restore disturbed areas.</li> <li>▪ Temporarily or permanently close areas.</li> <li>▪ Manage visitor use levels.</li> </ul>

**Table 3. Deterioration of Trail Conditions**

<b>Indicator</b>
Deterioration of trail conditions (width, depth, braiding, and muddiness).
<b>Threshold</b>
Trail conditions are consistent with trail class specifications.
<b>Rationale for Indicator and Threshold</b>
The conditions on any trail should remain consistent with the specified trail class. Changes in trail condition, such as widening and braiding of tread, impact the surrounding soil, vegetation, and hydrology can indicate heavy use or ineffective trail design. This indicator was selected based on the ease of measurement, cost-effectiveness, and ability to provide useful data any time of day or year. The US Geological Survey states: "the number, length, and density of informal trails, along with tread width, are the most commonly used indicators. Soil loss, the most ecologically significant trail impact, can be assessed at sample points by measuring maximum incision or cross sectional area." A 10% change in trail width and depth can inhibit vegetative growth and cause continual soil loss.
<b>Monitoring</b>
Through the trails management plan, the park has identified and defined baseline conditions for trails. These are denoted by trail classes. Monitoring of trail conditions will continue through park staff observations and complaint-based monitoring as reported by visitors. Additionally, routine asset management can assist in the monitoring effort.
<b>Management Strategies and Mitigation Measures</b>
<ul style="list-style-type: none"> <li>▪ Rehabilitate and armor trails.</li> <li>▪ Reroute trails.</li> <li>▪ Follow trail standards and sustainably design all new trails.</li> <li>▪ Close trails or areas temporarily.</li> <li>▪ Close trails or areas permanently if earlier management strategies have been implemented and determined ineffective.</li> </ul> <p>Strategies to manage trail widening:</p> <ul style="list-style-type: none"> <li>▪ Establish trail borders with rocks, logs, or fencing.</li> <li>▪ Advertise areas of muddiness, erosion, and excessive rockiness to contain the lateral spread of traffic along particular areas.</li> <li>▪ Educate visitors on the importance of staying to the center of the trail.</li> <li>▪ Strategically place rocks to narrow the trail width.</li> </ul> <p>Strategies to manage excessive soil loss:</p> <ul style="list-style-type: none"> <li>▪ Harden treads through the application of gravel or rockwork.</li> <li>▪ Install sand ladder or rock steps when grades are steep.</li> <li>▪ Incorporate periodic grade reversals within steeper treads that carry water.</li> <li>▪ Install water bars, outsloped treads, mulch, and other drainage control structures.</li> <li>▪ Install boardwalks.</li> </ul>

**Table 4. Visitor-Created Trails**

Indicator
Linear feet of visitor-created trails.
Threshold
New visitor-created trails will not exceed 50 linear feet annually
Rationale for Indicator and Threshold
<p>Visitor-created trails degrade resources and should be kept to a minimum. Visitor-created trails can indicate ineffective trail design, inadequate wayfinding, and visitor interest in accessing new areas. This indicator was selected based on the ease of measurement, ability to provide useful data, and cost-effectiveness. It helps managers protect sensitive habitat, reduce invasive species introduced by visitors, address wayfinding problems, and identify potential future sites or routes of interest. It also provides a range of management actions depending on resource sensitivity and level of use.</p>
Monitoring
<p>Current monitoring of visitor-created trails occurs through park staff observations as well as imagery analysis. In the past, student groups have collected GIS data on the networks of visitor-created trails. The park will continue to monitor the linear feet of visitor-created trails. Baseline data of visitor-created trails totals 1.82 miles. Park staff will walk the grounds and map the trails once a year to identify new visitor-created trails. Navy representatives will be invited to attend the annual trail monitoring/mapping exercise for trails related to the Naval Base Point Loma property.</p>
Management Strategies and Mitigation Measures
<ul style="list-style-type: none"> <li>▪ Educate visitors on the importance of staying on trails.</li> <li>▪ Improve communication with visitors about trail stewardship.</li> <li>▪ Improve trail maintenance, identification, and signage.</li> <li>▪ Evaluate visitor-created trails to determine appropriate management action.</li> <li>▪ Rehabilitate visitor-created trails as soon as possible and close trail segments temporarily if needed.</li> <li>▪ Improve delineation of designated trails and prevent off-trail travel by establishing trail borders using rocks, logs, fencing, and post and rope barriers.</li> <li>▪ Develop trail watch volunteers, including trail stewardship programs.</li> <li>▪ Close new or existing trails permanently if earlier management strategies have been implemented and determined ineffective.</li> </ul>

**Table 5. Damage to Historic Sites and Cultural Resources**

<b>Indicator</b>
Number of incidents of disturbance (i.e., as vandalism and/or graffiti) on historic sites or structures.
<b>Threshold</b>
No more than five incidents per year
<b>Rationale for Indicator and Threshold</b>
Damage to historic sites and cultural resources can occur through both intentional and unintentional means. Both can cause impacts that influence the integrity of these resources. Continued and increasing visitor use and new trails providing access to historic and cultural resources could cause negative impacts. The indicator selected would be sensitive to capture new activity around historic and cultural resources that will potentially be open for hiking and visitor access. It is particularly important at Cabrillo National Monument to maintain the protection of historic structures and cultural resources so that the number of incidents of disturbance and/or vandalism does not rise. The majority of the unauthorized visitor use that occurs in the park is minor such as carving initials into sandstone. More serious incidents are rare such as graffiti, and less than five documented incidents occur per year.
<b>Monitoring</b>
The park will continue to record incidences of disturbance or vandalism/graffiti. The park will review incident reports on a yearly basis and will encourage visitors to report and help monitor any harmful activities, theft, or damage to historic sites and cultural resources.
<b>Triggers and Management Strategies</b>
<p><i>Trigger:</i> Three documented incidents occur in one year.</p> <p><i>Management Strategies:</i> If three documented incidents of disturbance (i.e., vandalism and/or graffiti) on historic sites or structures occur, the park will take immediate action to conduct assessments of the area. The park might also consider more direct action and reduction in visitor use. For example, the park might explore the potential implementation of temporary or permanent area or trail closures.</p>
<b>Management Strategies and Mitigation Measures</b>
<ul style="list-style-type: none"> <li>▪ Document resources in high visitor use areas first.</li> <li>▪ Conduct damage analysis.</li> <li>▪ Establish trail watch volunteers/site stewards to help educate visitors on the sensitivity of resources, monitor resources, and notify park staff of damage.</li> <li>▪ Expand community and visitor education.</li> <li>▪ Conduct law enforcement blitzes oriented toward educating visitors on the sensitivity of resources and the need to protect historical sites, including signage.</li> <li>▪ Increase ranger/staff presence, patrol, and enforcement; adjust staff hours if necessary.</li> <li>▪ Reroute or temporarily close trails.</li> <li>▪ Create physical barriers.</li> <li>▪ Designate area(s) as ranger-led tours only.</li> <li>▪ Close areas if earlier management strategies have been implemented and determined ineffective.</li> </ul>

**Table 6. Crowding, Conflicts, and Congestion at the Tidepools**

<b>Indicator</b>
(1) Number of times the Cabrillo Road gate is closed in a month (2) Length of time the gate is closed
<b>Threshold</b>
(1) The Cabrillo Road gate is closed no more than 15 times a month (2) The gate is closed is no more than 15 hours in a month
<b>Rationale for Indicator and Threshold</b>
Crowding, conflicts, and congestion at the tidepools lead to natural resource damage and degradation of visitor experience. During busy periods, such as weekends and holidays, the tidepools parking lots are often full. To manage overcrowding, CABR staff close the road to visitor traffic until sufficient parking becomes available. The gate is currently closed by park staff about 16 times a month during July and August, most typically on weekends. This indicator was selected based on the ease of measurement, ability to provide useful data, and cost-effectiveness.
<b>Monitoring</b>
The park will establish a mechanism to document the number and length of time the gate is closed in a given month.
<b>Management Strategies and Mitigation Measures</b>
<ul style="list-style-type: none"> <li>▪ Place signs indicating tidepools parking is full</li> <li>▪ Increase communication about peak visitor use times and add messaging about low-use times</li> <li>▪ Reduce or restrict tidepools access</li> <li>▪ Close tidepools access temporarily or partially</li> <li>▪ Re-direct visitors to use trails that will change the flow of visitors to the area</li> <li>▪ Implement alternative tidepools access processes (permits, reservations, shuttles, etc.)</li> <li>▪ Designate queue for tidepools access</li> <li>▪ Temporarily or permanently close tidepools access if earlier management strategies have been implemented and determined ineffective</li> </ul>

## ALTERNATIVE 2

No new trails would be constructed. Cabrillo Road would be closed to vehicles during summer (June 21–September 21) and peak periods such as holiday weekends and Spring Break. The road would be used as a multiuse trail open to hiking and cycling, as well as other uses as identified per the park compendium. Coast Guard, Navy, and sewage plant traffic would still be allowed on the road: a sign would be posted instructing drivers to drive slowly and give a wide berth to pedestrians and cyclists. Existing parking spaces at the tidepools would be made available to people with disabilities or those requiring special accommodations. This alternative also includes all the actions described in the section “Common to All Action Alternatives.” A map of the existing trail system, proposed new trails under alternative 2, and trail improvements common to all action alternatives is included below (see figure 4).



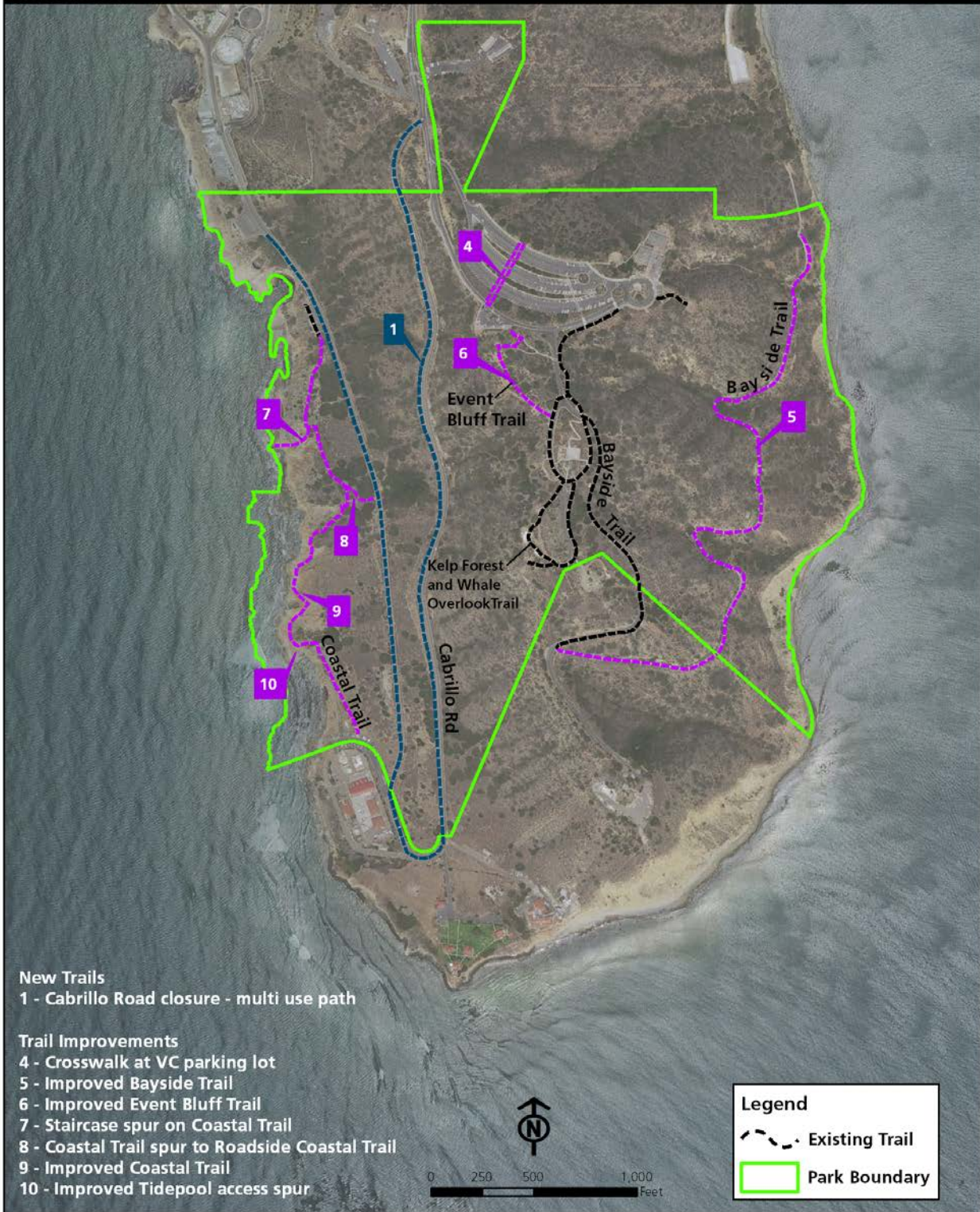


FIGURE 4. MAP OF EXISTING TRAILS, PROPOSED NEW TRAILS IN ALTERNATIVE 2 AND TRAIL IMPROVEMENTS

## **VISITOR CAPACITY**

Visitor capacity is a component of visitor use management defined as the maximum amount and types of visitor use that an area can accommodate while sustaining desired resource conditions and visitor experiences consistent with the purpose for which the area was established. Visitor capacity will be used to inform and implement the management strategies. By establishing and implementing visitor capacities, the National Park Service can help ensure that resources are protected and that visitors have the opportunity for a range of high-quality experiences. Under the new (2012) NPS planning portfolio, visitor use management plans are considered to be implementation level plans and can meet the legal GMP requirements (1978 NPRA, 54 U.S.C. 100502) to identify and implement visitor capacities by including detailed direction and analysis that is consistent with or amends a unit's general management plan. Cabrillo National Monument has no prior identification of visitor capacity. The following section outlines the considerations and process used to identify visitor capacity. See appendix B for visitor capacity and implementation strategies.

## **MITIGATION MEASURES COMMON TO ALL ACTION ALTERNATIVES**

The following mitigation measures have been developed to avoid or minimize potential adverse impacts from implementation of the trail management plan. These are considered common to all action alternatives.

### **Visitor Safety:**

- Construction activities would be scheduled to minimize construction-related impacts on visitors. Areas not under construction would remain accessible to visitors as much as is safely possible.
- The National Park Service would implement measures to reduce adverse effects of construction on visitor safety. Measures may include, but are not limited to, noise abatement, visual screening, and directional signs that aid visitors in avoiding construction activities.
- Per NPS standards, NPS trail crews would coordinate and supervise any trail construction or maintenance. Specifically, the National Park Service would monitor and/or direct water bar placement; drainage placement; brushing and clearing; revegetation; where to obtain fill and other materials for trails; and how to apply fill materials such as soil, gravel, and rocks.
- To minimize the amount of ground disturbance, staging areas would be located in previously disturbed areas, away from visitor use areas to the extent possible. All staging areas would be returned to preconstruction conditions following construction.
- The park would implement timely and accurate communication with visitors such as changes to programs, services, sites, or permitted activities via news releases, visitor contacts, web, and social media, as well as signage.

### **Natural Resources:**

- Removal of, or impact on, native vegetation adjacent to trails would be minimized as much as possible to protect native plants and to prevent the spread of nonnative species.
- Construction equipment would be inspected and properly cleaned to remove nonnative species prior to being delivered to the park.

- Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species in the trail corridor. No foreign materials with the potential to introduce invasive plant species would be brought into the area.
- If sensitive resources are discovered during trail construction, construction would cease and the area would be surveyed in more detail so that impacts could be avoided or minimized and/or an alternate route established.
- A construction zone for installation of the proposed trail system, as well as staging areas and work zones, would be identified and demarcated with construction tape or some similar material prior to any construction activities. The tape would define the zone and confine the activity to the minimum area needed for implementing the project.
- Qualified biologists would conduct studies to determine if rare, threatened, or endangered state or federally listed plant species are present before ground disturbance to avoid disturbance and ensure appropriate locations and design of facilities.
- All crew members and volunteers assisting in the trail work efforts would be educated about the importance of avoiding impacts on sensitive resources that have been flagged for avoidance, which may include natural and cultural resources.
- Care would be taken not to disturb any other sensitive wildlife species (reptiles, migratory birds, raptors, and bats) found nesting, hibernating, estivating, or otherwise living in or immediately nearby the worksites. Resource management personnel would be notified/consulted when wildlife must be disturbed or handled.
- Vegetation removal work would be conducted outside of the peak bird breeding season to the maximum extent practicable.
- If vegetation removal activities cannot occur outside the bird nesting season, surveys would be conducted prior to scheduled activity to determine if active nests are present within the area of impact. If active nests or breeding behavior (e.g., courtship, nest building, territorial defense, etc.) are detected during these surveys, no vegetation removal activities should be conducted until nestlings have fledged or the nest fails or breeding behaviors are no longer observed.
- According to *NPS Management Policies 2006*, the National Park Service would strive to construct the proposed trail system with a sustainable design to minimize potential environmental impacts. Development would not compete with, dominate park features, or interfere with natural processes, such as the seasonal migration of wildlife or hydrologic activity. To the extent possible, the design and management of the proposed trail system would emphasize environmentally sensitive construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings.

#### **Cultural Resources:**

- Before construction begins, the monument would conduct an archeological survey along the potential route of any new trails, to avoid disturbance and ensure appropriate locations and design of facilities.

- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of discovery, and the park would consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to 36 CFR 800.13. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.

