

Existing Conditions and Resources Inventory Report



Carmel River State Beach



June 2013 – Rev. December 2013

AECOM

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Acronyms

AADT	annual average daily traffic
ADA	Americans with Disabilities Act
ASR	Aquifer Storage and Recovery
BSLT	Big Sur Land Trust
Cal Fire	California Department of Forestry and Fire Protection
cal. BP	calibrated radiocarbon years
Cal Am	California American Water Company
Cal EMA	California Emergency Management Agency
Caltrans	California Department of Transportation
CAWD	Carmel Area Wastewater District
CCFRP	California Collaborative Fisheries Research Program
CCLEAN	Central Coast Long-term Environmental Assessment Network
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CGS	California Geological Survey
CLCC	Carmel Land and Coal Company
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CPLPA	Carmel Point and Lagoon Preservation Association
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRSA	Carmel River Steelhead Association
CRTF	Carmel River Task Force
CRWC	Carmel River Watershed Conservancy
CSA 50	County Services Area 50
CWA	Clean Water Act
DFG	California Department of Fish and Game
DOM	Department Operations Manual
DPR	California Department of Parks and Recreation
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FWARG	Far Western Anthropological Research Group, Inc.
GHG	greenhouse gas
GPA	General Plan Amendment
GPS	global positioning system
HELM	Homeowner's for Effective Lagoon Management
HSR	Historic Structure Report

ICS	Incident Command System
IMAP	Inventory, Monitoring, and Assessment Program
LPD	Los Padres Dam
MOU	memorandum of understanding
MPA	Marine Protected Areas
MPRPD	Monterey Peninsula Regional Park District
MPWMD	Monterey Peninsula Water Management District
MST	Monterey-Salinas Transit
NGDV	National Geodetic Vertical Datum
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWS	National Weather Service
OPC	Ocean Protection Council
PG&E	Pacific Gas & Electric
PLF	Point Lobos Foundation
RCDMC	Resource Conservation District of Monterey County
SB	State Beach
SCRB	Save Carmel River Beach
SMR	State Marine Reserve
TMPFW	The Monterey Pine Forest Watch
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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1 INTRODUCTION

This Existing Conditions and Resources Inventory Report was prepared in support of development of a General Plan for Carmel River State Beach (SB) and provides a detailed overview of the existing physical conditions at the park unit. Information presented in this report will inform the planning process, including the development of alternatives for use of the park unit, and will also serve as the baseline against which proposed changes at Carmel River SB will be evaluated. Carmel River SB is one of four California State Parks properties being evaluated through this planning process. The other California State Parks properties included in the current General Plan process are Point Lobos State Natural Reserve (SNR) and two unclassified properties commonly known as Point Lobos Ranch and Hatton Canyon. Separate Existing Conditions and Resource Inventory Reports have been prepared for these park units.

A combined General Plan for Point Lobos SNR (then called Point Lobos State Reserve) and Carmel River SB was approved by the California Park and Recreation Commission on May 11, 1979 (DPR 1979). A General Plan Amendment (GPA) was approved in June 1987 to designate 36 acres of newly acquired property for day use and to allow visitor facility development including new parking facilities (DPR 1988). A second GPA was approved in March 1996 to change the land use designation of the 155-acre Odello West field within Carmel River SB from agricultural use to riparian and wetland habitat to help reduce the risk of flooding and to address resource enhancement goals (DPR 1996).

This report includes information on land use, significant physical, biological, cultural, and aesthetic resources, and recreation values at Carmel River SB. It was prepared based on an extensive review of existing information, supplemented with photos and notes from a site tour conducted at the onset of the planning process and coordination with park staff, including resource specialists and planners from the Monterey District and Planning Division of California State Parks, and other agencies and organizations.

Carmel River SB is located in coastal Monterey County west of Highway 1 and approximately one mile south of the City of Carmel-by-the-Sea. The Carmel River SB unit is made up of three beaches: Carmel River Beach, Middle Beach, and Monastery Beach, which is sometimes referred to as San Jose Creek Beach. The regional location of Carmel River SB is shown in Exhibit 1-1. Exhibit 1-2 shows the park unit in a local context and in relation to the other park units also included in development of the current General Plan. Major park features are shown in Exhibit 1-3.

The current extent of Carmel River SB was acquired by California State Parks over several years beginning in 1953, with the most recent acquisition in 1981. Carmel River SB was originally acquired as a state park and was officially classified as a state beach in 1963. In addition, there are two subunits within Carmel River SB with special designations: the Ohlone Coastal Cultural Preserve and the Carmel River Lagoon and Wetland Natural Preserve.

California Public Resources Code Section 5019.56(c) defines **State beaches** as follows:

- **State beaches** consist of areas with frontage on the ocean, or bays designed to provide swimming, boating, fishing, and other beach-oriented recreational activities. Coastal areas containing ecological, geological, scenic, or cultural resources of significant value shall be preserved within state wildernesses, state reserves, state parks, or natural or cultural preserves, or, for those areas situated seaward of the mean high tide line, shall be designated state marine reserves, state marine parks, state marine conservation areas, or state marine cultural preservation areas.