## ACTIONS CONSIDERED BUT DISMISSED

While developing alternatives, it became clear that some proposed alternatives and actions did not need to be further analyzed. Certain alternatives can sometimes be considered but eliminated from further study for a variety of reasons listed in NPS Director's Order 12 *DO-12 Handbook*. Several actions were considered but dismissed from further consideration; see figure 5 for a map showing the specific location of proposed trail segments that were dismissed.

- **Closing one lane of Cabrillo Road to vehicular traffic and designating it as a multiuse trail (long-term or permanent closure).** Closing one lane would result in one-way, vehicular traffic on the road for Coast Guard and sewage plant vehicles and visitors needing special accommodations. This would require park staff on both ends to control uphill and downhill traffic, and/or traffic lights. This action is not technically feasible because the park does not have extra staff for traffic control. In addition, as visitors wait to go up and downhill, vehicle queues would form at the top and bottom. This would heighten congestion, especially at the park entrance. Therefore, this idea does not meet the plan purpose and need.
- **Making the Bayside Trail a loop.** Several trail options were considered for making the existing Bayside Trail a loop trail, including segment #1 and segment #5 shown on figure 5. Segment #1 is entirely on Navy land and within the explosive ammunition arc. Because of Navy land use, there are significant safety concerns for having visitors in that area, so this option does not meet the plan purpose and need. In addition, the invasive plant stinknet (*Oncosiphon piluliferum*) is pervasive on Navy land, and a route in this area could also facilitate the spread of stinknet onto park property. Segment #5 was dismissed because it would fragment and cause loss of sensitive habitat for species of concern, particularly the California coastal gnatcatcher.
- The other option considered for making the Bayside Trail a loop trail was to develop a switchback route from the north end of the Bayside Trail up to the main parking lot. This action was dismissed from further consideration because the trail would fragment and cause loss of sensitive habitat for species of concern, particularly the California coastal gnatcatcher. In addition, steep gullies on both ends of the hillside would force the route into a number of tight switchbacks that would likely result in extensive visitor-created trails because people often cut switchbacks when the next leg is easily visible, leading to increased erosion and vegetation loss.
- **Segment #2.** This segment would be on Navy and city property. It is not a desirable trail to hike because of sewage plant views and smells and therefore does not meet the plan purpose and need. Additionally, there would be safety and congestion issues regarding trail access because people would have to cross the road near the park entrance to access the trail.





**FIGURE 5. ACTIONS CONSIDERED BUT DISMISSED**

- Segment #3. This option to build a trail parallel to Cabrillo Road was considered but dismissed because it is economically infeasible compared to other options. In addition, the cut and fill report prepared for this planning effort shows that adverse resource impacts would be substantial, which does not meet the plan purpose and need.
- Segment #4. This option would fragment habitat and disrupt views for visitors on the western slope. Therefore, it does not meet the plan purpose and need.
- Segment #6. This option would fragment habitat and lead visitors to an unstable cliff. Therefore, it does not meet the plan purpose and need.
- Segment #7. This trail would be duplicative with other trails. Therefore, it does not meet the plan purpose and need.

## **STAFFING AND COST ESTIMATES**

NPS decision makers and the public must consider the costs and advantages of various alternatives, including the no-action alternative, to make a relevant comparison of the alternatives.

The costs presented here are estimates for comparison purposes only and are not to be used for budgetary purposes or implementing funding requests. If and when the actions are implemented, actual costs would vary. Specific costs would be determined in subsequent, more detailed planning and design efforts.

The estimates in this section include annual operations and maintenance, staffing, and one-time net construction costs to implement the action alternatives (see table 7) over 20 years. No new construction costs are anticipated for alternative 2 beyond those elements common to all. No new full-time equivalent (FTE) staff are anticipated for alternative 1, while alternative 2 would require one FTE (two seasonal employees) to manage uphill and downhill traffic with implementation of a road closure.

Deferred maintenance of the existing Cabrillo trail system is \$837,300. It would cost an average of \$61,600 per year to address all deferred maintenance within a 20-year window, allowing for the escalation of project costs over time.

**Table 7. Estimated, One-Time Construction Costs, Staffing, and Annual Operations and Maintenance Costs to Implement the Alternatives**

Construction and Maintenance Costs	Alternative 1	Alternative 2
<b>Net Construction Costs (One Time)</b>	-	-
(1) New Roadside Coastal Trail (concrete)	\$951,000	\$0
(2) New Bayside to Coastal Trail Connector	\$108,000	\$0
(3) New Bayside to Bunker Spur	\$2,200	\$0
(4) New Crosswalk at Visitor Center Parking Lot	\$31,500	\$31,500
(5) Improved Bayside Trail	\$152,800	\$152,800
(6) Improved Event Bluff Trail	\$23,600	\$23,600
(7) Staircase spur on Coastal Trail	\$29,200	\$29,200
(8) Spur to Roadside Coastal trail	\$2,400	\$2,400
(9) Improved Coastal Trail	\$40,600	\$40,600
(10) Improved Tidepools Access Spur	\$1,600	\$1,600
<b>Total Construction Cost</b>	<b>\$1,342,900</b>	<b>\$281,700</b>
<b>Additional Operations and Maintenance (Recurring)</b>	-	-
New crosswalk at VC Parking Lot	\$300	\$300
Coastal Trail	\$5,800	\$0
Bayside Trail	\$1,000	\$0
Spur Trails	\$200	\$0
Seasonal staff for traffic management (GS-5, 1 FTE)	\$0	\$47,400
<b>Total Annual O&amp;M Cost</b>	<b>\$7,300</b>	<b>\$47,700</b>
<b>Total 20-Year Life Cycle Costs (Net Present Value)</b>	<b>\$1,604,000</b>	<b>\$1,129,000</b>

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## CHAPTER 3: AFFECTED ENVIRONMENT

### INTRODUCTION

This chapter describes the resources that could be affected as a result of implementing any of the alternatives. The descriptions serve as an account of the baseline conditions against which the potential effects of the proposed actions are compared. The resource topics presented in this chapter and the organization of the topics correspond to the resource impact discussions contained in “Chapter 4: Environmental Consequences.” The following resources are included: soils, habitat, species of concern, visitor use and experience, and historic military structures.

### SOILS

The Natural Resources Conservation Service produced a soil survey for the park in 2013 with data extracted from the soil survey of San Diego County, California. Soils in the project area are mapped as Carlsbad gravelly loamy sand on the uplifted beach ridges; Gaviota fine sandy loams on the steeper slopes; Loamy alluvial land-Huerhuero complex on coastal plains; and Reiff fine sandy loams on the flatter terraces and shoreline cliffs (NRCS 2013). Park staff also have noted the presence of microbiotic soil crusts, which play several important ecological roles including the stabilization of soil surfaces (K. Lombardo, pers. comm.).

The 2013 NRCS soil survey provides ratings for erodibility and “trafficability” (ability to sustain continuous foot traffic) for all soils in the park. The survey acknowledges that trail development in the park should not require notable cutting or filling. The survey also identifies the suitability of soil types for trail development. The ratings are based on soil properties including stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer. Many of the Point Loma soils have a naturally high erosion hazard because of poorly consolidated sandstone and shale sediments and steep slopes (NRCS 2013). The cliffs near the shoreline are extremely unstable and highly erosive, and bluff retreat and sediment collapse are common (NRCS 2013). Together, these factors make trail development and maintenance challenging.

Visitor use of the park's official trail system has affected soils, mainly by compaction and erosion of soils in the trail corridor. Visitor-created trails are also present, particularly in the coastal zone. As of 2017, analysis of aerial imagery showed more than 1.8 miles of visitor-created trails in the park.

## HABITAT

In 1995, the National Park Service, US Navy, Department of Veterans Affairs, US Coast Guard, and the City of San Diego signed a memorandum of understanding with the US Fish and Wildlife Service to establish and cooperatively manage the Point Loma Ecological Reserve (PLER). The Point Loma Ecological Reserve was established to protect viable sensitive biological communities, ensure their long-term viability and perpetuation, avoid incremental habitat loss, and provide for long-term habitat and conservation.

In 2005, the same entities signed a new memorandum of understanding to continue their cooperative protection of the biologically diverse habitat within the federal reservation. The name of the Point Loma Ecological Reserve was changed to the Point Loma Ecological Conservation Area (PLECA). The project area, which includes both National Park Service and US Navy property, is within the Point Loma Ecological Conservation Area. The memorandum of understanding instructs that it may be necessary for a landowner to mitigate for a construction project's effects to native habitat that has been removed as a result of the project (CNRSW 2005). Such supplemental mitigation may consist of adding habitat to the Point Loma Ecological Conservation Area or restoring disturbed habitat within or outside the conservation area.

The native plant communities found in the project area are diverse. Cabrillo National Monument, Naval Base Point Loma, and the Point Loma Peninsula are located at the transition between the coastal sage scrub community of southwestern California and the maritime succulent scrub characteristic of northwestern Baja California (Barbour et al. 2007). This unique geographical setting is the driving force behind the unique assemblage of vegetation that is not found anywhere else in the United States. The primary native plant communities are described below for context but will not be analyzed individually for impacts. The primary native plant communities in the park include (NPS 1996; NPS 2010):

- **Southern coastal bluff scrub** - A low, sometimes prostrate scrub community that generally occurs at localized sites along the coast south of Point Conception. Dominant plants are mostly woody and/or succulent species that are often kept short and pruned by almost constant exposure to coastal, moisture, and salt-laden winds. This plant community occurs as a narrow band on the seaside bluffs along the length of Point Loma. Representative plant species include California desert thorn, sea bite, and lemonade berry.
- **Maritime succulent scrub** - A low-growing, open scrub dominated by drought deciduous, soft-woody shrubs, many of which are stem and/or leaf succulents. This habitat typically occurs on thin rocky or sandy soils, often on steep slopes of coastal headlands and bluffs. It is the predominant vegetation type on the steep, west-facing slopes on the seaside of the peninsula. Representative plant species include California sagebrush, California encelia, cliff spurge, and flat-top buckwheat.
- **Diegan coastal sage scrub** - A community of low, soft-woody subshrubs up to about three feet high typically found on dry sites such as steep, south-facing slopes. Where it mixes with maritime succulent scrub in the park, the sage scrub generally occupies the north-facing slopes, while maritime succulent scrub is found on the drier south-facing slopes and ridges.

Representative plant species include laurel sumac, black sage, California sagebrush, flat-top buckwheat, and lemonade berry.

- **Southern maritime chaparral** - This distinctive chaparral association is relatively open and low growing. It occurs on weathered sandstone within the coastal fog belt. On Point Loma, it is most abundant on the central north-south ridgeline of the peninsula and on north-facing slopes and along drainages in the eastern portions of the park. Representative plant species include chamise, lemonade berry, toyon, black sage, scrub oak, and mission manzanita.

Visitors have and are continuing to affect park vegetation and habitat by trampling vegetation, compacting and eroding soils, and inadvertently spreading nonnative plants. Vegetation along trails has been altered to varying degrees, including changes in vegetation cover, height, and biomass and changes in species composition—particularly where trail braiding and trail widening have occurred. In addition, visitors shortcutting trails or seeking access to points of interest often have created their own trails, eroding soils and damaging vegetation in the process. Visitor use on designated trails as well as in areas where visitor-created trails have developed is where damage to vegetation is highly concentrated, particularly in the coastal zone.

Invasive nonnative plants are also present in the park and are a threat to native plant communities. Established infestations include nonnative plants such as foxtail, wild oats, iceplant, and Russian thistle (NPS 2017a). Aside from outcompeting native plants, invasives can also remove valuable food sources from native animals and facilitate the invasion of other nonnative plants. Invasive plant infestations can often occur on ground disturbed from visitor use and facility development. A great deal of resource management work has occurred in the last 10 years centering on the removal of invasive plants. A large percentage of the park's acreage is relatively free of nonnative species, and most occurrences are limited to roadsides, trails, and facility footprints (NPS 2013). Still, the high levels of visitor use and recreation in the park continue to make the park's native plant communities prone to the expansion of established invasive plant infestations as well as the colonization of additional invasive species into the park.

## **SPECIES OF SPECIAL CONCERN**

In this document, species of special concern are defined as those species of which there is special concern because of their rarity or vulnerability to various causes of habitat loss or population decline. Some are formally listed and receive specific protection defined in federal or state endangered species legislation. Other species have no formal listing status as threatened and endangered, but have designations as "rare" or "sensitive" based on adopted policies and expertise of state resource agencies or organizations such as the California Native Plant Society (CNPS).

### **Federally Listed Species**

Via the website for the US Fish and Wildlife Service, the National Park Service accessed the most recent list of species protected under the federal Endangered Species Act (ESA) that may be impacted by projects in Cabrillo National Monument (USFWS 2018). Table 8 provides this list of species. There is no critical habitat located within the park.

**Table 8. Federally Endangered and Threatened Species that May Occur in Cabrillo National Monument (as of Nov. 2, 2018)**

Common Name	Scientific Name	Category	Federal Status	Species or Habitat in Planning Area
California Least Tern	<i>Stern antillarum browni</i>	Bird	Endangered	No
Coastal California Gnatcatcher	<i>Poliophtila californica</i>	Bird	Threatened	Yes
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	Bird	Endangered	No
Southern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Bird	Endangered	No
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	Bird	Threatened	No
Pacific Pocket Mouse	<i>Perognathus longimembris pacificus</i>	Mammal	Endangered	Yes
Orcutt's Spineflower	<i>Chorizanthe orcuttiana</i>	Plant	Endangered	Yes
San Diego Ambrosia	<i>Ambrosia pumila</i>	Plant	Endangered	No
San Diego Button-celery	<i>Eryngium aristulatum var. parishii</i>	Plant	Endangered	No
San Diego Thornmint	<i>Acanthomintha ilicifolia</i>	Plant	Threatened	No

Based on an assessment of known habitat types in the project area and on previous NPS-survey efforts, two federally listed species (coastal California gnatcatcher and Orcutt's spineflower) are known to occur within the planning area and are further evaluated in this environmental assessment.

The Pacific pocket mouse (*Perognathus longimembris pacificus*) was known to inhabit coastal strand, coastal dunes, river alluvium, and coastal sage scrub growing on marine terraces, although recent survey efforts have found the subspecies in sandy substrates within coastal sage scrub (USFWS 1998). In San Diego County, three historic locations for Pacific pocket mouse are known: the San Onofre area, Santa Margarita River estuary, and the lower Tijuana River valley (USFWS 1998). There are no known historical occurrences on Point Loma, and focused trapping surveys in 2001 and small mammal surveys in 1999, 2001, and 2003 on Point Loma failed to capture the Pacific pocket mouse (NAVFACSW 2012). The species, if historically present, is likely extirpated from Point Loma; therefore, the Pacific pocket mouse will not be further analyzed.

The seven other listed species in the above table (i.e., California Least Tern, Least Bell's Vireo, southern willow flycatcher, western snowy plover, San Diego ambrosia, San Diego button-celery, and San Diego thornmint) would not be affected by the alternatives because they are not present because of the lack of suitable habitat within the project area and thus will not be analyzed further in this environmental assessment. If new surveys determined the occurrence of one or more of these

species in the project area, the National Park Service would reinitiate consultation with the US Fish and Wildlife Service on potential effects on those species.

The listed species analyzed in this document are as follows:

**Coastal California Gnatcatcher (*Poliophtila californica californica*).** The coastal California gnatcatcher is a federally threatened species. Prior to 2015, it had been more than 100 years since the gnatcatcher nested on Cabrillo National Monument, with the last record of nesting occurring in 1915 (NPS 2017b). In the spring of 2015, calls from a family of gnatcatchers were heard in the park, and shortly after a nest was found by a wildlife biologist (NPS 2017b). Since 2015, most observations of the species have occurred east of Cabrillo Memorial Drive and Humphreys Rd (K. Lombardo, pers. comm.), although potential gnatcatcher habitat also occurs on the western side of the park. This species is strongly associated with coastal sage scrub habitats below 820 feet in coastal areas; however, not all types of coastal sage scrub communities are used or preferred (USFWS 2010). On Naval Base Point Loma, immediately north of the park, the bird appears to be most abundant in areas dominated by California sagebrush and buckwheat and is less abundant in coastal habitats dominated by black sage, white sage, or lemonade berry (NAVFACSW 2012).

The breeding season of the gnatcatcher extends from late February through August with the peak of nesting occurring from mid-March through mid-May (USFWS 2010). Typically, there is a high rate of nest failure each breeding season. This is offset by rapid and persistent efforts; a breeding pair may attempt to nest as many as ten times in a year, producing up to three successful broods in a season (USFWS 2010). Miner et al. (1998) found that nest success did not appear to be negatively affected by the proximity of the nest to actively used and maintained roads or trails. The gnatcatcher generally disperses short distances through contiguous habitat, but juveniles are capable of dispersing long distances, up to 14 miles, across fragmented and highly disturbed sage scrub habitat (USFWS 2010). The primary threats to the species include habitat degradation and fragmentation (USFWS 2010).

**Orcutt's spineflower (*Chorizanthe orcuttiana*).** Orcutt's spineflower is currently listed as endangered by both the US Fish and Wildlife Service and the California Department of Fish and Wildlife (CDFW) and is the only state-listed plant species in the park (NPS 2017c). The California Native Plant Society also considers it to be rare and endangered (CNPS 2017). The species is found on sandy soils developed from eroded coastal bluffs within openings in chaparral and coastal sage scrub (USFWS 1996). Bauder (2000) identified Carlsbad gravelly loamy sand as the primary soil type supporting the plant. This species was thought to be extirpated from Point Loma until several small populations were found on Naval Base Point Loma in the late 1990s (USFWS 2007). In the park, researchers are working to plant seeds in areas with suitable soil properties and plants that commonly occur with the species (NPS 2016). Invasive nonnative plants are the greatest known threat to the occurrences of Orcutt's spineflower on Point Loma (USFWS 2007). Other threats include habitat destruction, encroaching native plants, and trampling (USFWS 2007).

## Special Status Plant Species

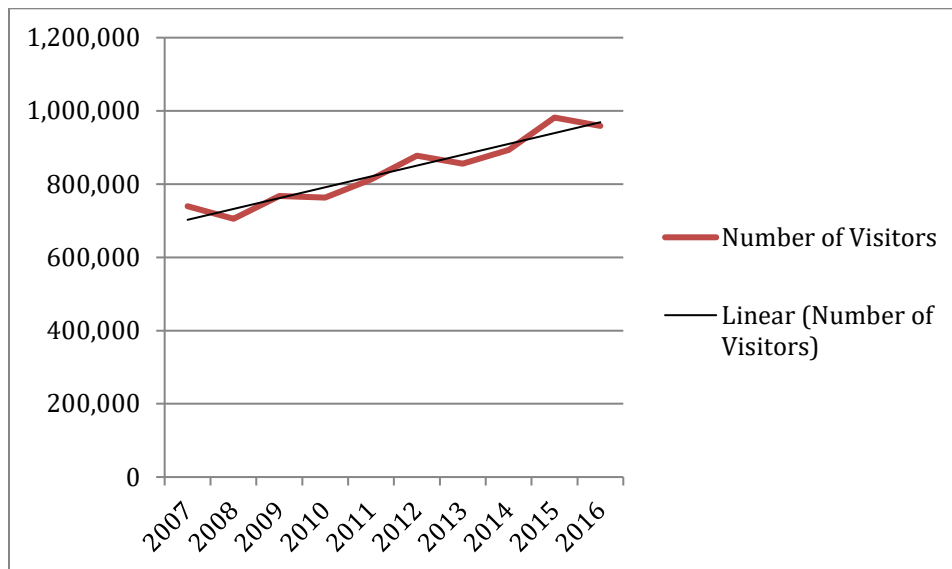
In the California Native Plant Society Inventory of Rare and Endangered Plants, the society has identified several plants known or suspected to occur in Cabrillo National Monument as species that should be watched and protected where possible so that they do not become threatened or endangered in the future (CNPS 2017, NPS 2017c). CNPS California Rare Plant Rank 1B includes plants that are rare throughout their range and meet the requirements for state listing. Examples of plant species observed in the park that are ranked as 1B include aphanisma (*Aphanisma blitoides*) and snake cholla (*Cylindropuntia californica* var. *californica*). Shaw's agave (*Agave shawii* var. *shawii*) and Cliff spurge (*Euphorbia misera*) are both examples of California Rare Plant Rank 2 plant species,

meaning the plant is rare in California but common elsewhere. The location of rare plant species within the park is widely distributed among all of the primary vegetation types of the park and in both high visitor use and low visitor use areas of the park, including in close proximity to existing trails.

## VISITOR USE AND EXPERIENCE

Cabrillo National Monument is a popular destination for local, regional, and international visitors seeking outdoor opportunities. Diverse visitor use and experience at the monument include hiking, birding, photography, whale watching, tidepooling, bicycling along Cabrillo Memorial Drive, as well as taking in the views of the city of San Diego, the Pacific Ocean, Mexico, and the mountains to the north and east. The park is a day-use park and the main gate closes at 5:00 p.m. daily. All visitors must exit the park at this time, and public access is not allowed between 5:00 p.m. and 9:00 a.m.

The park is located within the metropolitan city of San Diego, California. San Diego has a population of approximately 1.4 million people, making it the eighth-largest city in the United States and the second-largest city in California (Headwater Economics 2016). Between 2010 and 2015, the San Diego population increased at an average annual rate of 0.8% (Headwater Economics 2016). As the surrounding area has grown in population, so has visitation to the park. Average visitation has steadily risen since 2008 (see figure 6). In 2008, there were 705,331 annual recreation visitors. In 2016, the visitation had risen to 959,145. On average, the park's visitation is increasing by approximately 29,600 people every year.



**FIGURE 6. ANNUAL VISITATION AT CABRILLO NATIONAL MONUMENT**

Like many national park units, Cabrillo visitation patterns follow a standard bell curve in which visitation increases in the summer months with peak visitation occurring in July (see figure 7). Visitation remains steady in the winter months, most likely because of Southern California's mild winters. Rainfall is concentrated in the winter between November and April.

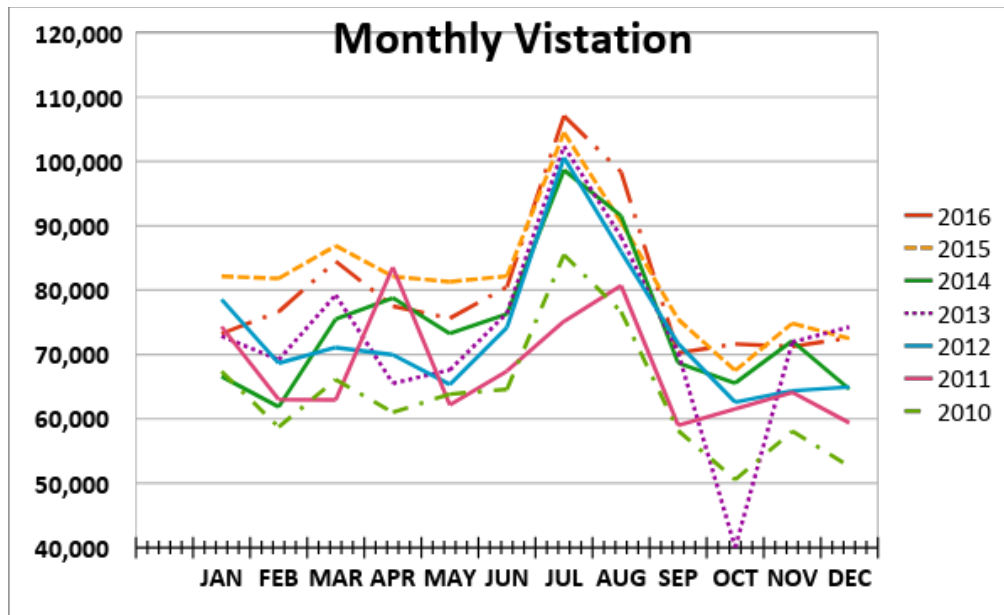
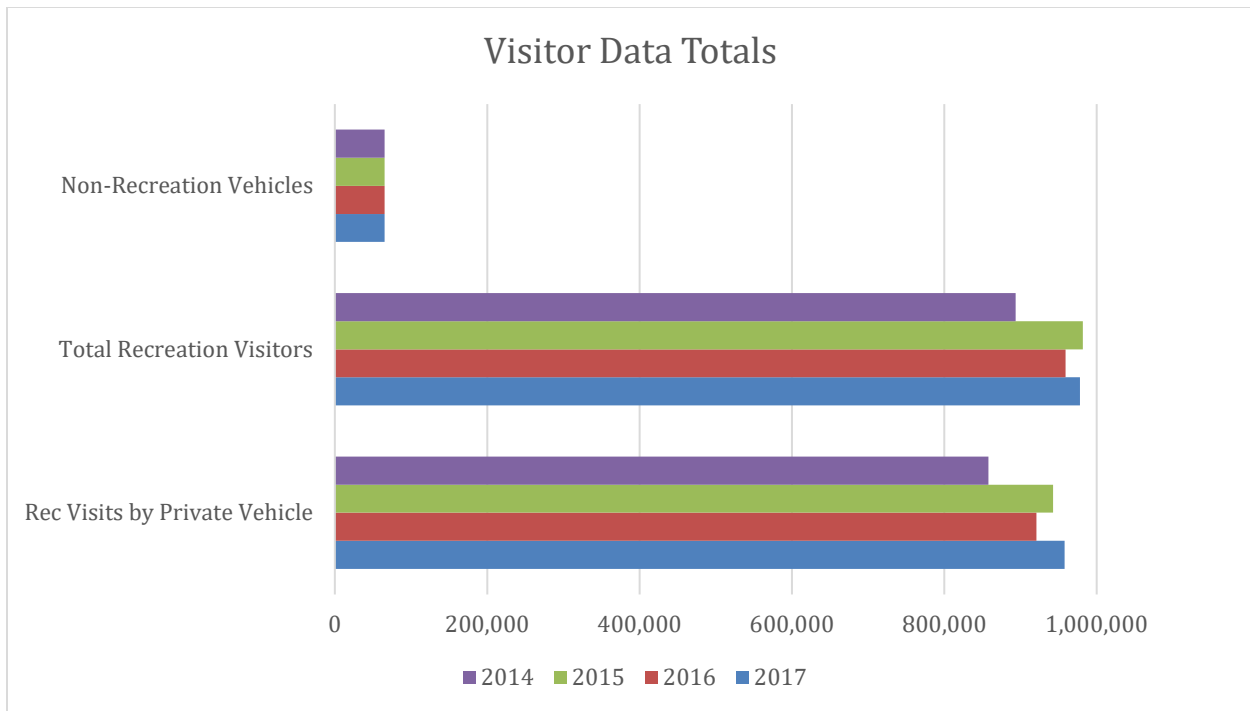


FIGURE 7. MONTHLY VISITATION AT CABRILLO NATIONAL MONUMENT

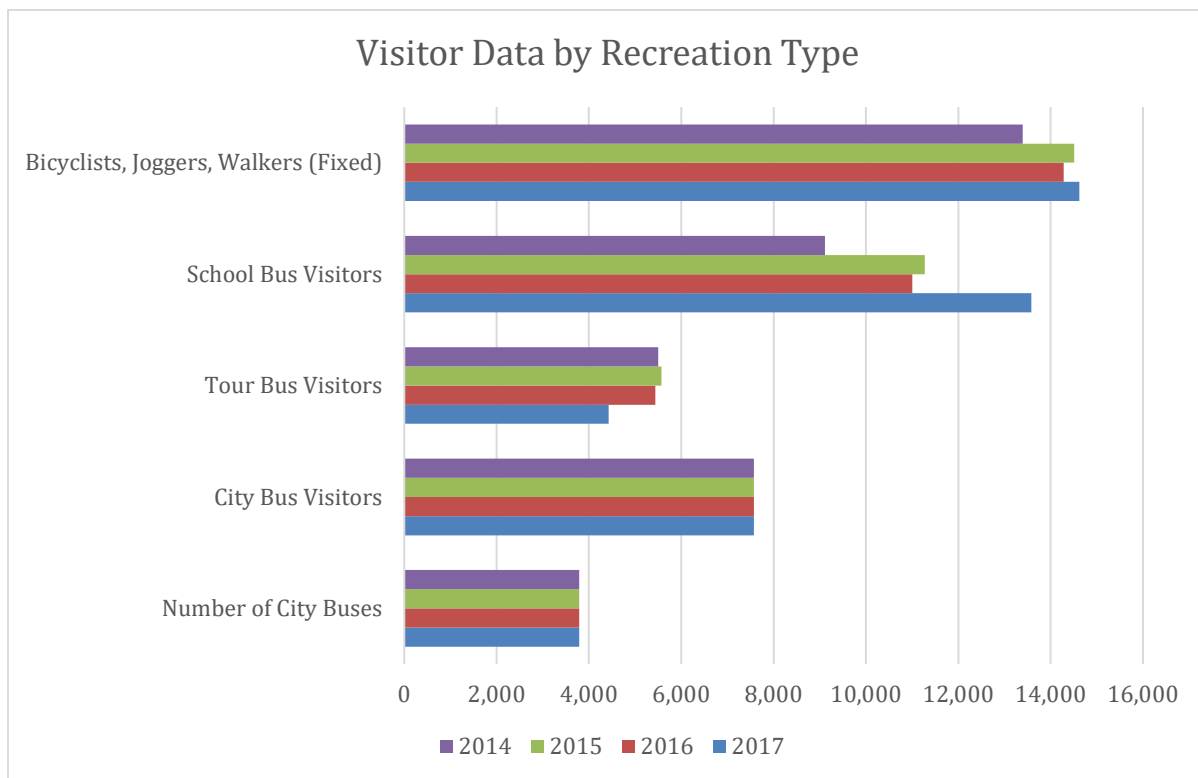
Cabrillo National Monument shares direct boundaries with the US Navy, US Coast Guard, and the City of San Diego Sewage Treatment Plant, officially known as the Point Loma Wastewater Treatment Plant. The operations of these neighbors impact visitor experience and safety, particularly during high visitation periods. Vehicular access to the Naval Base, the Coast Guard Station, the Wastewater Treatment Plant, and the park's Point Loma tidepools and coastal area parking occur from Cabrillo Road. During busy periods, such as weekends and holidays, the tidepools parking lots are often full. To manage overcrowding, Cabrillo National Monument staff close the road to visitor traffic until sufficient parking becomes available. When this happens, visitors wishing to access the tidepools must park near the visitor center and walk down Cabrillo Road. This causes unsafe and unpleasant conditions for park visitors because the Navy, Coast Guard and Wastewater Treatment Plant traffic, including deliveries and oversized vehicles such as dump trucks, access their property. It is important to highlight that this is an uncommon situation the typical national park visitor might not expect or anticipate. The smell from the Point Loma Wastewater Treatment Plant is evidenced throughout the park and is most noticeable to visitors from the upper most parking lot near the entrance station.

## Counting Methodology

The park tracks visitor data using inductive loop traffic counters, estimating the number of visitors entering by city bus, recording the number of visitors entering by tour and school buses (both recorded by the entrance station staff), and estimating the number of bicyclists, walkers, and joggers. This is compiled for the official visitation records kept by the NPS Public Use Statistics Office. The average length-of-stay multiplier for recreation visitors is 0.3 hours for tour bus passengers and 1.5 hours for all other visitors. Visitation by type is represented in figures 8 and 9. Driving by personal vehicle is the most common form of access for visitors. Recreation visits are estimated at CABR using inductive loop traffic counters, city busy estimates, recorded entrances by tour and school buses and bicyclists, walkers and joggers are estimated using the person per vehicle (PPV) multiplier that varies by month of the year.



**FIGURE 8. OVERALL ANNUAL VISITATION AT CABRILLO NATIONAL MONUMENT**



**FIGURE 9. ANNUAL VISITATION BY TYPE AT CABRILLO NATIONAL MONUMENT**



## Diversity of Visitor Opportunities and Experiences

**Trail System.** The trails at Cabrillo National Monument enable visitors to experience one of the parks' identified fundamental resources and values for scenic views from the foundation document (2017d). Panoramic views of the ocean, offshore islands, the city and harbor of San Diego, and distant mountain ranges are all available to the visitor. There are four primary trails that provide access to this opportunity: the Coastal Trail; the Bayside Trail, Event Bluff site, and Kelp Forest and Whale Overlook Trail.

The Coastal Trail is a one-mile hike that the park rates as easy to moderate. It is accessed by either the tidepools parking area or Coast View Parking Area along Cabrillo Road. This trail provides access to the tidepools along the western peninsula. This trail provides visitors with views of the ocean, wildlife and native vegetation. There are stairs on certain steep sections of the trail, some of which are uneven because of trail erosion. Strollers are not allowed on this trail. This trail is popular with runners and hikers. There are no trashcans on this trail (or anywhere in the park), so visitors must pack out whatever trash they pack in. Vault toilet restrooms are available at the tidepools parking area. Also along Cabrillo Road there is a visitor-created trail connecting Coast View Parking Area with the Sea Cove Parking Area. Some visitors walk on the visitor-created trail and others walk on the road. For those that walk on the road, visitor safety is a concern given that visitors and vehicular traffic (and some oversized vehicles from the wastewater treatment plant) share a small road space. To mitigate this risk, the visitor-created trail will be evaluated, formalized and added to the park's trail network as part of this plan.

The Bayside Trail is 2.5 miles round trip where visitors depart from the visitor center and hike south past the Old Point Loma Lighthouse and various overlooks, before turning north again. The Bayside Trail is an out-and-back trail rather than a loop trail. Visitors traveling on this trail have the opportunity to experience city, ocean, and mountain views. The trail follows an old military road from the top of the park down toward the San Diego Bay but does not provide beach access. The trail is rated as easy to moderate, with a steep section of approximately 340 feet elevation gain on the return. The park website advises that this section may be challenging for those visitors with heart and respiratory health issues. There are no restrooms along this trail.

The Event Bluff Trail / site is a short, gravel trail leading to an overlook of the Pacific Ocean. It is often used for special events, such as weddings, military reenlistments, and memorial services. Additionally, the Kelp Forest and Whale Overlook trails primarily function to provide sweeping views of the ocean. This section of trail is particularly popular during the whale migration when the trail attracts large numbers of visitors. This trail also extends the visitor experience beyond viewing the Old Point Loma Lighthouse.

There are presently no trails originating from the visitor center and main parking lot where visitors can hike to access the tidepools and coastal area, which are incredibly popular. As a result, some visitors have walked down Cabrillo Road. Visitor-created trails also proliferate in the park, making wayfinding difficult even with the limited trail system.