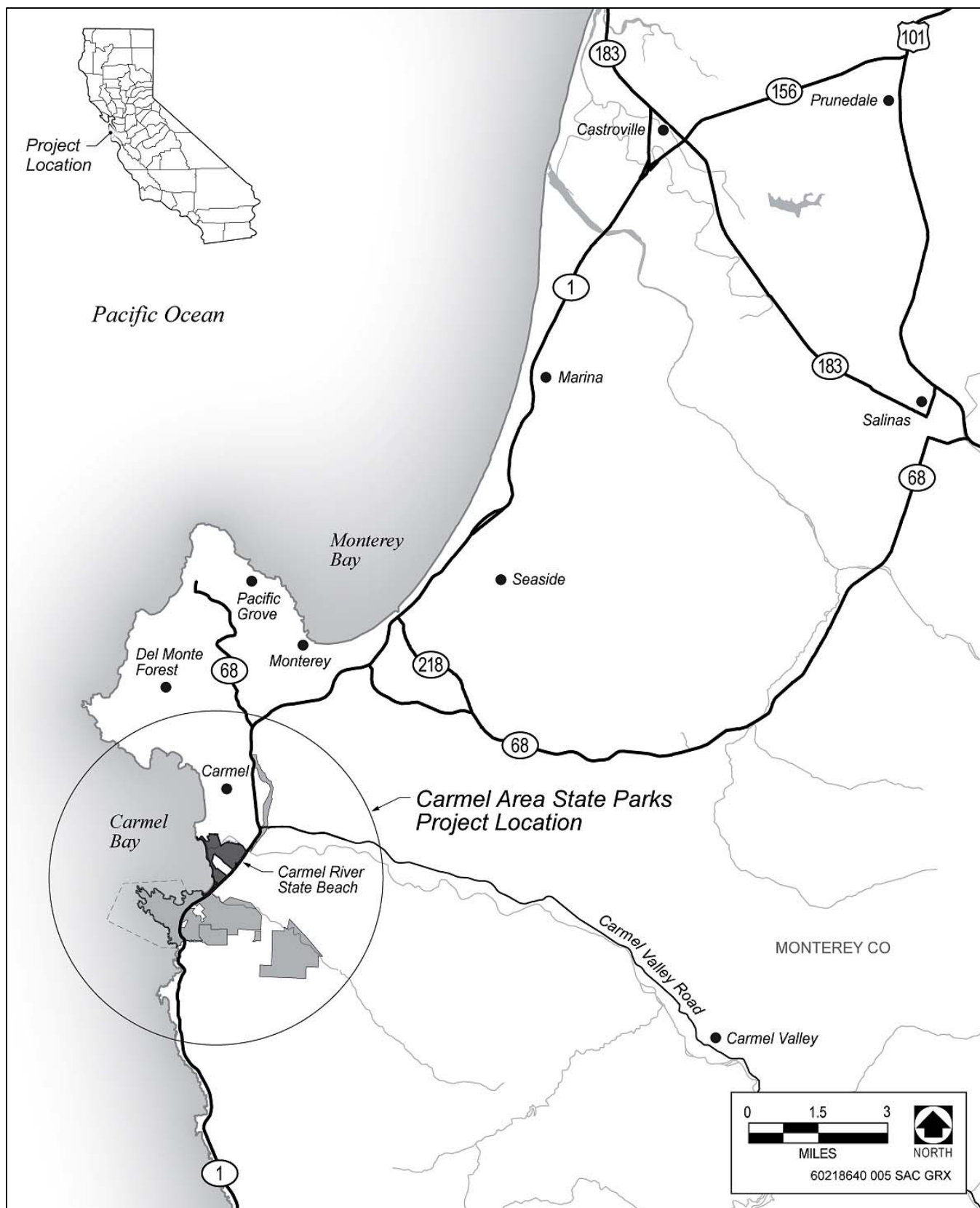


Exhibit 1-1

Regional Location of Carmel River SB

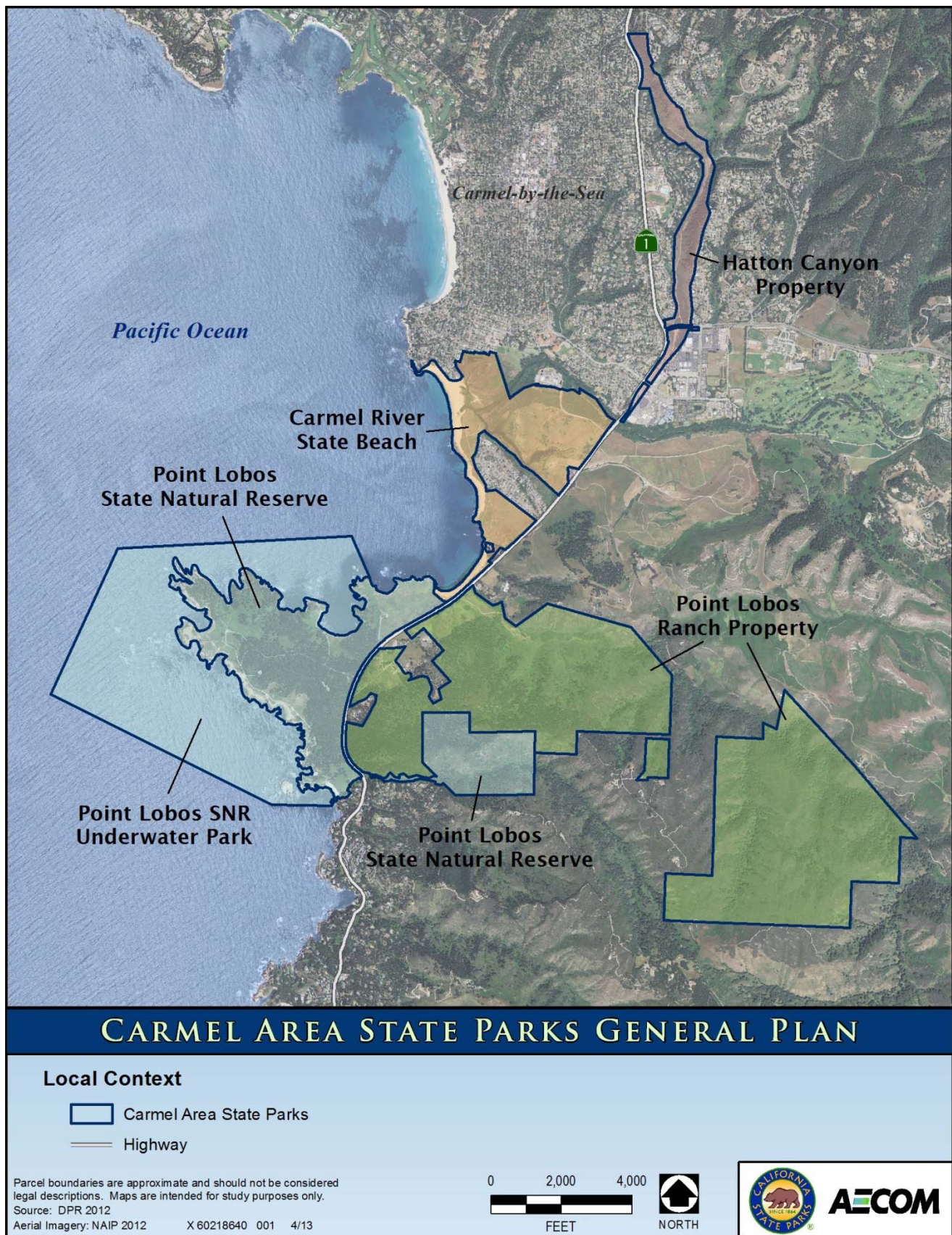


Exhibit 1-2

Local Context of Carmel River SB

California Public Resources Code Sections 5019.56(c) and 5019.74 define **Natural preserves** and **Cultural preserves** as follows:

- ▶ **Natural preserves** consist of distinct nonmarine areas of outstanding natural or scientific significance established within the boundaries of other state park system units. The purpose of natural preserves shall be to preserve such features as rare or endangered plant and animal species and their supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of civilization, geological features illustrative of geological processes, significant fossil occurrences or geological features of cultural or economic interest, or topographic features illustrative of representative or unique biogeographical patterns. Areas set aside as natural preserves shall be of sufficient size to allow, where possible, the natural dynamics of ecological interaction to continue without interference, and to provide, in all cases, a practicable management unit. Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the natural preserve.
- ▶ **Cultural preserves** consist of distinct nonmarine areas of outstanding cultural interest established within the boundaries of other state park system units for the purpose of protecting such features as sites, buildings, or zones which represent significant places or events in the flow of human experience in California. Areas set aside as cultural preserves shall be large enough to provide for the effective protection of the prime cultural resources from potentially damaging influences, and to permit the effective management and interpretation of the resources. Within cultural preserves, complete integrity of the cultural resources shall be sought, and no structures or improvements that conflict with that integrity shall be permitted.