**Tidepools Experience.** The tide pools/marine ecosystem (Intertidal Zone) is one of the fundamental resources and values identified by the Foundation Document (2017d) for Cabrillo National Monument. The tidepools are described in the foundation document as *the extensive rocky intertidal area along the monument's western boundary and the southern tip of the Point Loma Peninsula contains one of the best-preserved, mainland Pacific tide pool ecosystems in Southern California. This area, protected by NPS staff and volunteers, provides unique opportunities for the public, academic groups, and researchers to observe and study a local marine community similar but also distinctly different communities south through Baja California and Baja California Sur, Mexico, and north to Point Conception, California.* Further, one of the goals of the trails plan is to *provide opportunities for visitors to have immersive experiences at one of the best-preserved, publically available, mainland Pacific tide pool ecosystems in Southern California.*

In 2011, National Park Service staff conducted an assessment to determine the number of visitors to the rocky intertidal marine habitat (also known as the tidepools). Game counters were placed on two separate trails that lead to the various tidepools. All visitors had to pass one of these counters to reach the tidepools. NPS staff collected and analyzed the data from these counters. They estimated that there were 213,714 visitors to the area for the 2011 calendar year. Peak visitation occurred in the summer months, with most people visiting the intertidal area in July. The study showed that visitation was highest on weekends and holidays and higher in the afternoon than in the morning. Furthermore, times of peak visitation did not coincide with low tide.

## **HISTORIC MILITARY STRUCTURES**

Point Loma was designated a US military reserve in 1852, strategically positioned to protect the entrance to San Diego Bay. The War Department dedicated the site as Fort Rosecrans in 1899 and over the years constructed a series of gun batteries and other military installations. Between World Wars I and II, the US Army constructed searchlight and personnel bunkers, fire control stations, a radio station, and gun batteries on Point Loma as part of the coastal and harbor defense system. The monument's surviving military structures and features are listed on the National Register of Historic Places and identified as regionally significant historic structures with a period of significance of 1905 to 1945 (NPS 2017d, NPS 1998).

The specific structures directly along the trail network that have the potential to be impacted by this plan are discussed below.

**Battery Point Loma.** The Bayside to Coastal Trail proposed in the trail management plan would provide visitor access to the site of a World War II era artillery battery known as Battery Point Loma on the west (Pacific Ocean) side of Point Loma. The site is about 300 yards north of the 1891 lighthouse station at the southern point of the peninsula and near the present junction of Cabrillo Memorial Drive and Gatchell Road. Because of delays in the modernization of San Diego's harbor defenses, the US Army installed the battery of four mobile (tractor-drawn), 155-mm guns in 1939 (before World War II) to cover the harbor entrance primarily from the west. The guns had a maximum range of 17,400 yards. Battery Point Loma was in full operation by September 1941, and by that time, engineers constructed "Panama" mounts for the guns that had a traverse range of 360 degrees. After Pearl Harbor, Point Loma became the challenge battery for the harbor defenses and the primary anti-submarine battery. In August 1943, Battery Point Loma was deactivated, its 155-mm guns replaced by four 90-mm, anti-motor torpedo boat (AMTB) guns placed in front of the former battery. Battery Point Loma was ultimately replaced by the 6-inch caliber guns of Battery Humphreys in 1943 (NPS 1991, NPS 1998, NPS 2000; Naval Command Center 1996).

The Panama gun mounts remain in place, spaced 90 feet apart along a north-south alignment. Archeologists have uncovered the mount for Gun No. 4. While the other three have not been excavated in order to better preserve them in place, excavation would presumably yield additional artifacts from the World War II period. At the center of the Gun No. 4 emplacement is a 10-foot-diameter circular, concrete pad on which the gun rested. A circular concrete ring outside the pad with an embedded steel rail supported the rear of the gun and allowed the gun to be rotated. An open communications trench, once a tunnel, extends along the rear of the battery from Gun No. 1 to Gun No. 4. Three dug-out bunkers near Gun No. 4 consist of corrugated metal barrel vaults, the largest of which (about 40-feet-long) was overlaid with a thick layer of protective concrete. The bunkers are partially covered with earth and vegetation. The ruins of the tunnel that once connected these bunkers to the communications tunnel is evident. Three similar bunkers are presumed to be near Gun No. 1. It is likely that the larger (reserve) bunkers served the gunners as sleeping quarters and storage facilities. The other bunkers were likely munition magazines that could be readied for immediate action. The battery and bunker complex was actively used from 1941 through 1942 and abandoned in 1943 (NPS 1991, NPS 1998).

Although a condition assessment conducted in 1998 did not identify major structural concerns, the corrugated metal bunkers were found to be substantially infilled with earth and vegetation. Exterior exposed portions of the metal structures were heavily corroded. Concrete curbs at the base of the reserve bunker walls that once supported the wooden infrastructure are now collapsed and are overgrown with vegetation (NPS 2000).

**Searchlight Shelter No. 19.** This structure is situated on the southeast side of Point Loma on a bluff above the Bayside Trail, near Searchlight Shelter No. 18 and the Generator Station. Under the proposed alternative, a short spur trail would be constructed from the Bayside Trail to provide visitor access and interpretive opportunities (NPS 2000).

Searchlight Shelter No. 19 was originally constructed in 1918-1919 during World War I to shelter a 60-inch searchlight mounted on a counter-weighted elevator. It was originally named Searchlight No. 6 and later renamed No. 12 in 1936 when additional searchlights were added to the coastal defense system. The searchlight was ultimately designated No. 19 during World War II. The structure no longer contains a searchlight and is currently closed to the public. The reinforced concrete, multi-level underground structure features a square, mechanized roof that moves north on metal tracks embedded in concrete curbs. The metal hipped roof, painted green, rests on a wooden structure and slides open to completely expose the main room of the structure and the counter-weighted elevator platform below. A cog and chain roof opening mechanism is located at grade. An aboveground, single concrete post originally supported a communications control box (NPS 2000).

The bi-level interior housed the operator area and the searchlight lift. The interior has concrete slab floors and walls, and the exposed underside of the steel roof cover forms the ceiling. A single metal hatch at the south end provides access to the structure. The nearby generator station provided electrical service to the shelter. The 14-foot deep lower space containing the manually-operated, counterweighted elevator is accessed from the personnel area by a metal ladder (NPS 2000).

Inspection of the shelter in 1998 identified some deterioration including minor cracking of the exterior concrete walls; rotting wood at the roof base; and corrosion of the metal roof, hatch cover and platform mechanism. Invasive vegetation covered part of the structure and the roof tracks. Interior concrete walls exhibited minor deterioration and spalling (NPS 2000).

Among the military structures that could be affected by proposed trail improvements at the northern end of the project area (improved Event Bluff Trail) is the **Army Radio Station**, located northwest of the old lighthouse. The station, constructed and operational in 1918, was the Army's first radio

station for the Harbor Defenses of San Diego. It functioned as a radio station through 1936, when radio operations were relocated to the harbor defense command post. The building next became the meteorological station for the coast artillery, was later used to house the monument superintendent's office, and then used for storage. The building was rehabilitated in 1998-1999. An exhibit on the military history of Fort Rosecrans was installed in March 1999. This one-story building is rectangular in plan and set into the sloping hill. Although the building exhibits some minor cracks and spalling of concrete walls and foundations, no significant structural concerns were noted at the time the building was inspected in 1998 (NPS 2000).

The **Battery Commander and Base-End Station (Battery Ashburn)**, located west of the Army Radio Station, was constructed ca. 1936-1941 for use during World War II. The upper level served as a battery commander's station and the lower level was the base-end station and sleeping area. The five structures associated with the battery supplied tracking data to Ashburn's two 16-inch coastal guns. The station closed in 1948, and was later used as a whale watching station and a darkroom. The structure is currently vacant and closed to the public. The battery commander's station is a multilevel and partially underground reinforced concrete and steel structure. The roof is a continuation of the concrete camouflage walls, formed of rough concrete aggregate. No significant structural concerns were noted during inspection of this structure in 1998 (NPS 2000).

Two additional military structures are located near planned spur trail construction connecting to the Coastal Trail. **Battery Commander Station and Base-End Station (Battery Humphreys) and Base-End Stations (Batteries Woodward and Grant)** are located on the west side of Point Loma, directly below the whale watch overlook. This pair of concrete and steel structures was constructed c.1936-1941 for use during World War II. The upper level of the upper structure served as the battery commander's station for Battery Humphreys, which had two, 6-inch guns, while the lower level served as the base-end station. The upper level of the lower structure served as the base-end station for Battery Woodward, which was located at the north end of Fort Rosecrans, and the lower level served as the base-end station for Battery Grant at Fort Emory. The structures are currently vacant and are not open to the public. Despite minor concrete deterioration, no significant structural concerns were noted in 1998 (NPS 2000).



## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

### INTRODUCTION

The National Environmental Policy Act requires that any environmental document address the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided if a proposed action is implemented. In this instance, the proposed federal action is the development of new trails and other improvements to enhance the visitor experience and pedestrian circulation at Cabrillo National Monument. In this chapter, the environmental impacts of implementing the three alternatives on natural and cultural resources and visitor use and experience are analyzed. This analysis is the basis for comparing the beneficial and adverse effects of implementing the various alternatives.

This chapter begins with a description of the methods and assumptions used for each topic, followed by policies related to cumulative impacts and the projects that comprise the cumulative impact scenario. Then, for each impact topic there is a description of current conditions and expected future conditions, followed by an analysis of the impacts of each alternative. All impact topics are assessed for each alternative.

### METHODOLOGY AND ASSUMPTIONS FOR ANALYZING IMPACTS

#### Soils, Habitat, and Species of Special Concern

**General Assumptions.** The following assumptions were considered when assessing the effects of each alternative management action.

Visitation levels for all uses would increase throughout the park during the timeframe of the plan, and no new uses would occur that are not already occurring in the park. No major changes would occur in management of soils, habitat, or species of concern. Under the “no action” alternative, no new facilities would be built except those described under the “Other Projects and Actions” section.

Even with the application of mitigation measures, ground disturbance because of construction, restoration, and visitor use would potentially increase the spread of nonnative species.



The area of habitat loss would depend on the design of the facilities, type of vegetation removal, amount of cut/fill, and other factors. Trail lengths are estimated from computer analyses of routes drawn on topographic maps. The area of new disturbance to soils and habitat was calculated by multiplying the estimated length of the trail by the width of the corridor that would be affected by construction. It is assumed that trails would be built or restored to the maximum width of the designated trail class. Mileages and acreages of disturbance have been rounded to the nearest 0.01. Because of rounding, numbers presented may not add up precisely to the totals provided.

Visitors travel off designated trails to reach sites of interest or scenic viewpoints, which would result in continued soil compaction, loss of organic matter, and trampling of vegetation. Visitor-created trails and sites can appear to be authorized areas to visitors as well. Restoration of visitor-created trails would guide where and how visitors access sites. By restoring these areas, visitors are more likely to use designated trails to reach sites of interest and scenic viewpoints. Beneficial impacts also occur from strategies that aim to provide information to visitors about the benefits to resources from staying on designated trails.

### **Visitor Use and Experience**

The effects of the alternatives on visitor use and experience in the project area were analyzed based on impacts resulting from 1) new opportunities for recreation in key visitor experiences, 2) impacts to current visitor experiences resulting from changes to visitor use patterns, 3) visitor safety, 4) emerging visitor interests, use characteristics, patterns, and trends, and 5) visitor demand and expectations at key areas. The impact analysis was based on the knowledge and best professional judgement of planners, comparisons of conditions from data from park records, and studies of similar actions and impacts when applicable. Management strategies and mitigation measures associated with the indicators and thresholds from “Chapter 2: The Alternatives” are also included in the impact analysis. Not all strategies, specifically the reservation and/or permit system, and temporary and/or permanent closures, would necessarily be implemented concurrently. These strategies and actions would be implemented based on feasibility, staff resources, and park funding or as needed when thresholds are approached or as part of managing visitor capacity.

### **Historic Military Structures (Cultural Resources)**

The analysis of adverse and beneficial impacts on historic structures are described in terms of the potential of project undertakings to diminish or protect the integrity, informational potential, and character-defining qualities that contribute to their eligibility for listing in the National Register of Historic Places. The impact analysis is qualitative in nature and is based on the knowledge and best professional judgment of planners, resource specialists, data from park records, and studies of similar actions and impacts as applicable. The analysis primarily includes discussion of the extent to which the military structures would be affected by development or ground disturbance, changes in visitor use, or other actions proposed by the alternatives.

### **CUMULATIVE IMPACT SCENARIO**

The Council on Environmental Quality regulations, which implements the National Environmental Policy Act, requires assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes such other actions. Cumulative impacts can result from individually minor, but collectively important actions taking place over a period of time.

Cumulative impacts are considered for both the no-action and action alternatives. They were determined by combining the impacts of the alternatives proposed in this document with the impacts of other past, present, and reasonably foreseeable future actions. Plans that are conceptual, focusing on long-term goals and objectives rather than on specific projects that have been funded and approved, have not been included in the cumulative impact scenarios.

## **Other Projects and Actions**

### **Park Projects**

*Upgrade Visitor Center Restrooms* – Proposed upgrade of the visitor center restrooms would primarily entail interior work. The last full remodel of the restrooms occurred in the 1980s, with smaller upgrades in early 1990s. No project impacts are foreseen to vegetation and soils, although protection of the Mission 66 cultural landscape would be an important design and construction consideration. Temporary closure of the restrooms during construction may require the placement of a portable restroom trailer in the parking lot.

*Ballast View Rest Area Planning Design* – A design project is underway to improve accessibility to the Ballast View Rest Area amphitheater. As part of an accessibility transition plan, NPS staff are assessing options for addressing the steep access ramps at Ballast View that do not meet accessibility standards. The area was built as part of improvements carried out during the Mission 66 period of NPS design and construction, and preservation of the Mission 66 cultural landscape is an important design consideration. New ramps would need to be sensitively designed to avoid adversely impacting the historic character of the area. NPS staff use the area for educational programs, and visitors often find opportunities for reflection at the rest area. The project could entail some ground disturbance and loss of vegetation.

*Restore Native Plants by Administration Building* – In partnership with the California Native Plants Society, NPS staff are planting additional native plant species by the administration building. The project goal is to develop a demonstration garden for native drought-tolerant plant species, using planter boxes and structures similar to those used when the building was constructed. About 0.25 acre of total ground disturbance is associated with the project.

*Vegetation Restoration Projects* – Various projects throughout the national monument are underway that involve removing nonnative plants, mostly herbaceous species and grasses, and restoring vegetation communities to more closely reflect native habitat and species composition. The area by the military history building and the tidepools area are among the more substantial restoration areas, and approximately 2 to 3 acres are proposed for restoration.

*Accessibility Transition Plan / Sign Plan* – The park is implementing a variety of measures to improve visitor accessibility and interpretation. Measures include placing handrails where needed, ensuring replacement benches are accessible, and enabling wayside exhibits to be more accessible to those in wheelchairs. Updated wayside exhibits will be installed, and selected locations will be archeologically monitored where new postholes are required.

*Northern Bayside Trail Restoration* – The northern portion of the Bayside Trail extends into the Navy's explosive safety arcs around the weapons magazine. Because the Navy may be at continued risk of liability for visitor injuries, the northern portion of the Bayside Trail was recently shortened to end 110 feet south of the Navy / NPS boundary, and appropriate signage was placed to indicate the end of the trail. The closed section of the trail in the monument will be restored with native plants.

## **Projects and Activities Undertaken by Monument Neighbors**

**Point Loma Lighthouse Major Maintenance and Repair.** The US Coast Guard is undertaking upgrades and retrofits to the active Point Loma lighthouse at the southern tip of the point. Most of the upgrade work consists of painting, although some structural work is also scheduled. Most of the remodeling upgrades would occur in an area that is already paved. Temporary project impacts are primarily visual, and a temporary increase in large (e.g., tractor-trailer) truck traffic going to and from the lighthouse is anticipated for a few months during the project period.

**Bayside Trail Restoration.** As noted above, the northern portion of the Bayside Trail was shortened to end before the Navy / NPS boundary. The US Navy, in partnership with the National Park Service, will restore the section of the trail on Naval Base Point Loma with native vegetation, resulting in a gain of 0.039 acres of native habitat on Navy property and 0.025 acres on NPS property.

## **SOILS**

### **No-Action Alternative**

**Analysis.** Continued use of the existing trail system by park visitors would result in adverse impacts on soils. The area affected would be less than two acres, mostly along existing trail corridors. Adverse impacts caused by visitors would primarily be compaction and erosion on the park's four soil types. Compaction would continue to cause the treads of trails to become lower than surrounding soils. Trail braiding and widening would continue to occur in spot-locations as trail users avoid rutted or rocky areas on trails, compacting and eroding soils next to trails. Over time, continued use and development of visitor-created trails would result in soil erosion and compaction across an estimated 0.35 acres (based on existing user-created trails and the likelihood new trails would develop over time). However, these impacts are not likely to be significant as the soil types affected are common across the region, and ongoing impacts would not diminish soil function in the park.

**Cumulative Impacts.** Past actions in the park have resulted in small amounts of soil compaction because of effects that are limited to project areas. Most past projects affecting soils have occurred within or adjacent to existing developed areas in an approximately 15-acre footprint within the 160-acre park. The construction of new access ramps at Ballast View to meet accessibility standards would adversely impact approximately 0.05 acres of soil through soil erosion and compaction. Existing access ramps would be removed and the disturbed area restored with native vegetation, resulting in beneficial impacts to soils from decompaction and stabilization. Restoration of the northern section of the Bayside Trail will reduce soil compaction and erosion across 0.06 acres.

As previously described, the direct and indirect impacts of the no-action alternative would result in continued adverse impacts on less than 2 acres of park soils. When these effects are combined with other past, present, and reasonably foreseeable impacts, the total cumulative impact on soils would continue to be adverse. The incremental impacts of the no-action alternative would contribute slightly to, but would not substantially change, the impacts that are already occurring.

**Conclusion.** Under the no-action alternative, use of the existing trail system by park visitors would result in continuing small adverse impacts on soils across 2 acres of the park. These impacts are not likely to be significant as they are limited to trail corridors, and the soil types affected are common across the region. Ongoing impacts would not diminish overall soil function in the park. The incremental impacts of the no-action alternative would contribute slightly to, but would not substantially change, the impacts already occurring.

## Alternative 1

**Analysis.** Construction of new trails would result in permanent adverse impacts to up to 0.43 acres of undisturbed soils in the park. Initial trail construction would cause soil compaction and loss through erosion. In some areas, up to 6-8 inches of topsoil would be removed to create trail benches; this soil would be cast downhill from the trail. Recreational use of the trails would likely cause continued adverse soil impacts including loss of organic litter and soil compaction, rutting, and erosion. In addition, trail widening or braiding may result in soil compaction and erosion on either side of new trails. However, use of management strategies and mitigation measures listed in chapter 2, such as rehabilitating trails and establishing trail borders, would reduce off-trail travel and lessen adverse impacts from hiking on the trail corridors and adjacent areas.

Actions common to all action alternatives would result in both adverse and beneficial impacts to soils. Formalizing parking island crossings and spur trails would adversely impact to approximately 0.03 acres of soils through soil compaction and erosion. Restoration of visitor-created trails and the Event Bluff area would reduce soil compaction and erosion across approximately 0.51 acres, resulting in beneficial impacts. Improved signage and better delineation of trails would reduce development of visitor-created trails, and hence, soil compaction and erosion.

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on soils under alternative 1 would be the same as those described for the no-action alternative above. Alternative 1 would contribute to the adverse impacts to soils through new construction of trails and other permanent disturbances but would contribute beneficial impacts to soils over a greater area through restoration projects. When the effects of alternative 1 are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impacts on soils are expected to be primarily beneficial. Alternative 1 would contribute slightly to, but would not substantially change, the impacts that are already occurring.

**Conclusion.** New trail construction in alternative 1 would have adverse impacts on soils. Specifically, construction of new trails and formalization of spur trails would adversely impact up to 0.46 acres of soils. At the same time, approximately 0.51 acres of visitor-created trails and other areas disturbed by visitors would be restored through actions common to all, resulting in soil decompaction and reduced potential for soil loss and erosion over time, all beneficial impacts.

## Alternative 2

**Analysis.** Under this alternative, use of Cabrillo Road as a multiuse trail would have no direct impacts on soil. The actions common to all action alternatives would cause the same impacts to habitat in alternative 2 as alternative 1, including permanent adverse impacts to up to 0.03 acres of soils and permanent beneficial impacts to 0.51 acres of soils.

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on soils under alternative 2 would be the same as those described for the no-action alternative. Alternative 2 would contribute to the loss of soils through actions that involve formalization of trails but would contribute beneficial impacts across a greater area through restoration of disturbed areas. Overall, cumulative impacts on soils would be largely beneficial when analyzed beyond the period of initial trail construction. Alternative 2 would contribute slightly to, but would not substantially change, the impacts that are already occurring.

**Conclusion.** Alternative 2 would have no adverse impacts on soils. The restoration of approximately 0.51 acres of disturbed areas in the actions common to all would result in permanent beneficial impacts to soils through decompaction and stabilization and protection of soil function. Relative to the no-action alternative and alternative 1, alternative 2 would decrease the amount of soil adversely affected.

## **HABITAT**

### **No-Action Alternative**

**Analysis.** With no major changes in management of the park, continued use of the existing trail system by park visitors would result in small adverse impacts on habitat. The area affected would be less than 2 acres, primarily along existing trail corridors. Trail braiding and widening would continue to occur in spot-locations as trail users avoid rutted or rocky areas on trails, trampling adjacent vegetation. Visitor-created trails would likely expand beyond the 1.82 miles that have been mapped in the park, adversely impacting approximately 0.33 acres of vegetation, which represents a 10% expansion in visitor-created trails over time. Trampling of vegetation would continue to cause reductions in vegetation cover, height, and biomass, changes in species composition, and introduction and spread of nonnative plants (Marion et al. 2016). Although park managers would continue to work to control the spread of nonnative species, vehicles and people would likely continue to spread the seeds of some nonnative plants in the park.

Under the no-action alternative, there would continue to be some beneficial effects to vegetation from park managers' efforts to address visitor-caused impacts, such as temporary closures of sites and actions to restore native vegetation in disturbed areas and remove nonnative plants. These beneficial actions would be limited to a few high priority sites, however.

**Cumulative Impacts.** Past actions in the project area have resulted in the introduction of nonnative and invasive plant species. Most past projects affecting vegetation have occurred within or adjacent to existing developed areas in an approximately 15-acre footprint within the park. Past restoration efforts have mitigated the adverse effects of previous ground disturbing activities through revegetation with native plants. The construction of new access ramps at Ballast View to meet accessibility standards would result in the loss of approximately 0.05 acres of habitat; however, existing access ramps would also be removed and the disturbed area restored with native vegetation. Vegetation restoration projects across the park would replace nonnative vegetation with native plants in approximately 3-5 acres, increasing the overall health of native plant communities. Restoration of the northern section of the Bayside Trail with native plants will result in permanent beneficial impacts to 0.06 acres of habitat.

As described previously, the impacts of the no-action alternative would result in adverse impacts to less than two acres of habitat as visitor-created trails continue to grow and spread. When the effects of the no-action alternative are combined with other past, present, and reasonably foreseeable impacts, the total cumulative impact on habitat would continue to be beneficial. The incremental impacts of the no-action alternative would slightly diminish, but would not substantially change the beneficial impacts that are already occurring.

**Conclusion.** Under the no-action alternative, continued visitor use of the existing trail system and the creation / widening of user-created trails would result in continued adverse impacts to native vegetation, decreasing the overall health of park habitat. However, these adverse impacts would not affect plant species at the population level, because the species affected are present throughout the



park and park managers would continue removing nonnative plants in high priority areas. The area affected would total less than 2 acres out of 144 acres of habitat within the park.

## **Alternative 1**

**Analysis.** Construction of new trails would result in permanent adverse impacts to up to 0.43 acres of habitat through removal of vegetation. The majority of the vegetation that would be removed consists of herbaceous plants and small shrubs. The corridor for the trail construction would be limited to the maximum trail width according to the assigned trail class, and any areas outside of those limits where vegetation was removed would be revegetated primarily with plant materials removed during construction. During and after construction, management strategies and mitigation measures listed in chapter 2 would be implemented to help prevent the recurrence of invasive plants along the new corridors and minimize potential spread into adjacent habitat.

Actions common to all action alternatives would have both adverse and beneficial impacts on habitat. Formalizing parking island crossings and spur trails would adversely impact up to 0.03 acres of habitat through vegetation removal. In other areas of the park, restoration of visitor-created trails and the Event Bluff area would result in permanent beneficial impacts to habitat through the restoration of 0.51 acres. Improved signage and better delineation of trails would also reduce future development of visitor-created trails, and hence, resultant adverse impacts to vegetation. These actions combined with the implementation of other mitigation measures would minimize impacts from the project such that, overall, there would be no meaningful change to the species composition and functionality of vegetative communities within the project area.

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on habitat under alternative 1 would be the same as those described for the no-action alternative above. Alternative 1 would result in the loss of up to 0.46 acres of habitat but would also result in the restoration of 0.51 acres. Overall, cumulative impacts on habitat would be largely beneficial when analyzed beyond the period of initial trail construction. Alternative 1 would contribute slightly to, but would not substantially change, the impacts that are already occurring.

**Conclusion.** Under alternative 1, construction of new trails and formalization of spurs would result in the loss of up to 0.46 acres of habitat. However, approximately 0.51 acres of habitat would be restored under the actions common to all, resulting in a net gain in habitat within the park. This combined with the implementation of mitigation measures would minimize adverse impacts from the project such that, overall, there would be no meaningful change to the species composition and functionality of vegetative communities within the project area. The net gain of habitat within PLECA under alternative 1 would be approximately 0.05 acres.

## **Alternative 2**

**Analysis.** Under this alternative, use of Cabrillo Road as a multiuse trail would have no direct impacts on habitat. The actions common to all action alternatives would cause the same impacts to habitat in alternative 2 as alternative 1.

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on habitat under alternative 2 would be the same as those described for the no-action alternative above. Alternative 2 would result in the loss of up to 0.03 acres of habitat but would also result in the restoration of 0.51 acres. Overall, cumulative impacts on habitat would be largely beneficial when analyzed beyond the period of initial trail construction. Alternative 2

would contribute slightly to, but would not substantially change, the impacts that are already occurring.

**Conclusion.** Under alternative 2, formalization of spur trails and parking island crossings would cause the loss of approximately 0.03 acres of habitat. However, approximately 0.51 acres of habitat would also be restored under the actions common to all, resulting in a net gain in habitat within the park. This combined with the implementation of mitigation measures would minimize adverse impacts from the project such that, overall, there would be no meaningful change to the species composition and functionality of vegetative communities within the project area. The net gain of habitat within the PLECA under alternative 2 would be approximately 0.48 acres, all within the monument.

## **SPECIES OF SPECIAL CONCERN**

Since this section includes federally listed species, the following environmental consequences analysis will address NEPA standards (significant “impacts”) as well as Endangered Species Act Section 7 Biological Assessment standards (i.e. “effects”). For the purposes of this section, the term impacts refers to both NEPA significant impacts and ESA effects. In this document, the anticipated Endangered Species Act determination categories are based on the US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service guidance for implementing section 7 consultation under the Endangered Species Act (USFWS 1998) and are as follows.

- *No effect:* The appropriate conclusion when the action agency determines its proposed action would not affect a listed species or designated critical habitat.
- *May affect, not likely to adversely affect:* The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous favorable effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.
- *May affect, likely to adversely affect:* The appropriate finding in a biological assessment (or conclusion during consultation) if an adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (see definition of may affect, not likely to adversely affect). In the event the overall effect of the proposed action is beneficial to the listed species but is also likely to cause some adverse effects, then the proposed action is likely to adversely affect the listed species. If incidental take is anticipated to occur as a result of the proposed action, a likely to adversely affect determination should be made.

## **No-Action Alternative**

### **Analysis.**

*Federally Listed Species* — Under the no-action alternative, there would be no new construction that would affect the coastal California gnatcatcher. Use and expansion of visitor-created trails would continue to have negligible adverse impacts on gnatcatchers as this occurs mostly outside of gnatcatcher habitat within the park. Research previously cited has shown that proximity to actively

maintained and used trails had no effect on nest success. *Therefore, the no-action alternative may affect but is not likely to adversely affect the coastal California gnatcatcher.* Potential impacts to Orcutt's spineflower are analyzed under Rare Plant Species.

*Rare Plant Species* — Under the no-action alternative, there would be no new construction activities that would adversely affect rare plant species. Continued use and expansion of visitor-created trails, as well as trail widening or braiding, may adversely impact individual plants through soil erosion but would not affect rare plants at a population level. *Therefore, the no-action alternative may affect but is not likely to adversely affect the Orcutt's spineflower.*

**Cumulative Impacts.** Replacement of nonnative plants with native plants across 3-5 acres and restoration of the northern section of the Bayside Trail would result in beneficial impacts to coastal California gnatcatchers through improved habitat for foraging and nesting. No rare plants would be adversely affected by the construction of new access ramps in the Ballast View Rest Area or by any proposed restoration activities. Removal of nonnative plants would cause beneficial impacts to rare plant species by limiting encroachment of nonnative plants across restoration areas. As previously described, the no-action alternative would result in negligible adverse impacts on gnatcatchers and no adverse impacts to rare plant species at the population level. When these effects are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on species of special concern would continue to be beneficial.

**Conclusion.** Continued use of the existing trail would have no measurable impacts on species of special concern. Visitor trampling and erosion along trail corridors would continue to potentially cause adverse impacts to individual rare plants and degrade a very small amount of habitat. However, these impacts would not affect any species of special concern at a population level, and restoration projects would improve habitat for species of special concern through removal of nonnative plants.

## Alternative 1

### Analysis.

*Federally Listed Species* — Construction of the Bunker Spur trail would result in less than 0.02 acres of permanent habitat loss for the coastal California gnatcatcher. Meanwhile, the restoration of visitor-created trails would result in permanent beneficial impacts to gnatcatchers through improvement of habitat. Overall, the relative loss of habitat would be small because less than 0.02 acres would be removed out of 45 acres of mapped habitat, and restoration projects would improve habitat through restoration of native plants. Additionally, the implementation of management strategies described in chapter 2 would minimize disturbances to breeding or nesting birds from trail construction activities. *Therefore, alternative 1 may affect but is not likely to adversely affect the coastal California gnatcatcher.* Potential impacts to Orcutt's spineflower are analyzed under Rare Plant Species.

*Rare Plant Species* — No rare plants, including Orcutt's spineflower, aphanisma, or other plants listed federally or by the California Native Plant Society as rare would be adversely affected by any proposed construction or restoration activities. All proposed trail corridors would be surveyed by NPS botanists prior to ground disturbance. If any rare plants are encountered on a proposed trail alignment, the plants would be marked so that individual plants can be avoided by routing the trail away from the plants. Restoration of visitor-created trails and other areas would result in permanent habitat gain of 0.51 acres. Additionally, implementation of management strategies described in chapter 2 would likely reduce inadvertent trampling of rare plant species by discouraging off-trail travel. These actions would minimize impacts from the project such that, overall, no rare plant

species would be affected. *Therefore, alternative 1 may affect but is not likely to adversely affect the Orcutt's spineflower.*

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on habitat under alternative 1 would be the same as those described for the no-action alternative above. Alternative 1 would contribute to the direct loss of habitat for species of concern through construction of new trails and disturbances of individual gnatcatchers. However, alternative 1 would also contribute to greater habitat gain through restoration of disturbed areas. When combined with other past, present, and reasonably foreseeable future actions, cumulative impacts from alternative 1 are expected to be primarily beneficial, with alternative 1 contributing only a small increment to the cumulative impacts.

**Conclusion.** Construction of the Bunker Spur Trail would result in less than 0.02 acres of permanent habitat loss for the coastal California gnatcatcher; however, restoration of visitor-created trails in the eastern half of the park would result in habitat improvement for this species, a beneficial impact. This action combined with the implementation of mitigation measures would minimize adverse impacts from the project such that impacts would not affect species of concern at the population level.

## Alternative 2

### Analysis.

*Federally Listed Species* — Use of Cabrillo Road as a multiuse trail would have no direct impacts on the coastal California gnatcatcher. Impacts from actions common to all action alternatives are the same as in alternative 1. The loss of 0.03 to 0.05 acres of sub-optimal habitat and minimal disturbances from human activity would have insignificant impacts on the gnatcatcher at an individual and population level. *Therefore, alternative 2 may affect but is not likely to adversely affect the coastal California gnatcatcher.*

*Rare Plant Species* — Use of Cabrillo Road as a multiuse trail would have no direct impacts on rare plant species, including Orcutt's spineflower, aphanisma, or other plants listed federally or by the California Native Plant Society as rare. Impacts from actions common to all action alternatives are the same as in alternative 1. The potential for disturbance and trampling of individual plants would be negligible because of the implementation of management strategies and mitigation measures described in chapter 2. *Therefore, alternative 2 may affect but is not likely to adversely affect the Orcutt's spineflower.*

**Cumulative Impacts.** Past, present, and reasonably foreseeable actions with the potential to contribute to cumulative effects on habitat under alternative 2 would be the same as those described for the no-action alternative above. Alternative 2 would contribute to minimal direct loss of habitat for species of concern through formalization of spur trails and parking island crossings and may result in disturbances of individual gnatcatchers. However, alternative 2 would also contribute to habitat gain through restoration of native vegetation. When combined with other past, present, and reasonably foreseeable future actions, cumulative impacts from alternative 2 are expected to be primarily beneficial, with alternative 2 contributing only a small increment to the overall impacts.

**Conclusion.** Use of Cabrillo Road as a multiuse trail would have no direct impacts on species of special concern. Approximately 0.51 acres of habitat would also be restored under this alternative, resulting in a net gain in habitat within the park. This combined with the implementation of mitigation measures would minimize adverse impacts from the project such that impacts would not affect species of special concern at the population level.

## VISITOR ACCESS AND CIRCULATION

### No-Action Alternative

#### Visitor Circulation and Access.

*Trail System* — Increasing development and population growth in San Diego will lead to increasing visitation, and in turn, increasing competition for key park experiences. This would adversely impact visitor access and circulation. Current trail system links do not exist and therefore leave some of the park's key fundamental resources and values disconnected from pedestrian access to. Specifically, no trails connect the visitor center / main parking area with the coastal area. The tidepools experience would continue to lack pedestrian connectivity to other key experiences in the park resulting in adverse impacts to visitor circulation and access. Currently, visitor safety is adversely impacted as many visitors to the tidepools walk on Cabrillo Road to return to vehicles parked in parking lots 2 and 3.

*Tidepools Experience* — Visitors would continue to experience crowded conditions in the tidepools during peak use times. This poses risk to visitors' safety, as people crowd into the limited space of the rocky intertidal area. In addition, current management actions include intermittent road closures to alleviate congestion at the tidepools. This action adversely impacts the availability of the experience, resulting in temporal and/or spatial displacement of visitors during peak use (i.e., visitors' seek other experiences or long wait times). Further, congestion in the tidepools parking area would continue to limit parking availability. In contrast, the tidepools experience would remain as a first-come, first-served opportunity providing beneficial impacts to the availability of this as a visitor experience as open to all.