There are 63 state beaches in the state park system (California State Parks 2012a). The purpose for which Carmel River SB was acquired is to perpetuate forever, for public enlightenment, inspiration and aesthetic enjoyment, and recreational pursuits, a combination of beautiful sandy beaches and rocky bluffs, including the coastal strand, coastal bluff, and coastal scrub communities and preservation of wetlands formed by the Carmel River in an essentially natural condition together with the outstanding related scenic, natural, and cultural values including the flora and fauna of Carmel Bay, Carmel River wetlands, and the coastline of Carmel Bay. The Carmel River SB unit is approximately 297 acres, and is managed so that areas of high ecological sensitivity do not contain any type of development and recreational facilities shall be designed and developed in accordance with allowable use intensities and the sensitivities of other resources in the unit (DPR 1979).

In addition, as part of the 1987 approved GPA, the purpose of Carmel River SB was amended to state that the unit would also be managed to preserve and protect public opportunities for ocean beach-oriented recreation in a high-quality environment, and to restore and protect the natural values of the coastal wetland, coastal bluffs, and upland, as well as the cultural values associated with historical and Native American uses of the site (DPR 1988).

The northern portion of Carmel River SB is located adjacent to the Carmel Bay State Marine Conservation Area, while the southern portion is located adjacent to the Point Lobos State Marine Reserve (SMR) (Exhibit 1-4). Both of these areas are classified as Marine Protected Areas (MPA) as designated by the California Department of Fish and Wildlife (CDFW).