**Cumulative Impacts.** The temporary impacts of the planned park projects described above in "Other Park Projects and Actions" (e.g., upgrade the visitor center restrooms, improve accessibility, and restore vegetation) in conjunction with the Point Loma Lighthouse Major Maintenance & Repair by the US Coast Guard will add more construction equipment and tractor-trailer traffic to upper parking lot, visitor center grounds, lighthouse area, and Cabrillo Road during construction periods. These actions would enhance adverse impacts to visitor circulation, access and safety during intermittent area and road closures. Temporary closure of the restrooms during construction may require the placement of a portable restroom trailer in the parking lot. These effects, when considered with other past, present, and reasonably foreseeable future projects, would present slight adverse cumulative impacts to visitor experience and safety daily during construction or for a few hours at a time on Cabrillo Road.

**Conclusion.** Key park experiences would remain disconnected under the continuation of current management, forcing visitors to use vehicles to move short distances in the monument. Thus, continuation of the existing trail system would continue to adversely impact visitor circulation and access. All visitors would be affected in all areas of the park.

### Alternative 1

#### Visitor Circulation and Access.

*Trail System* — Improvements to the trail system would enhance visitor access and circulation throughout the park. The new Bayside to Coastal Trail would enhance visitor circulation between the visitor center and coastal area. Further, new trails connecting the tidepools to other key park experiences would result in less automobile dependence, a beneficial impact to visitor access and circulation. New trails would also provide a more natural immersive experience for visitors, enhance



interpretation, and provide additional opportunities to connect with the park's fundamental resources and values, including scenic views and geologic resources.

Visitors are less likely to experience congestion under alternative 1. Pedestrian access from new trails will provide hiking/walking opportunities from the park's largest parking lot to the tidepools. This action would temporally (over time) redistribute visitor use during peak times when the coastal area parking lots fill. Temporal redistribution of visitor use would alter crowded conditions by delaying the arrival time of visitors' hiking/walking to the tidepools, a beneficial impact to the diversity of visitor opportunities and the quality of visitor experiences. The roadside coastal trail would separate vehicles and pedestrians, a beneficial impact to visitor safety. The roadside coastal trail also provides benefits to the visitor experience by offering a walking/hiking loop in the coastal area near the tidepools.

Because the coastal area could be accessed from the visitor center area, parking congestion would also decrease under alternative 1, enhancing the overall visitor experience. The closure of Cabrillo Road during special events and holidays (and use of the road as a multiuse trail) would alleviate congestion at the tidepools on the highest visitation days.

*Increased Visitation Levels and Crowding* — There are a range of actions in the alternatives and adaptive management strategies associated with implementing the identified visitor capacity to address the issue of increased visitation and crowding as well as congestion that occurs around the tidepools. Strategies include the temporary or permanent closure of Cabrillo Road and/or trail access, temporary or permanent closure of the tidepools, and a permit or reservation system for tidepools access. Beneficial impacts occur from strategies that aim to decrease crowding and congestion at the tidepools by providing access to fewer visitors yet resulting in higher quality visitor experiences and opportunities. In contrast, adverse impacts are likely to occur to the visitor experience from strategies associated with temporary or permanent closure of Cabrillo Road, trail access, and/or the tidepools.

While temporary and/or long-term closure of Cabrillo Road, trail access, and/or the tidepools results in decreased crowding and congestion, some visitors are also likely to experience adverse impacts. However, these impacts would be small because visitors could return another time in the same day or wait for the experience to become available (e.g., temporary temporal displacement). However, permanent closures are likely to result in decreased visitation to the park as primary experiences are closed to visitor access. In addition, the adverse impact would affect the diverse range of opportunities available to park visitors at Cabrillo National Monument. Specific to road and trail closures, the alteration of traffic control and typical access to the tidepools and coastal area is likely to adversely impact visitors because access will have changed under temporary closures or be denied completely under permanent closures. Results in long traffic lines and wait times as congestion is alleviated in the tidepools area. These impacts are also common to alternative 2.

One of the potential strategies associated with implementing visitor capacity is the development of a permit or reservation system. See the visitor capacity section for more information on implementation. Developing a permit or reservation systems for tidepools access would result in beneficial impacts as visitors could more effectively plan their trip without having to worry about available parking or tidepools access, thus they would have predictability in access. These permit or reservation holders would also benefit by having access to the tidepools that is actively managed to prevent crowded conditions. For others, such systems would result in adverse impacts as they would not be able to access a destination if they did not plan their trip far enough in advance, prefer spontaneous travel, or had some other barrier to obtaining a reservation or permit. These visitors would have to find another destination. Further, a managed access system would drastically change

the way visitors accessed the tidepools experience. Managed access systems require advance planning, and knowledge of the system that can present barriers for some visitors and result in temporary adverse impacts to the visitor experience as visitors adjust to the new access system. These impacts are also common to alternative 2.

*Tidepools Experience* — Upon implementing the visitor capacity strategies in combination with the actions in alternative 1, the visitor experience in the tidepools would be less crowded during peak use times. The addition of the Bayside to Coastal Trail would help alleviate crowding at the pools by altering the flow of visitors into the coastal area. For example, when the tidepools parking lots are closed, the alternative for tidepools access is to park at the visitor center and walk. The downhill walk is estimated to take 20 minutes, the uphill walk 30 minutes. This would slow the flow of visitors to the tidepools while still allowing an option for access, a beneficial impact to the visitor experience at the tidepools.

A hiking trail to the tidepools and fewer closures of Cabrillo Road would also alleviate congestion in parking lots 1-3 in the coastal area. The closure of Cabrillo Road during special events or holiday and use of the road as a multiuse trail would alleviate congestion at the tidepools, further enhancing the visitor experience.

The availability of the tidepools experience would remain as a first-come, first-served opportunity. Visitors parking in the lower parking lots would also have the opportunity to walk/hike the Bayside Trail and see the visitor center area and lighthouse without moving their vehicle. This would result in beneficial impacts to visitor access.

**Cumulative Impacts.** The Point Loma Lighthouse Major Maintenance & Repair by the US Coast Guard focuses mostly in remodeling. The temporary impacts of this project will add more tractor-trailer traffic to the lighthouse during construction, an adverse impact on the visitor experience expected to last no more than six months. More tractor-trailer traffic on the road to the lighthouse would further create adverse impacts to visitors' safety, when intermittent road closures are initiated. These effects, when considered with other past, present, and reasonably foreseeable future projects, would be daily and/or hourly only during construction and lead to slight adverse impacts to visitor experience and safety.

**Conclusion.** While the continuation of current management is likely to result in adverse impacts to visitor circulation and access to key park experiences, actions in alternative 1 would largely result in beneficial impacts to the visitor experience. New trail construction, along with improvements to existing trails (described in actions common to all), would improve circulation and visitor safety while enhancing access to key points of interest. Alternative 1 would also alter visitor access to the tidepools during peak periods and thus would enhance the overall quality of the visitor experience by reducing crowding and congestion at the tidepools. Overall, new trail construction and improvements to existing trails, would permanently improve visitor circulation and access throughout the park and better separate visitors from automobile traffic.

## **Alternative 2**

### **Visitor Access and Circulation.**

*Trail System* — Under alternative 2, no new trails would be built, and Cabrillo Road would be converted into a multiuse trail during peak use periods. This action would improve visitor circulation and provide additional modality for visitors seeking to access the tidepools. Benefits to the visitor experience would exceed those of the no-action alternative, as Cabrillo Road would serve as a multiuse trail providing additional opportunities for biking in the park that presently does not exist.

Conversion of the road into a multiuse trail would give visitors new opportunities to connect with the park's fundamental resources and values, including scenic views and geologic resources. This would result in beneficial impacts to visitor access and circulation. Further, the road / multiuse trail would be wide, paved, and relatively low in grade. Thus, it would be accessible to the greatest range of visitors. However, conversion of the road into a multiuse trail during peak periods would have a slight adverse impact on visitor safety, as visitors and vehicles would share space. Based on traffic frequency, a visitor could expect four to six passing vehicles during a round-trip hike/walk to the tidepools on Cabrillo Road. Currently, there are no documented accidents between pedestrians and vehicles in the monument. However, increased use of the road by pedestrians would raise the likelihood of an accident, and the consequences of a pedestrian-auto collision could be severe. Thus, alternative 2 poses higher risks to visitor safety compared to the no-action alternative and alternative 1. There is also potential for conflict between cyclists and pedestrians in alternative 2. (See also alternative 1 impacts for those common to alternatives 1 and 2.)

*Tidepools Experience* — Upon implementing the visitor capacity strategies, the visitor experience in the tidepools would be less crowded during peak use times, a beneficial impact for those visitors accessing the tidepools. The addition of the Cabrillo Road multiuse trail to the tidepools would also help to alleviate crowding at the pools by altering the flow of visitors into the coastal area (the round-trip hiking time from the upper parking area to the tidepools along Cabrillo Road would be approximately 40 minutes, and some visitors would likely opt out of the hike). Decreases in crowded conditions at the tidepools would beneficially impact the overall visitor experience.

The availability of the tidepools experience would remain as a first-come, first-served opportunity, a beneficial impact to the visitor. Parking lots 1-3 in the coastal area would be available for visitors on a first-come, first-served basis, or for those visitors with special needs. Once parking lots 1-3 filled, visitors would have to park in the main parking area near the visitor center and walk/hike/bike on Cabrillo Road to access the tidepools and coastal area. Thus, the experience would still be available, a beneficial impact for visitor access and circulation.

**Cumulative Impacts.** The Point Loma Lighthouse Major Maintenance & Repair by the US Coast Guard focuses mostly on remodeling. This project would add more tractor-trailer traffic on Cabrillo Road during construction, an adverse impact visitor safety expected to last six months. The impacts would occur when the intermittent road closures are initiated, and since the road would be the sole means of tidepools access during these periods, the adverse effects would be greater than alternative 1.

**Conclusion.** Conversion of Cabrillo Road into a multiuse trail would provide several beneficial impacts during peak visitation periods, including increased visitor opportunities and experiences and enhanced visitor access and circulation, compared with the no-action alternative. However, there would also be adverse impacts to visitor safety in alternative 2. The conversion of Cabrillo Road to a multiuse trail would adversely impact visitors using the road, as they would have to share the route with semi-trucks and auto-traffic going to neighboring facilities. Thus, alternative 2 would negatively impact visitor safety for longer periods of time than the no-action alternative and alternative 1.

## **HISTORIC MILITARY STRUCTURES**

### **No-Action Alternative**

**Analysis.** Under the no-action alternative, continuation of current park management activities is not anticipated to result in direct impacts on the national monument's military structures. NPS staff

would continue to monitor and preserve the condition of the structures in accordance with the Secretary of the Interior's Standards. Preservation measures carried out to preserve the historic integrity of the military structures and the qualities that contribute to their listing on the National Register of Historic Places would have beneficial impacts on the structures. Although the structures are generally durable (built primarily of concrete and steel) they have sustained some damage from corrosion, concrete spalling and cracking, erosion, and deterioration of wooden features. There is also a potential for limited adverse visitor-related impacts from vandalism and graffiti although such impacts would be largely reversible. Any adverse impacts would be expected to be minimal and would not diminish the overall integrity or national register eligibility of the military structures.

**Cumulative Impacts.** Among other proposed projects at the national monument are accessibility improvements at the Ballast View rest area and projects to restore native vegetation, including the restoration of vegetation near the military history building. These projects could entail some limited ground disturbance that could potentially affect archeological resources, historic structures, and cultural landscape features. Various ongoing and routine NPS projects (e.g., trail and road maintenance) could also involve ground disturbance with the potential to impact cultural resources that may exist in project areas. However, all undertakings would continue to be assessed by NPS cultural resources staff to ensure that significant resources, if identified in project areas, are avoided by project redesign and/or are clearly identified for avoidance. The actions presented above are likely to have only limited adverse impacts on cultural resources including the monument's military structures.

The impacts associated with implementation of the no-action alternative would have beneficial and only limited adverse impacts on the monument's military structures and other cultural resources. Other past, present, and reasonably foreseeable actions would result primarily in limited adverse impacts. Consequently, the adverse impacts of the other actions described above, in combination with the impacts of the no-action alternative, would cumulatively result in limited adverse impacts on military structures and other cultural resources. The impacts associated with the no-action alternative would represent only a small component of the adverse cumulative impact.

**Conclusion.** No direct impacts are anticipated on historic military structures resulting from proposed development or the continuation of current park management activities. The National Park Service would continue to monitor and protect the monument's military structures and other cultural resources under existing laws and policies. Beneficial impacts on the structures and other cultural resources would occur from ongoing resource protection measures and monitoring conducted in accordance with NPS policies. Limited adverse impacts could result from visitor use, erosion and natural deterioration, and other factors that could diminish resource integrity. Limited adverse cumulative impacts on military structures would also occur from implementation of the no-action alternative in conjunction with other past, present, or reasonably foreseeable actions.

## **Alternative 1**

**Analysis.** As proposed in alternative 1, the development of new trails (the Bayside to Coastal Trail and the Bunker Spur [improved Bayside Trail] would direct visitors to or near the historic Panama Gun mounts of Battery Point Loma on the west side of the point and to a searchlight shelter on the east side of the point. Other proposed spur trails or improvements would be developed near the Army Radio Station, Battery Commander and Base End Station (Battery Ashburn) and the Battery Command Stations for Batteries Humphreys, Woodward, and Grant. No direct impacts on these military structures would occur from proposed trail development, although limited visitor use impacts (e.g., graffiti, vandalism, social trail erosion around the structures) could potentially result associated with increased accessibility to the structures. Any adverse impacts would likely be very

limited and unlikely to compromise the historic integrity of the structures. Improvements to existing trails including minor realignments are also not anticipated to adversely impact the military structures or other cultural resources. NPS staff would review and survey all final trail alignments to ensure adverse impacts to sensitive cultural resources are avoided or minimized.

Beneficial impacts would also result from enhanced interpretation of the sites and opportunities to inform visitors of the historic importance of the structures and the need to protect them as part of the Point Loma coastal defense network. NPS staff would undertake appropriate structural and site preservation and rehabilitation actions to improve visitor safety and enhance the preservation and interpretation of the structures. These measures would result in beneficial impacts.

**Cumulative Impacts.** Among other proposed projects at the national monument are accessibility improvements at the Ballast View rest area and projects to restore native vegetation, including the restoration of vegetation near the military history building. These projects could entail some limited ground disturbance that could potentially affect archeological resources, historic structures and cultural landscape features. Various ongoing and routine NPS projects (e.g., trail and road maintenance) could also involve ground disturbance with the potential to impact cultural resources that may exist in project areas. However, all undertakings would continue to be assessed by NPS cultural resources staff to ensure that significant resources, if identified in project areas, are avoided by project redesign and/or are clearly identified for avoidance. The actions presented above are likely to have only limited adverse impacts on cultural resources including the monument's military structures.

The impacts associated with implementation of alternative 1 would have beneficial and only limited adverse impacts on the monument's military structures and other cultural resources. Other past, present, and reasonably foreseeable actions would result primarily in long-term limited adverse impacts. Consequently, the adverse impacts of the other actions described above, in combination with the impacts of alternative 1, would cumulatively result in limited adverse impacts on military structures and other cultural resources. The impacts associated with alternative 1 would represent only a small component of the adverse cumulative impact.

**Conclusion.** No direct impacts are anticipated on historic military structures resulting from proposed trail development. The National Park Service would continue to monitor and protect the monument's military structures and other cultural resources under existing laws and policies. Beneficial impacts on the structures and other cultural resources would occur from ongoing resource protection measures. Limited adverse impacts could result from visitor use, erosion and natural deterioration, and other factors that could diminish resource integrity. Limited adverse cumulative impacts on military structures would also occur from implementation of alternative 1 in conjunction with other past, present, or reasonably foreseeable actions.

## **Alternative 2**

**Analysis.** No direct impacts are anticipated on historic military structures as a result of temporary and/or seasonal closure of Cabrillo Road to visitor traffic. NPS staff would continue to monitor and preserve the condition of the structures in accordance with the Secretary of the Interior's Standards. Preservation measures carried out to preserve the historic integrity of the military structures and the qualities that contribute to their listing on the National Register of Historic Places would have beneficial impacts on the structures. Although the structures are generally durable (built primarily of concrete and steel) they have sustained some damage from corrosion, concrete spalling and cracking, erosion, and deterioration of wooden features. There is also a potential for limited adverse visitor-related impacts from vandalism and graffiti, although such impacts would be largely

reversible. Improvements to existing trails including minor realignments are also not anticipated to adversely impact the military structures or other cultural resources. NPS staff would review and survey all final trail alignments to ensure adverse impacts to sensitive cultural resources are avoided or minimized. Any adverse impacts would be expected to be minimal and would not diminish the overall integrity or national register eligibility of the military structures.

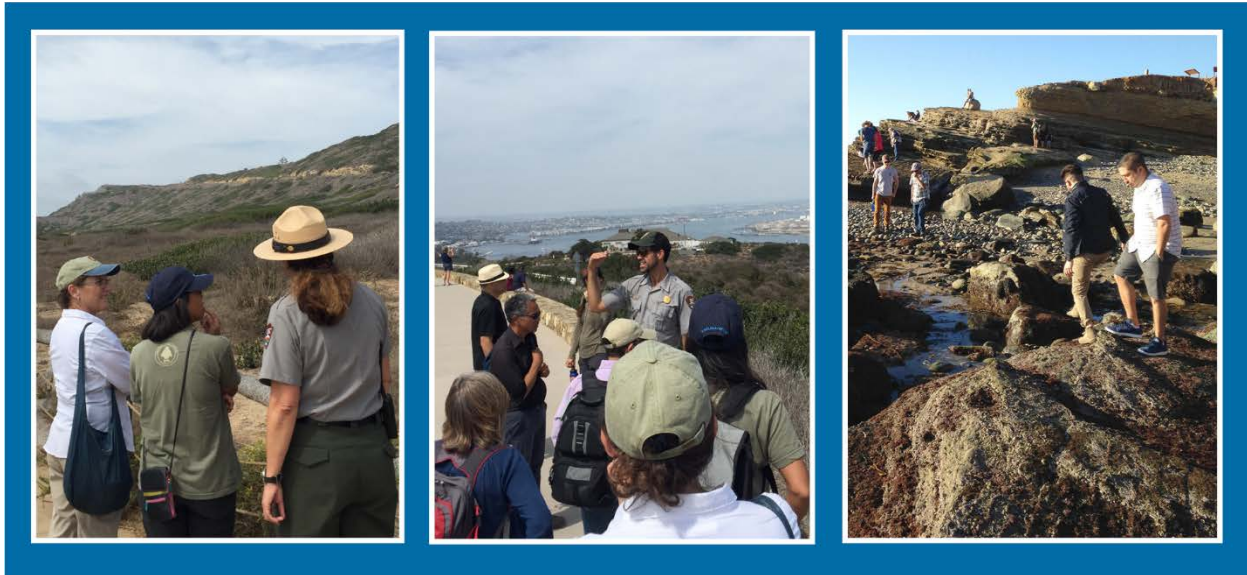
**Cumulative Impacts.** Among other proposed projects at the national monument are accessibility improvements at the Ballast View rest area and projects to restore native vegetation, including the restoration of vegetation near the military history building. These projects could entail some limited ground disturbance that could potentially affect archeological resources, historic structures, and cultural landscape features. Various ongoing and routine NPS projects (e.g., trail and road maintenance) could also involve ground disturbance with the potential to impact cultural resources that may exist in project areas. However, all undertakings would continue to be assessed by NPS cultural resources staff to ensure that significant resources, if identified in project areas, are avoided by project redesign and/or are clearly identified for avoidance. The actions presented above are likely to have only limited adverse impacts on cultural resources including the monument's military structures.

The impacts associated with implementation of alternative 2 would have beneficial and only limited adverse impacts on the monument's military structures and other cultural resources. Other past, present, and reasonably foreseeable actions would result primarily in limited adverse impacts. Consequently, the adverse impacts of the other actions described above, in combination with the impacts of alternative 2, would cumulatively result in limited adverse impacts on military structures and other cultural resources. The impacts associated with alternative 2 would represent only a small component of the adverse cumulative impact.

**Conclusion.** No direct impacts are anticipated on historic military structures resulting from temporary and/or seasonal closure of Cabrillo Road to visitor traffic. The National Park Service would continue to monitor and protect the monument's military structures and other cultural resources under existing laws and policies. Beneficial impacts on the structures and other cultural resources would occur from ongoing resource protection measures. Limited adverse impacts could result from visitor use, erosion and natural deterioration, and other factors that could diminish resource integrity. Limited adverse cumulative impacts on military structures would also occur from implementation of alternative 2 in conjunction with other past, present, or reasonably foreseeable actions.

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## CHAPTER FIVE: CONSULTATION AND COORDINATION

### PUBLIC INVOLVEMENT

From March 2, 2017, to April 16, 2017, staff at Cabrillo National Monument began civic engagement to inform the trail management plan and environmental assessment. Two public meetings were held on Tuesday, March 21, 2017. One was held at the Cabrillo National Monument Auditorium and the other at the Cabrillo National Monument Visitor Center. In total, 33 people attended the two meetings.

During the civic engagement, members of the public entered comments into the NPS Planning, Environment, and Public Comment (PEPC) website, provided comments directly at a public meeting, or mailed or e-mailed comments directly to the park. Overall, the park received 62 items of correspondence, producing a total of 107 comments.

To inform the public of the planning process, the planning team distributed a newsletter (Spring 2017) containing the purpose and need for the plan, key planning objectives, potential management options, how to comment, where public open houses would be held, and a general project schedule. As identified in the newsletter, the purpose of the project is to create a trail management plan to guide trail management and development. The plan is needed to 1) enhance visitor experience and visitor safety, 2) potentially improve connectivity between features of interest inside the monument (for pedestrians), and 3) protect park resources through the decision-making process and subsequent actions.

To reach a broad audience, the newsletter and information about civic engagement were shared with the public in a variety of ways. Electronic versions of the newsletter were sent out to contacts on the park's mailing list. Press releases, website posts, and social media notifications were also used to inform the public and stakeholders about the planning process and the opportunity to comment.

The planning team collected public comments to understand the public's perspectives on potential trail management options for the park. In implementing the NEPA process, thoughts and ideas from individuals, organizations, and agencies were analyzed and considered equally. For this reason, the

unique content of comments, rather than the number of times a comment was received, was used to guide the development of a range of reasonable management alternatives for the plan.

A summary of the comments received during the civic engagement period was compiled in the Civic Engagement *Report* (May 8, 2017). Many supported an expanded trail system, including a trail to the Tidepools area with possible connection to the Bayside Trail, which could be extended to complete a loop trail. A desire for better wayfinding and interpretive trail signs were noted by several commenters, as well as other facility improvements (e.g., steps, railings and separate bike paths). Several expressed a desire for the development of loop trails to enhance their recreational experience. Trails could variously connect to existing parking areas, provide access to points of interest, be linked in a more connected network, and be developed away from the park's paved access areas. Others expressed concern for possible adverse resource impacts from trail expansion, such as damage to native vegetation and ecosystems. Some commenters expressed a desire for minimal new development, noting they enjoy opportunities for interpretation, scenic views, and contemplation along the existing trails.

## **CONSULTATION WITH AGENCIES AND TRIBES**

### **List of Agencies Consulted**

California Coastal Commission

California Department of Fish and Wildlife

City of San Diego

United States Navy

California State Historic Preservation Office (Office of Historic Preservation)

United States Coast Guard (Sector San Diego)

United States Fish and Wildlife Service

United States Department of Veterans Affairs

## **AGENCY CONSULTATION**

### **State Historic Preservation Office**

In accordance with Section 106 of the National Historic Preservation Act, Cabrillo National Monument notified the California State Historic Preservation Office (SHPO) of the proposed trails management plan in a letter dated March 7, 2017. In response to the park (letter dated May 15, 2017) the state historic preservation office concurred that the proposed project constitutes an undertaking with the potential to affect historic properties. The state historic preservation office also agreed to further consult with the National Park Service as the undertaking became better defined and the effects on potential historic properties were identified. The state historic preservation office will be provided a copy of the trail plan / environmental assessment for their review. As presented in the plan, some proposed trails have the potential to affect identified historic military structures primarily by improving visitor access to the structures for interpretive purposes. NPS staff will take appropriate measures to preserve and protect the structures from potential visitor use damage or other factors (e.g., weathering and erosion). Because all preservation measures and trail development will be carried out in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, the National Park Service finds that undertakings identified in the trails management plan would result in a Section 106 determination of *no adverse effect*.

## **American Indian Consultation**

In letters dated March 16, 2017, Cabrillo National Monument notified American Indian tribes having cultural associations with the monument area about the trails management plan and presented them with copies of the newsletter. The following tribes were notified: Campo Band of Kumeyaay Indians; Barona Band of Mission Indians; Inaja-Cosmit Band of Indians; La Posta Band of Mission Indians; Mesa Grande Band of Mission Indians; Lipay Nation of Santa Ysabel; La Jolla Band of Luiseno Indians; Pala Band of Mission Indians; Rincon Band of Luiseno Indians; Viejas Band of Kumeyaay Indians; Ewiiapaayp Band of Kumeyaay Indians; Jamul Indian Village, a Kumeyaay Nation; Manzanita Band of Kumeyaay Indians; San Pasqual Band of Mission Indians; Sycuan Band of Kumeyaay Indians; Los Coyotes Band of Cahuilla and Cupeno Indians; Pauma Band of Luiseno Indians.

The Pala Tribal Historic Preservation Office (THPO) responded (letter dated April 20, 2017) that they determined the project area to be outside the boundaries of the Pala Indian Reservation and the boundaries of the tribe's traditional use area. Therefore, they wished to defer to other tribes having more direct connections between their respective ancestral territories and the monument. However, the Pala THPO indicated that planning should include provisions for tribal consultation and participation in the development of interpretive materials, as well as mitigation measures to address inadvertent discovery of cultural resources of tribal importance. A cultural resources treatment plan should also be developed with tribal consultation. The Viejas Band of Kumeyaay Indians responded (letter dated April 7, 2017) that they reviewed the project and determined that the area has cultural significance to their tribe. The Viejas Band requested that a tribal cultural monitor be on-site during ground disturbing activities to inform the inadvertent discovery and treatment of cultural artifacts, cremation sites, or human remains.

## **US Naval Base – Point Loma**

The Naval Base Point Loma commanding officer responded to the Cabrillo National Monument superintendent (email dated March 20, 2017) noting safety concerns at the northern end of the Bayside Trail where the trail extended into the Navy's explosive safety arcs around the weapons magazine. Because the Navy may have been at continued risk of liability for visitor injuries, the base commander requested the trail be shortened. In accordance with that request, signage was installed and the trail was shortened to end approximately 110 linear feet before the Navy / NPS boundary. In addition, park staff had proposed a new trail segment on Naval Base Point Loma to connect the upper parking lot and the Bayside Trail with the tidepools. However, after base security and compliance offices expressed concern, the proposed segment was shifted to the north to route the new trail segment entirely on NPS property.

## **US Fish and Wildlife Service**

Cabrillo National Monument notified the US Fish and Wildlife Service of the trail management plan / environmental assessment in a letter dated March 7, 2017. The letter served as a record that the National Park Service had initiated informal consultation with the US Fish and Wildlife Service pursuant to the requirements of the Endangered Species Act and NPS management policies. The monument requested a current list of federally listed plant and animal species and designated critical habitat for such species that might occur within the monument.

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## APPENDIXES

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## **APPENDIX B: VISITOR CAPACITY**

### **VISITOR CAPACITY IDENTIFICATION AND IMPLEMENTATION STRATEGIES**

Visitor capacity is a component of visitor use management defined as the maximum amount and types of visitor use that an area can accommodate while sustaining desired resource conditions (i.e., goals and objectives for this plan) and visitor experiences, consistent with the purpose for which the area was established. Visitor capacity will be used to inform and implement the management strategies selected as part of this trail management plan / environmental assessment (plan).

The primary goal of this planning effort is to preserve the fundamental resources and values of Cabrillo National Monument and the plan purpose and need. By establishing and implementing visitor capacities, the National Park Service can help ensure that resources are protected and that visitors have the opportunity for a range of high-quality experiences. Under the new (2012) NPS planning portfolio, visitor use management plans are considered to be implementation level plans and can meet the legal GMP requirements (1978 NPRA, 54 U.S.C. 100502) to identify and implement visitor capacities by including detailed direction and analysis that is consistent with or amends a units general management plan. Cabrillo National Monument has no prior identification of visitor capacity. Through this planning effort, the monument has an important opportunity to proactively safeguard the highly valued experiences and resources throughout the park unit. The following section outlines the considerations and process used to identify and implement visitor capacity.

### **GENERAL PROCESS FOR IDENTIFYING VISITOR CAPACITIES**

Visitor capacities were identified using best practices and examples from other plans and projects across the National Park Service. The approach for identifying visitor capacities is based on the Interagency Visitor Use Management Council's (IVUMC) Visitor Use Management Framework (<https://visitorusemanagement.nps.gov/>). Based on these best practices, the planning team describes the process for identifying capacity following these guidelines: 1) determine the analysis area, 2) review existing direction and knowledge, 3) identify the limiting attribute(s), and 4) identify visitor capacity and implementation strategies.

### **THE ANALYSIS AREA: CABRILLO NATIONAL MONUMENT TRAIL NETWORK AND COASTAL AREA**

Park staff and planning team considered the most meaningful geographic areas to determine the analysis area. The goals and objectives for the trail management plan and relationships between existing and potential visitor use patterns were considered. The trail network and coastal area were selected as destinations where high levels of use are currently or projected to cause impacts to natural, cultural resources, and visitor experiences. The trail network and coastal area comprises the majority of the high visitor use areas within the park where the trail management plan is facilitating access.