Exhibit 1-3 Major Features

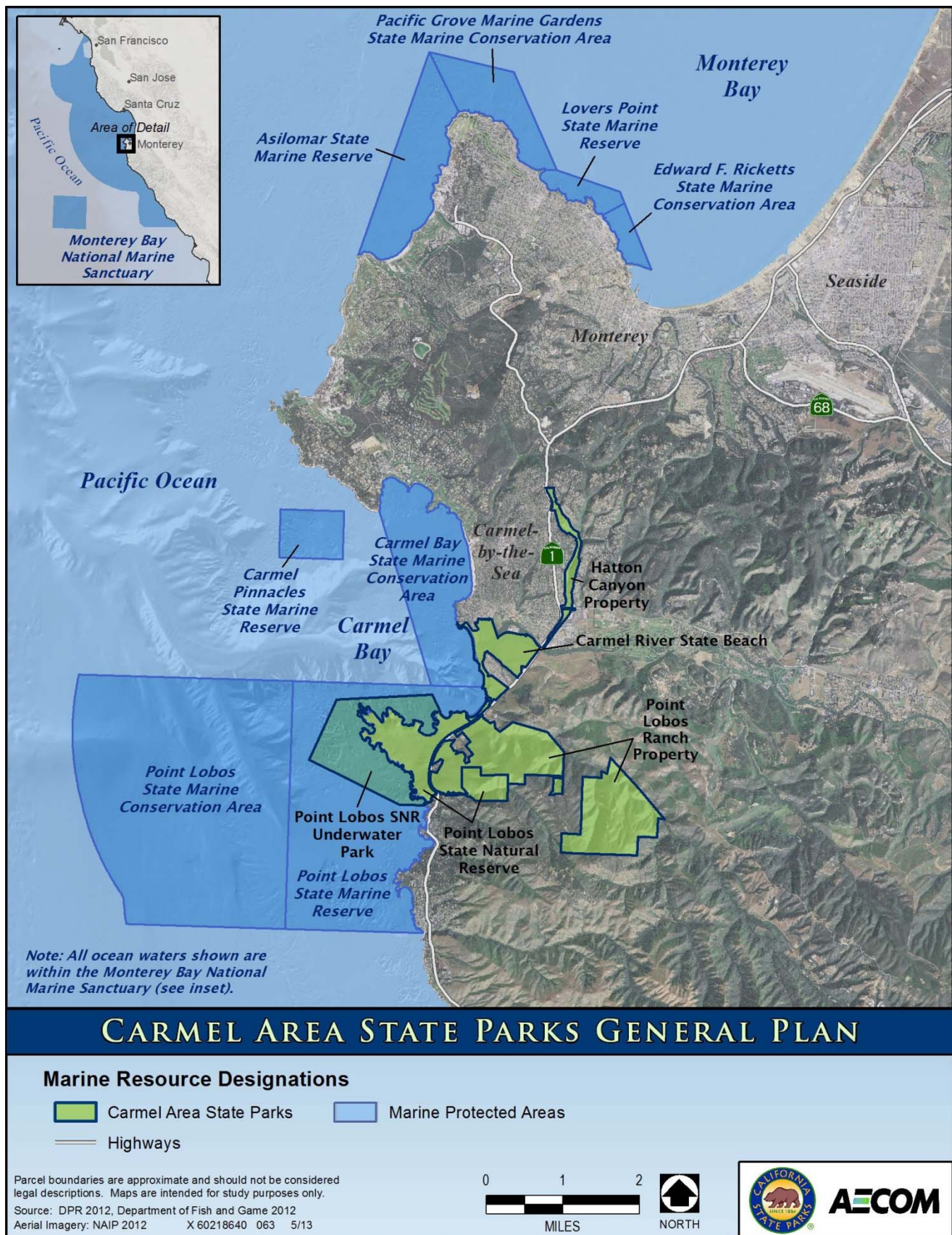


Exhibit 1-4

Marine Resource Designations

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2 LAND USE AND POLICY REVIEW

2.1 REGIONAL LAND USES

Founded in 1850, Monterey County is one of the first counties in California. Much of the current land use in the county is dictated by the natural landforms. Monterey County lies between the Pacific Ocean and the Gabilan Mountain Range, which is part of the California Coastal Ranges running in a northwest-to-southeast direction along the California coastline. Major land uses within the county include recreation, agriculture, urban development (housing and industrial), mining extraction, and transportation. The 2010 General Plan Update for the county establishes land use policies to designate general distribution and intensity of various land uses. The main vision of the 2010 Land Use Element is to create a general framework that encourages growth within or near developed/developing areas in order to reduce impacts to agricultural production, natural resources, and public services. Most of the intense land uses are concentrated in the northern third of the county. The following is the land use breakdown with respect to land coverage percentage in the county (Monterey County 2010):

Agriculture	60%
Public/ Quasi Public (e.g., hospitals)	28%
Residential	0.7%
Commercial	0.3%
Industrial	0.3%
Other and Federal lands	remaining

Several other plans that provide regional land use guidance specifically in the Carmel coastal segment of the county have also been adopted. These include the *Greater Monterey Peninsula Area Plan* (Monterey County 1997), a *Conservation Plan for Three Ranches* (Monterey County 1966a), *Rancho San Carlos Master Plan* (Monterey County 1966b), *Carmel Valley Master Plan* (Monterey County 1986), and *Carmel Area Land Use Plan* (Monterey County 1983). The development policies and land use recommendations in all of these plans follow the basic objective of maintaining the unique scenic and recreational resources of the Carmel coastal area by holding developments to a standard of “minimal visibility”, such that it is subordinate to the existing natural grandeur of the coastline and adjacent coastal terraces.

The *Greater Monterey Peninsula Area Plan* is intended to provide refinement of the County General Plan to reflect local concerns which could not be addressed at the county-wide level. The primary land uses in the Carmel Coastal segment envisioned in the *Greater Monterey Peninsula Area Plan* include residential, commercial, recreational, resource conservation, and agricultural. Public uses in the Carmel area include Point Lobos SNR, Carmel River SB, county and city parks, elementary schools, a day-care school, churches, and a sewage treatment plant.

Regionally major concerns related to new development in the *Greater Monterey Peninsula Area Plan* include:

- ▶ Creation of additional recreational demands on the existing state reserve and beaches.
- ▶ Degradation of the visual quality of the scenic coastline.
- ▶ Continued encroachment affecting the quality of life in existing communities.

- ▶ Continued encroachment on open space.
- ▶ Scarcity of water and waste services.

Land use in portions of Monterey County that are within the coastal zone is also influenced by the California Coastal Act. Local jurisdictions implement the California Coastal Act in coordination with the California Coastal Commission through Local Coastal Programs. The Local Coastal Programs contain the ground rules for future development and protection of coastal resources. The *Carmel Area Land Use Plan* is part of the Local Coastal Program. Carmel River SB is within the coastal zone. All development in the coastal zone requires either a Coastal Development Permit or an exemption from coastal permit requirements. The California Coastal Act established a framework for resolving conflicts among competing uses for limited coastal lands. The highest priority is placed upon the preservation of natural resources, including environmentally sensitive habitat areas. In the case of sensitive habitat areas, only uses dependent on these resources are allowed within such areas. Public recreational uses have priority on coastal sites which are not habitat areas and not needed for coastal-dependent uses. For sites that are not reserved for habitat preservation, agriculture, coastal-dependent uses, public recreation, or other types of development are permitted. However, commercial visitor-serving recreation has priority over private residential, general industrial and general commercial development (Monterey County 1983).

Many parks that offer recreation opportunities are available in the region (Exhibit 2-1). Approximately 14% of the county is devoted to parks and recreation facilities that are owned by various federal, state, and local agencies (Monterey County 2010). The U.S. Bureau of Land Management (BLM) manages lands in the Monterey area, including Fort Ord National Monument, that provide a variety of recreation opportunities. In the Carmel and Carmel Valley areas, the Monterey Peninsula Regional Park District (MPRPD) operates Garland Ranch Regional Park, Thomas Open Space, Blomquist Open Space Preserve, Cachagua Community Park, Carmel Valley Community Park, and Palo Corona Regional Park (MPRPD 2012a).

The Monterey County Parks Department owns several parks in the area including Jacks Peak County Park and Martin Canyon. Mission Trails Regional Park, owned by the City of Carmel, is also a well-used corridor connecting the Carmel Mission to surrounding neighborhoods (Monterey County Parks 2012).

Other California State Parks properties in the immediate area include Point Lobos SNR, the unclassified Point Lobos Ranch property, the unclassified Hatton Canyon property, and Garrapata State Park. California state parks slightly farther to the north of Carmel River SB include Asilomar State Beach and Conference Grounds, Monterey State Historic Park, Monterey State Beach, Fort Ord Dunes State Park, Marina State Beach, and Salinas River State Beach. There are also a number of state parks in the Big Sur area. These parks are discussed in more detail in Section 4, Recreation Resources.

Other popular recreation opportunities within the region include the Monterey Bay Aquarium, Cannery Row, Fisherman's Wharf, 17-Mile Drive, and various golf courses including Pebble Beach. Numerous hotel/resorts, restaurants, and shopping areas are located near Carmel River SB. Visitors come to the Monterey Peninsula for a variety of recreation experiences, including sightseeing, scenic driving, fishing, diving, surfing, wine tasting, and golfing. Visitors also come to the Monterey area for organized special events such as the Big Sur Marathon, Sea Otter Classic (bicycle races and outdoor sports festival/expo), or race events at Laguna Seca (Monterey County 1983, Monterey County Convention and Visitors Bureau 2012). Peak visitation to the region occurs between June and September. The Big Sur area to the south is a popular destination for visitors. Activities in this area include camping, tours, whale watching, hiking, and SCUBA diving (Caltrans 2004). The Big Sur area attracts

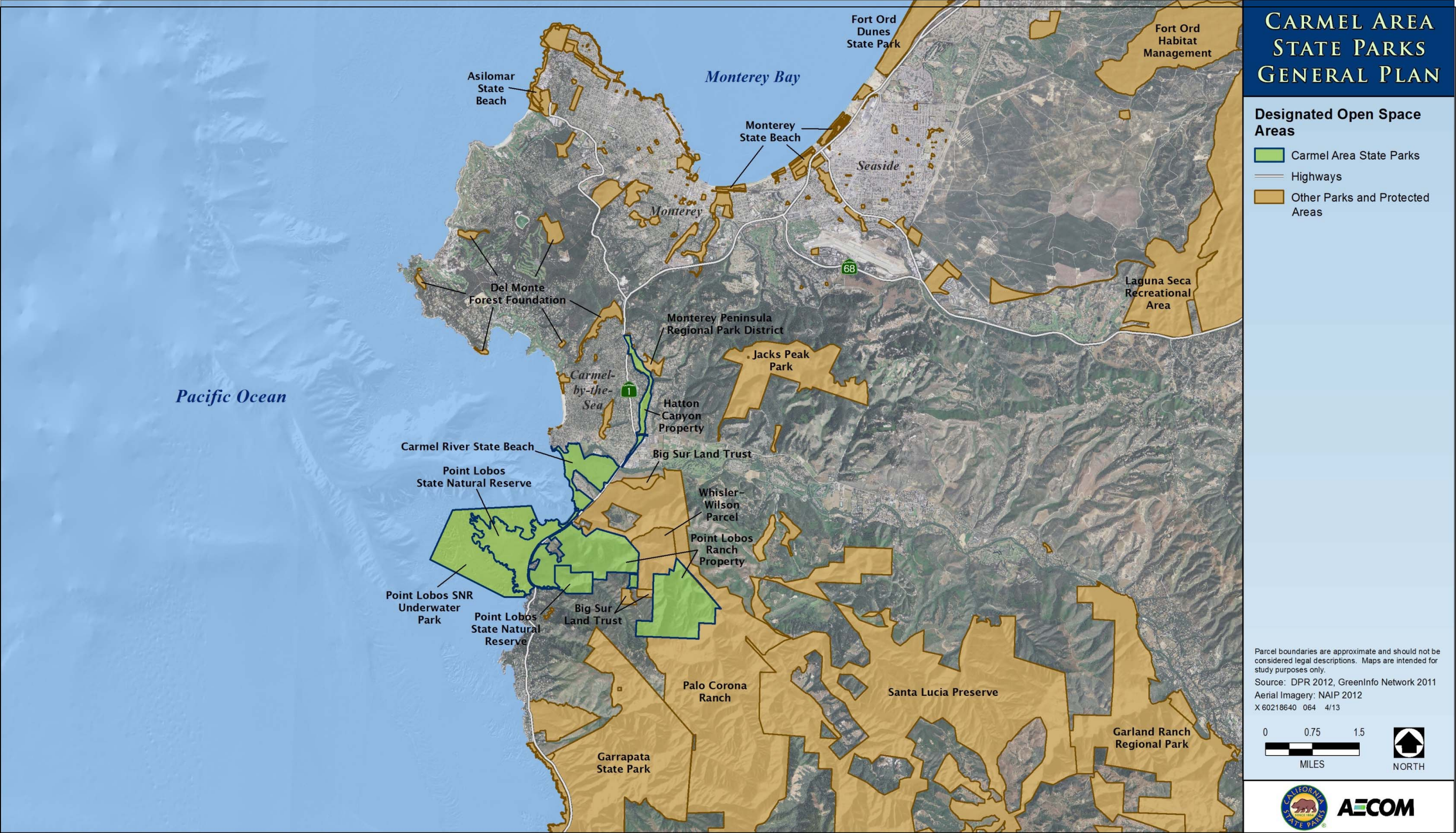


Exhibit 2-1 Designated Open Space Areas

visitors from around the world. It offers spectacular views of California's rugged coast and is recognized as one of the most scenic coastlines in the world.