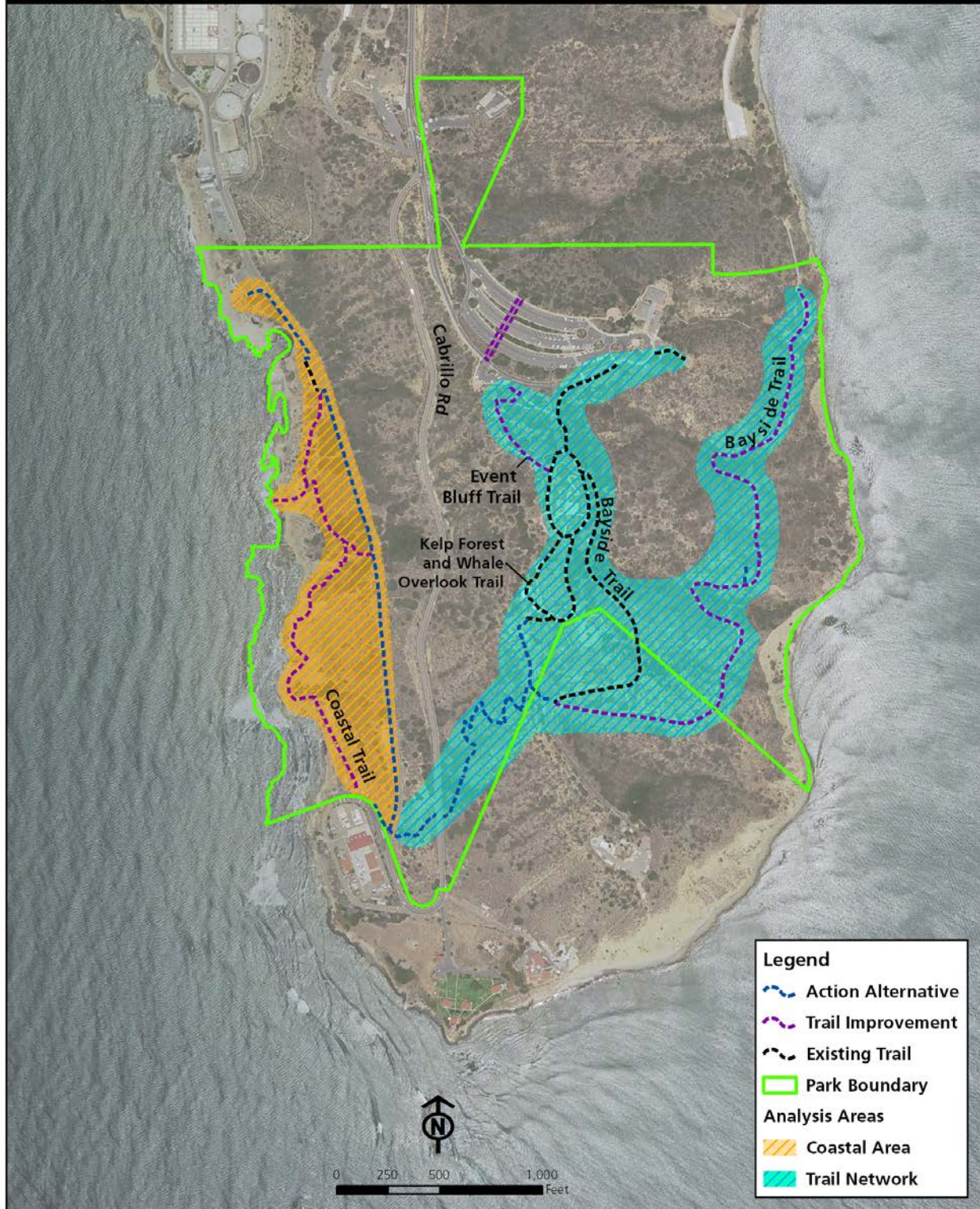


Figure B-1. Visitor Capacity Analysis Area - Alternative 1



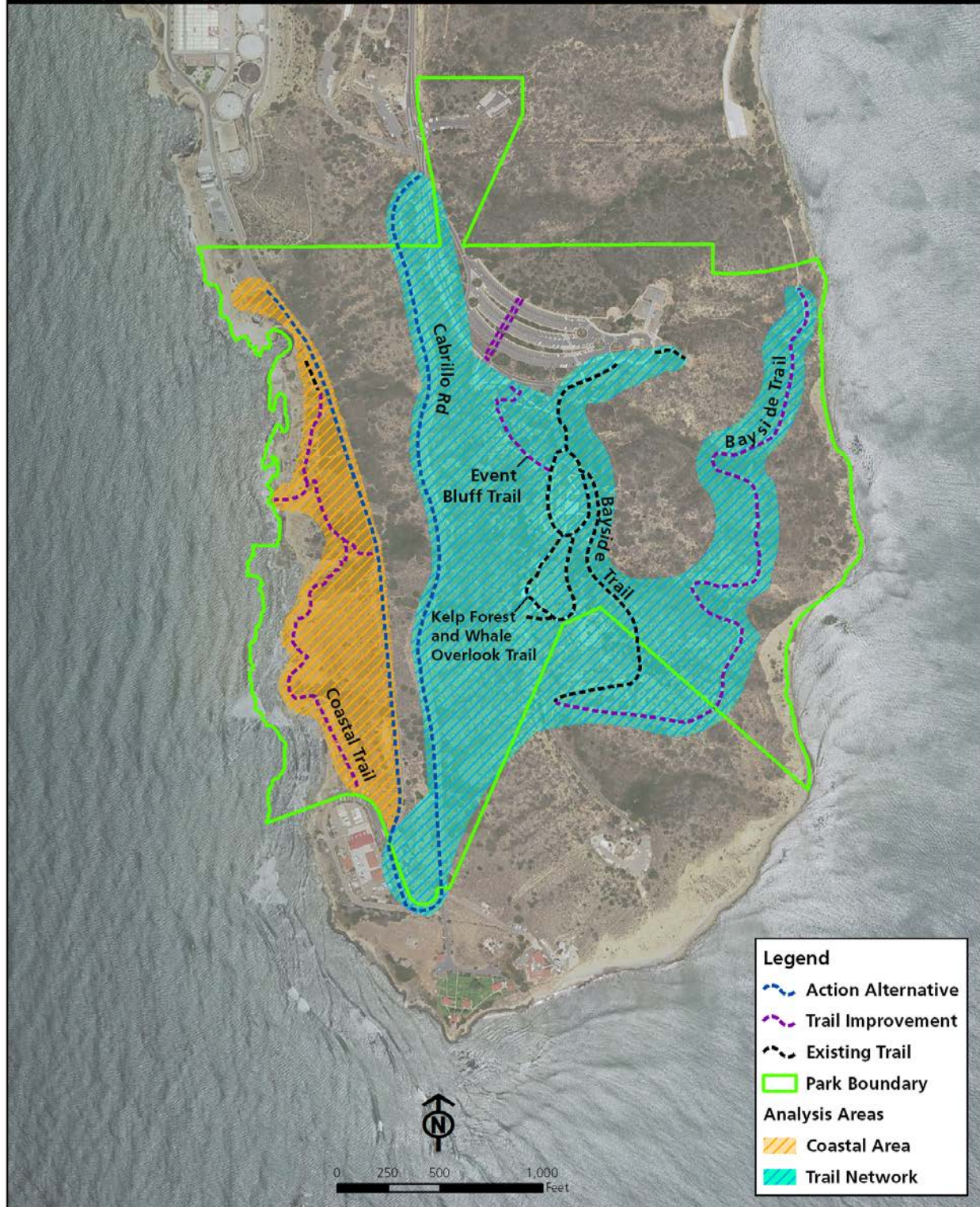


Figure B-2. Visitor Capacity Analysis Area - Alternative 2

## EXISTING DIRECTION AND KNOWLEDGE

The planning team reviewed the plan goals and the indicators and thresholds, with particular attention to conditions and values that must be protected related to visitor use levels. In addition, the action alternatives were assessed for the primary differences related to the amounts, timing, distribution and types of use. Given the purpose and need for the plan, the differences in the alternatives do not suggest the need to look at different capacities. Therefore, visitor capacity was identified based on consideration of the action alternatives and the parks' fundamental resources and values, and the goals established for the trail management plan.

### Overview of Visitor Use

There is one primary goal of the trails plan that relates specifically to the trail network and coastal area and that is to: *provide opportunities for visitors to have immersive experiences at one of the best-preserved, publically available, mainland Pacific tide pool ecosystems in Southern California*. Desired conditions are for visitors to have the opportunity for an immersive “wildish” experience in an urban proximate environment. The trail system and coastal area, inclusive of the tidepools at Cabrillo National Monument are unique, and the parks' goal is to manage to low density use levels. The park wants to preserve the uniqueness of the visitor experience by maintaining a low density of visitors in the coastal area, and the trail system partially facilitates access.

The amount, timing, and distribution of visitor use at Cabrillo National Monument on the trail network and in the coastal area influences both resource and experiential conditions. Currently, there is a high demand for recreation opportunities and moderate to high levels of use within the park, particularly during peak summer months and during the holidays. The levels and patterns of visitor use are causing moderately negative impacts to visitor experiences and more evident negative impacts to natural resources. Specifically, on holidays and during the summer month weekends, the coastal area becomes very congested and crowded. During these busy days, visitors often have difficulty finding authorized parking spaces. Further, crowding and congestion can cause significant risk to visitors' safety as people crowd into the limited space of the rocky intertidal area. Impacts to natural resources are also more likely to occur on these busy and congested days. Further, the current trail system does not provide access from parking lots at the northern end of the park to the coastal area. This means that for visitors to access the tidepools, vehicle congestion is high during the busy times and results in some visitors parking near the visitor center and walking down Cabrillo Road. The road has no shoulder, which causes unsafe conditions for pedestrians as they share it with park visitor, US Navy, US Coast Guard, and Wastewater Treatment Plant vehicles.

Annual visitation for 2016 was approximately 960,000 people at Cabrillo National Monument. In 2016, the six highest visitation month average was 87,430 (February, March, April, June, July, and August). For the purposes of understanding current use levels on the trail network, park staff assumed that on average 60% of visitors who park in the upper parking lot use the trail network. That means that during the average high visitation months ( $87,430 \times .6 = 52,460/30$ ) 1,750 people per day (PPD) on average use the trails. The park is open from 9 a.m. to 5 p.m. (8 hours) a day. If 1,750 PPD visit (1,750 PPD / 8 hours a day), 220 people at one time (PAOT) under current visitor use levels would be on the trails. That would look like approximately 90 cars in the parking lot during open hours (220 PAOT/2.5 person per vehicle) dedicated to trail users.

Almost one quarter of a million people are estimated to visit the coastal area each year with visitation patterns reflecting typical NPS units, higher visitation during the summer months and on the holidays. Annual visitation to Cabrillo in 2016 was slightly less than 1 million, down from the year before according to NPS Public Use Statistics Office (PUSO). However, the overall trend since 2007



is up and visitation has been increasing by approximately 29,602 visitors annually. Trail count data supports this estimation of visitors with approximately 215,000 visitor counts annually in the coastal area (Phillips, Philippi, & Pister 2011). This averages to about 600 PPD visiting the coastal area. The total visitation for weekend days (Saturday and Sunday) was 94,681 or 956 PPD (Phillips, Philippi, & Pister 2011). The total number of visitors for combined weekdays (Monday through Friday) was 119,033 or 481 PPD (note, this number includes holidays falling on weekdays (Phillips, Philippi, & Pister 2011). The supporting infrastructure in the coastal area includes one large parking lot with two smaller lots connected by a winding coastal trail. The trails plan presents an alternative that connects the two smaller parking lots with more direct access by a trail that follows along the road. This trail is considered to ease access to the parking lots and is not estimated to expand the amount of use the area can sustain. During busy periods, such as weekends and holidays, the parking lots are typically full. As a result, the road to the coastal area is sometimes closed for short periods until sufficient parking becomes available. This temporary closure of the road allows for traffic to flow freely and allows a more pleasant experience for the visitors by reducing congestion in the coastal area and reducing the damage to the fragile ecosystem. Visitor safety is compromised as visitors walk along park roads with no shoulders to access the tidepools area from the upper parking lots. There is currently no identified visitor capacity at Cabrillo National Monument in any prior planning or management document. The park collects monitoring data for the locations where it is deemed necessary to identify visitor capacity as a way to approximate as best as possible the total numbers of people present.

## THE LIMITING ATTRIBUTE

Park staff identified the visitor experience as the most limiting attribute to constrain visitor use levels for the trail network and coastal area. The visitor experience on the trail network and in the coastal area is a unique national park experience in close proximity to San Diego. The park wants to preserve the uniqueness of the visitor experience by maintaining low density of visitors in the coastal area to which access is provided by the trail network. The experience includes coastal viewing experiences and immersive experiences for visitors to be on the trails and in the intertidal area connected to one of the goals of the trails management plan to *provide opportunities for visitors to have immersive experiences at one of the best-preserved, publically available, mainland Pacific tide pool ecosystems in Southern California.*

## VISITOR CAPACITY

### Trail Network

This visitor capacity was identified based on the best professional judgement of park staff and the understanding about current visitor experience and resource conditions.

With the preferred alternative 1, there will exist approximately 16,720 linear feet of trail, including proposed new trails. The park estimated that the trails could sustain additional visitor use and still maintain and achieve the desired visitor and resource conditions. The capacity for the trails will be approximately 1,570 PPD. This would suggest that if all 1,570 people were there at the same time, there would be about one person every 11 feet (total linear feet of trail divided by average daily visitation). Alternatively, this could be managed to 320 PAOT on the trails. The PAOT is calculated by dividing the PPD by the average parking lot turnover rate of five times a day. Since visitation varies throughout the day, the park knows that at a minimum desired visitor and resource conditions would be maintained even during periods of high use. This visitor capacity of 320 PAOT would allow for surges in visitation during busy holiday weekends, while still providing a meaningful visitor

experience by preserving the uniqueness of the visitor experience and maintain low visitor density on the trails. The identified visitor capacity would be close to double current visitor use levels.

With alternative 2, there will exist approximately 18,790 linear feet of trail, including proposed new trails. The park estimated that the trails could sustain additional visitor use and still maintain and achieve the desired social and resource conditions. The capacity for the trails will be approximately 1,860 PPD. This would suggest that if all 1,860 people were there at the same time, there would be about one person every 10 feet (total linear feet of trail divided by average daily visitation). Alternatively, this could be managed to 370 PAOT on the trails. The PAOT is calculated by dividing the PPD by the average parking lot turnover rate of five times a day. Since visitation varies throughout the day, the park knows that at a minimum desired social and resource conditions would be maintained even during periods of high use. This visitor capacity of 370 PAOT would allow for surges in visitation during busy holiday weekends, while still providing a meaningful visitor experience by preserving the uniqueness of the visitor experience and maintain low visitor density on the trails. The identified visitor capacity would more than double current visitor use levels.

## **Coastal Area**

This visitor capacity was identified based on the best professional judgement of park staff and the understanding about current visitor experience and resource conditions. As previously stated, the coastal area receives about a quarter million visitors annually, supported by approximately 215,000 visitor counts on trails in the coastal area alone. This averages to about 600 PPD visiting the coastal area. With the preferred alternative, there will exist approximately 5,870 linear feet of trail, including proposed new trails, which would equate to about 1 person per 9 feet of trail under current use levels (total linear feet of trail divided by average daily visitation). The park estimated that the area could sustain additional visitor use and still maintain and achieve the desired social and resource conditions for the area given the desire to provide experiences for visitors to have close viewing experiences of the coast. The capacity for the coastal viewing area will be 700 PPD. This would suggest that if all 700 people were there at the same time, there would be about one person every 8 feet. Since visitation varies throughout the day, the park knows that at a minimum desired social and resource conditions would be maintained even during periods of high use. This visitor capacity of 700 PPD would allow for surges in visitation during busy holiday weekends, while still providing a meaningful visitor experience by preserving the uniqueness of the visitor experience and maintain moderate visitor density in the coastal area.

## **VISITOR CAPACITY IMPLEMENTATION STRATEGIES**

Park staff will employ a variety of management options to implement visitor capacity on the trail network and in the coastal area. Not all strategies, specifically the reservation and/or permit system, and temporary and/or permanent closures, would necessarily be implemented concurrently. These strategies and actions would be implemented based on feasibility, staff resources, and park funding or as needed when thresholds are approached or as part of managing visitor capacity. These strategies include:

- Target messaging around tidepools experiences
- Direct visitors to other tidepools in the local area
- Continued reduction of special events because of capacity and overcrowding
- Selectively disperse education groups over days of the week and times of day

- Create an ocean discovery zone before going into the intertidal area, mini training such as an experiential tactile pool in the ocean discovery area
- Expanded amenity fee for coastal area and designation of the tidepools as a special use area
- Install bike racks in select locations for parking and securing.
- Install temporary barriers to mitigate multi-modal conflicts on road.
- Rotate access, such as implementing a 1 out, 1 in strategy
- Reduce the days the tidepools are open, odd or even days
- Reduce the amount of special events permits given out for the tidepools—any group more than 10 is currently permitted (e.g., summer camps, scout groups, larger families, school groups)
- Park staff will use the three primary access points—the road, the trail, and the tidepools access—to modify the amount of visitor use:
  - Temporary or permanent closure of the road
  - Temporary or permanent closure of tidepools trail access
  - Road closure open to shuttle only on high use weekends and holidays
  - Road closure with pedestrian access for park visitors. Road would be closed for a block of time but would still provide access to visitors with disabilities or those requiring additional accommodations
  - Close access to the intertidal, close for an hour or 30 minutes until congestion decreases
- A potential permit and/or reservation system
  - A parking ticket system with brightly colored hang tags for rearview mirrors or an alternate ticket system
  - Limit parking – parking meters, 1 hour parking or a ticket system

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## APPENDIX C: TRAIL CLASSES

### Trail Classes

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
<b>Tread</b>	<ul style="list-style-type: none"> <li>Tread intermittent and often indistinct. 0"-12" wide</li> <li>May require route finding</li> <li>Predominantly native materials</li> </ul>	<ul style="list-style-type: none"> <li>Tread continuous and discernible, but narrow and rough. 6"-18" wide</li> <li>Typically native materials</li> </ul>	<ul style="list-style-type: none"> <li>Tread continuous and obvious. Up to 36" wide</li> <li>Native or imported materials</li> </ul>	<ul style="list-style-type: none"> <li>Tread wide and relatively smooth with few irregularities, may be hardened. Up to 60" wide</li> <li>Native or imported materials</li> </ul>	<ul style="list-style-type: none"> <li>Tread wide, firm, stable, and generally uniform. Up to 72" wide</li> <li>Commonly hardened with asphalt or other imported material</li> </ul>
<b>Obstacles</b>	<ul style="list-style-type: none"> <li>Obstacles common, naturally occurring, often substantial and intended to provide increased challenge</li> <li>Narrow passages; brush, steep grades, rocks and logs present</li> </ul>	<ul style="list-style-type: none"> <li>Obstacles may be common, substantial, and intended to provide increased challenge</li> <li>Blockages cleared to define route and protect resources, vegetation may encroach into trailway</li> </ul>	<ul style="list-style-type: none"> <li>Obstacles may be common, but not substantial or intended to provide challenge</li> <li>Vegetation cleared outside of trailway</li> </ul>	<ul style="list-style-type: none"> <li>Obstacles infrequent and insubstantial</li> <li>Vegetation cleared outside of trailway</li> </ul>	<ul style="list-style-type: none"> <li>Obstacles not present</li> <li>Grades typically &lt; 8%</li> </ul>
<b>Constructed Features</b>	<ul style="list-style-type: none"> <li>Structures minimal to nonexistent</li> <li>Typically no bridges</li> </ul>	<ul style="list-style-type: none"> <li>Structures of limited size, scale, and quantity; typically constructed of native materials</li> <li>Bridges as needed for resource protection and appropriate access</li> </ul>	<ul style="list-style-type: none"> <li>Structures may be common and substantial; constructed of imported or native materials</li> <li>Bridges as needed for resource protection and appropriate access</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent and substantial; typically constructed of imported materials</li> <li>Bridges as needed for resource protection and user convenience</li> <li>Trailside amenities may be present</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent or continuous; typically constructed of imported materials</li> <li>May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features</li> </ul>
<b>Signs</b>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions</li> <li>Route markers present when trail location is</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions</li> <li>Route markers present when trail location is</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and as needed for user reassurance</li> <li>Route markers as</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and as needed for user reassurance</li> <li>Route markers as</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and for user reassurance</li> <li>Route markers</li> </ul>

<b>Trail Attributes</b>	<b>Trail Class 1</b> Minimally Developed	<b>Trail Class 2</b> Moderately Developed	<b>Trail Class 3</b> Developed	<b>Trail Class 4</b> Highly Developed	<b>Trail Class 5</b> Fully Developed
	not evident <ul style="list-style-type: none"> <li>• Regulatory and resource protection signing infrequent</li> <li>• Destination signing, unless required, generally not present</li> <li>• Information and interpretive signing generally not present</li> </ul>	not evident <ul style="list-style-type: none"> <li>• Regulatory and resource protection signing infrequent</li> <li>• Destination signing typically infrequent outside of wilderness; generally not present in wilderness</li> <li>• Information and interpretive signing not common</li> </ul>	needed for user reassurance <ul style="list-style-type: none"> <li>• Regulatory and resource protection signing may be common</li> <li>• Destination signing likely outside of wilderness; generally not present in wilderness</li> <li>• Information and interpretive signs may be present outside of wilderness</li> </ul>	needed for user reassurance <ul style="list-style-type: none"> <li>• Regulatory and resource protection signing common</li> <li>• Destination signing common outside of wilderness; generally not present in wilderness</li> <li>• Information and interpretive signs may be common outside of wilderness</li> </ul>	as needed for user reassurance <ul style="list-style-type: none"> <li>• Regulatory and resource protection signing common</li> <li>• Destination signing common</li> <li>• Information and interpretive signs common</li> </ul>
<b>Recreation Environment</b>	<ul style="list-style-type: none"> <li>• Natural, unmodified</li> </ul>	<ul style="list-style-type: none"> <li>• Natural, essentially unmodified</li> </ul>	<ul style="list-style-type: none"> <li>• Natural, primarily unmodified</li> </ul>	<ul style="list-style-type: none"> <li>• May be modified</li> </ul>	<ul style="list-style-type: none"> <li>• May be highly modified</li> </ul>



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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## **Cabrillo National Monument Trail Management Plan and Draft Environmental Assessment**