2.2 PARK LAND USE AND ZONING

The previous General Plan for Carmel River SB, which also covers Point Lobos SNR, was approved in October 1979. Amendments to the 1979 General Plan were approved in June 1987 and March 1996. Appendix A includes a description of the 1979 General Plan and 1987 and 1996 GPA proposals by topic area and a brief description of whether they were implemented and the reasons they were or were not implemented.

The primary purpose of Carmel River SB is to provide swimming, boating, fishing, and other beach-oriented recreational facilities. Carmel River SB is a recreation destination in the Carmel area. Carmel River Beach is the northernmost beach within the unit, with Middle Beach immediately south of Carmel River Beach, and Monastery Beach to the south of Middle Beach (Exhibit 1-3). Most of the recreational activities at this park unit are passive and low-intensity such as sightseeing, photography, painting, dog walking, nature study, picnicking, walking, bird watching, and whale watching. Monastery Beach is also used heavily for SCUBA diving. Recreational uses within the Carmel River SB are described in more detail in Section 4, Recreation Resources. There is also a natural preserve and cultural preserve. In addition, a portion (approximately 43 acres) of Carmel River SB has been restored by Caltrans to wetland and riparian habitat for use as mitigation credits. Under agreement with Caltrans, this mitigation area provides mitigation for impacts to riparian and wetland habitats from regional transportation projects. Certain portions of Carmel River SB are used primarily by local visitors who walk to the beach from adjacent neighborhoods. The exception is the area known as Monastery Beach (Exhibit 1-3). This area is heavily used for day-use activities because of the visibility and accessibility from Highway 1 which is immediately adjacent. Odello West field and the Odello Farm complex are also within Carmel River SB. In the 1996 GPA, the designation of the Odello West field was changed from agriculture to riparian and wetland habitat. The Odello Farm complex is comprised of several historic farm buildings.

Adjacent land uses include the Bay School, which serves preschoolers and adults, vacation rentals, residential developments, Carmel River Elementary School, Mission Ranch, and Carmel Mission, and the Carmel Area Wastewater District (CAWD) wastewater treatment plant. Adjacent offshore areas include two MPAs managed by CDFW (Exhibit 1-4). A portion of the Point Lobos SMR which is 8.8 square miles is adjacent to Monastery Beach, and the 2.12-square mile Carmel Bay State Marine Conservation Area is adjacent to Carmel River Beach and Middle Beach. Carmel Pinnacles SMR is a 0.53-square mile area of submerged granitic pinnacles and spires located further offshore (Exhibit 1-4). This area is commonly visited by SCUBA divers. There is no fishing allowed within either of the state marine reserves. Recreational take of finfish and limited commercial fishing is allowed within the marine conservation area (Clifton and Johnson 2010).

Carmel River SB is within the *Carmel Area Land Use Plan*, which is also part of the Local Coastal Program. Carmel River SB is designated as wetlands and coastal strand and scenic and natural resource recreation. The State Beach surrounds Carmel Meadows, a medium-density residential area; and an area designated for agricultural preservation.

Carmel River SB is zoned as Coastal Agriculture Preserve, Resource Conservation, and Open Space Recreation by Monterey County. The purpose of the Coastal Agricultural Preserve designation is to preserve and enhance the use of the prime, productive, and unique farmlands in Monterey County while also providing an opportunity to

establish necessary support facilities for those agricultural uses. The Resource Conservation designation is to protect, preserve, enhance, and restore sensitive resource areas in Monterey County. The Open Space Recreation designation is to provide a district for the establishment, enhancement, and maintenance of the outdoor recreation uses in Monterey County.

2.3 RELEVANT PLANNING POLICIES

There are various plans that guide management within and in the vicinity of Carmel River SB. Below are descriptions of the relevant planning policies.

2.3.1 1979 GENERAL PLAN

The 1979 General Plan does not include specific management guidelines for Carmel River SB; however, it contains the following direction regarding management of the unit:

- ▶ Areas of very high ecological sensitivity shall not contain any type of development.
- ▶ Trails and day-use facilities shall be carefully planned in order to prevent ecosystem degradation. Overnight camping facilities shall not be permitted west of Highway 1.
- ▶ The cultivated portion of the Odello parcel shall remain in agricultural production or be restored to a near natural condition.
- ▶ The opening of Carmel River Lagoon during flood periods is an unnatural process. The possibility of levee construction south of Carmel River should be investigated.
- ▶ Marine ecosystems shall be monitored to detect natural and human-made changes. Marine ecosystem degradation shall not be allowed.
- ▶ Dogs shall not be allowed on Carmel River Beach because of the sensitivity of the Carmel River wetlands ecosystem.
- ▶ The esthetic resources of the unit shall be protected from intrusions into the natural scene.
- ▶ Archaeological sites shall be stabilized by revegetation of disturbed areas with plants native to the particular management unit.
- ▶ The agricultural use of the Odello Ranch is historic in character and may be continued as an interpretive activity.
- ▶ Recreation facilities shall be designed and developed in accordance with allowable use intensities and the sensitivities of other resources in the unit.
- ▶ Esthetic, natural, cultural, and recreational values of the state beach shall be interpreted to the public.

2.3.2 1987 GENERAL PLAN AMENDMENT

The purpose of the 1987 GPA was to designate 36 acres of newly acquired property for day use as part of Carmel River SB and to allow visitor facility development including new parking facilities. The 1987 GPA includes the following management guidelines for Carmel River SB:

- ▶ New permanent facility development shall avoid geologic hazards. Site-specific geologic investigations shall be conducted by a registered geologist or certified engineering geologist before final siting of facilities. The investigation shall identify potential geologic hazards of the site, and shall provide for mitigating measures to ensure structural stability of the development.
- ▶ All future permanent facility development at Carmel River SB shall be sufficiently set back to ensure that the development will endure. New developments shall neither create nor contribute significantly to erosion or geological instability. Development shall not be permitted on the cliff face, except for engineered staircases or accessways to provide public access to designated public use areas. These access structures shall be designed to minimize alteration of the bluff and beach.
- ▶ The department shall initiate a feasibility study to assess Monterey Pine restoration and management at Carmel River SB.
- ▶ In order to maintain the diversity of native species, landscaping in developed areas should consist of species indigenous to the unit, or to Point Lobos SNR.
- ▶ The department shall pursue a long-range objective of reducing or removing exotic plants, including eucalyptus, French broom, black mustard, and ice plant that have become established in the unit.
- ▶ Use of prescribed fire shall be allowed in Carmel River SB in accord with department-prescribed fire management policies.
- ▶ The department shall work with appropriate agencies to implement a Wildfire Management Plan at Carmel River SB.
- ▶ Specific management programs shall be developed when appropriate for animal species that are threatened, endangered, or of special concern. Necessary and suitable habitat, where it exists, shall be perpetuated.
- ▶ The department shall survey potential Smith's blue butterfly habitat in Carmel River SB to determine if the Smith's blue butterfly is present in the unit, or if the habitat is suitable for species introduction.
- ▶ In order to preserve the integrity of the wetlands at Carmel River SB, a wetland management plan shall be prepared and implemented.
- ▶ Where use or facility development create impacts to archaeological sites, the department shall take the necessary steps to preserve their heritage values. Threatened sites shall be protected with appropriate stabilization measures.

- ▶ Where human-caused bluff edge erosion is occurring from nondesignated trails, the areas shall be stabilized by the planting of native vegetation or other appropriate means consistent with preservation of the unit's scenic, cultural, and natural values.
- ▶ The department shall consider the coastal terrace between Carmel River and San Jose Creek for designation as a cultural preserve, in order to give additional recognition and protection to archaeological sites.
- ▶ No demolition of the barn, blacksmith shed, or creamery/cookhouse buildings shall be permitted without prior additional study and evaluations.
- ▶ The emphasis of landscape management at Carmel River SB shall be toward maintenance of the natural landscape. Facilities shall be screened to the extent possible and harmonious with the natural landforms of the unit. Human-made intrusions shall be reduced or eliminated. The department shall work with appropriate local agencies to place overhead utility lines adjacent to the unit underground, where feasible.

2.3.3 1996 GENERAL PLAN AMENDMENT

The 1996 GPA called for the change of land use designation on the 155-acre Odello West field from agriculture to riparian and wetland habitat. The justification for the change was that the field was needed as a floodway for the Carmel River to reduce the likelihood of flooding residential and commercial parcels north of the river and to help restore altered natural habitats. The change in designation was completed.

2.3.4 CARMEL AREA LAND USE PLAN

Many of the policies within the *Carmel Area Land Use Plan* are relevant to Carmel River SB. These policies are listed below:

- ▶ The County should work with the California State Parks and the State Coastal Conservancy to explore the restoration of significant coastal resource areas, as provided for in the State Coastal Conservancy Act.
- ▶ California State Parks should monitor disturbed areas such as trail construction sites for the presence of noxious plants and erosion, and such potential problems should be immediately controlled.
- ▶ The California State Park's interpretive program should include static displays, guided nature walks and published information which emphasize the values of environmentally sensitive habitats and which are directed toward the general public.
- ▶ The County, in coordination with the California State Parks and other concerned agencies or organizations, should promote increased public understanding of the importance and values of environmentally sensitive habitats.
- ▶ The State Water Resources Control Board, the California Department of Fish and Wildlife, the California State Parks, the County of Monterey, the Carmel Sanitary District, and the universities and research stations should develop a coordinated water quality monitoring program for the Areas of Special Biological Significance.

- ▶ Point and non-point sources of pollution of Point Lobos and Carmel Bay Areas of Special Biological Significance, coastal streams, and the Carmel River Lagoon and Marsh shall be controlled and minimized.
- ▶ The County or appropriate local jurisdictions should seek funding for a detailed floodplain management study of the lower Carmel River Valley floodplain.
- ▶ Parking along the highway shoulders in the vicinity of major recreational areas shall be discouraged due to pedestrian and traffic hazards and conflicts. Especially hazardous in the Carmel area is the uncontrolled, haphazard parking on the west side of Highway 1 at Monastery Beach. The California State Parks shall provide improved parking at Monastery Beach according to the standards and criteria set forth in the Public Access Element of this plan.
- ▶ The provision of recreational opportunities and facilities shall be compatible with the preservation of sensitive coastal resources. Passive to low-intensity outdoor recreational uses shall be emphasized within the State beaches, park and reserve.
- ▶ Use of areas designated as Resource Conservation and Scenic and Natural Resource Recreation on the plan map shall be limited to passive and low-intensity day-use recreational and educational activities. These areas include the Carmel Point shoreline, Carmel River SB, the marsh and lagoon, Point Lobos SNR, and the Garrapata acquisition.

2.4 EASEMENTS

Several of the deeds granted for Carmel River SB contain utility easements including a T.V. cable line easement that runs from east to west across the Odello West field and electrical line easements along the eastern edge of the property. A 10-foot sewer line easement runs from east to west from the CAWD wastewater treatment plant to the 100-foot sewer outfall easement located at Middle Beach. There is also a 40-foot roadway easement that runs east to west from the Bay School to Highway 1 and a 20-foot roadway easement on the eastern edge of the property to accommodate the access road to the CAWD wastewater treatment plant (California State Parks 2012b). Caltrans also has a right-of-way easement adjacent to Highway 1.

2.5 EXISTING PARK FACILITIES

Existing facilities within Carmel River SB are listed below. Additional detail and a map of the recreational facilities are provided in Section 4.2, Recreation Facilities and Trails. Additional detail and a map of operations and maintenance facilities are provided in Section 7.1, Existing Facilities.

- ▶ Visitor Serving Facilities at Scenic Road
 - Restroom at Scenic Road
 - Parking area at Scenic Road
 - Interpretive displays at Scenic Road
 - Carmel River Beach Service Road and Trail
- ▶ Visitor Serving Facilities at Monastery Beach
 - Restroom at south end of Monastery Beach

- Warning signs at Monastery Beach
- Parking area at Monastery Beach
- ▶ Odello Farm Complex
 - Barn
 - Blacksmith Shed
 - Creamery/cookhouse
 - Odello Residence

3 SIGNIFICANT RESOURCE VALUES

3.1 PHYSICAL RESOURCES

3.1.1 CLIMATE

The climate in the Carmel area is a maritime Mediterranean climate characterized by warm, rainy winters and cool, foggy summers (Thomson 1997). The year-round climate is mild and not subject to severe seasonal change, primarily because of the immediate influence of the Pacific Ocean. A semi-permanent Pacific high pressure system to the west or northwest of the Monterey area creates northwesterly winds over the ocean. The Pacific high pressure system intensifies during the summer months, keeping storms to the north. On average, fog occurs 135 days per year, primarily during July, August, and September, although inland areas experience less fog than the coastal areas. Average annual temperatures in the area generally range from 49°F to 63°F, with summer maximum temperatures around 68°F and winter maximum temperatures in the low 60s. Daily temperature fluctuations are typically small. Rainfall averages 19 inches per year and falls primarily between October and May (CeNCOOS 2012, Caltrans 2004). The El Niño phenomenon of cyclical ocean warming increases the severity and frequency of winter storms and increases the amount of precipitation. During El Niño events, coastal erosion accelerates, resulting in loss of beach sand and coastal bluff failures. La Niña years tend to bring nearly opposite effects of El Niño to the United States (NWS 2012). According to the National Oceanic and Atmospheric Administration's Weather Service website, the nearest weather station to Carmel River SB is the Monterey Peninsula Station.

3.1.2 TOPOGRAPHY

Carmel River SB consists of a north- to northwest-facing beach and lagoon backed by low coastal terraces. The elevation ranges from mean sea level to 100 feet, with the highest elevations being within the area north of the Bay School and the lowest elevations on Carmel River Beach and Monastery Beach (DPR 1988). The topography is fairly flat with slight undulations in the local dunes/beach.

Submarine topography is highly variable. At a depth of approximately 210 feet, a sunken terrace 160 feet offshore from San Jose Creek forms the rim of the Carmel Submarine Canyon. Depths in the canyon reach 1,200 feet (DPR 1988).

3.1.3 GEOLOGY AND SEISMICITY

Carmel River SB is in the Salinian block of the Coast Ranges Geomorphic Province (DPR 1988). One major geologic feature, the Santa Lucia Granodiorite of Paleocene Age, dominates Carmel River SB. The Santa Lucia Granodiorite is approximately 93 million years old, comprises the bedrock basement at the Carmel River Lagoon, and is a primary formation along Carmel River SB shoreline. The bay itself is small, with an area of approximately 5 square miles, and is bounded by two granodiorite headlands, Pescadero Point to the north and Carmel Point to the south (Simpson 1972). Sand is abundant along the coast and in the river beds (DPR 1988). The composition of the sand is variable, depending on the source (DPR 1988). Although heavy minerals such as garnet, biotite, and magnetite are common in the sands of Carmel Bay, quartz and feldspar predominate (Simpson 1972).

The Carmel Submarine Canyon, which is a branch of the larger Monterey Submarine Canyon, is a major geomorphic feature adjacent to Carmel River SB and off the California coast.

Faults in the Monterey area occur primarily in two northwest-trending zones, the Palo Colorado-San Gregorio fault zone and the Monterey Bay fault zone. There are several active or potentially active faults within these zones including: San Andreas, San Gregorio-Palo Colorado, Chupines, Navy, and Cypress Point, with the San Andreas and San Gregorio being the most dominant faults that are considered active and have evidence of historic or recent movement. The San Andreas Fault runs through much of California and the southeast portion of Monterey County (Monterey County 2010). The Cypress Point Fault which extends from the City of Carmel-by-the-Sea directly across Carmel River SB to Palo Corona Regional Park. This is a poorly studied fault and little is known about it (Bryant 2001). Small to moderate earthquakes (i.e., magnitude 5.0 and below) are common in Monterey County. Although there are a number of fault zones in this area, none of them are officially designated as an Alquist-Priolo Earthquake Fault Zone (DPR 1979, 1988; TAMC 2009) (Exhibit 3-1).

Geologic hazards at Carmel River SB include landslides, rockfalls, seaciff retreat, liquefaction, tsunamis, and seismic shaking (DPR 1988).

3.1.4 PALEONTOLOGY

The Carmelo and Temblor Formations adjacent to Carmel River SB contain plant and animal fossils, largely consisting of leaf fragments, pieces of carbonized wood, and seaweed. However, no fossils have been found in the three outcrops around Carmel Bay (Simpson 1972).

3.1.5 SOILS

Carmel River SB is located within the Northern Coast Soil Region, which is characterized by coastal terraces and uplands. According to the 2009 Natural Resources Conservation Service (NRCS) Soil Survey and GIS data layers, the three soil types with maximum coverage in the area are Pico fine sandy loam, Narlon loamy fine sand and coastal beaches (Exhibit 3-2).

The Pico fine sandy loam soil type is formed alkaline, moderately coarse textured alluvium derived mostly from sedimentary formations. This soil type is typically well drained and has moderate rapid permeability with slow to medium runoff. “Coastal beaches” are mapped on narrow, sandy beaches. This soil type is partially or completely covered by water during high tides and storm surges. Permeability is high, and erosion hazard related to wind and wave action is high. Narlon soils consist of poorly drained soils that formed uplands in soft marine sediments.

A small area of Sheridan coarse loamy sand occurs adjacent to San Jose Creek west of Highway 1. Runoff is average and erosion potential is low for this soil type.

The Carmel River SB also has a dissected form of Xerorthents. This type of soil is typically steep to extremely steep and consist primarily of unconsolidated or weakly consolidated stony alluvium. Runoff is rapid and with erosion potential.

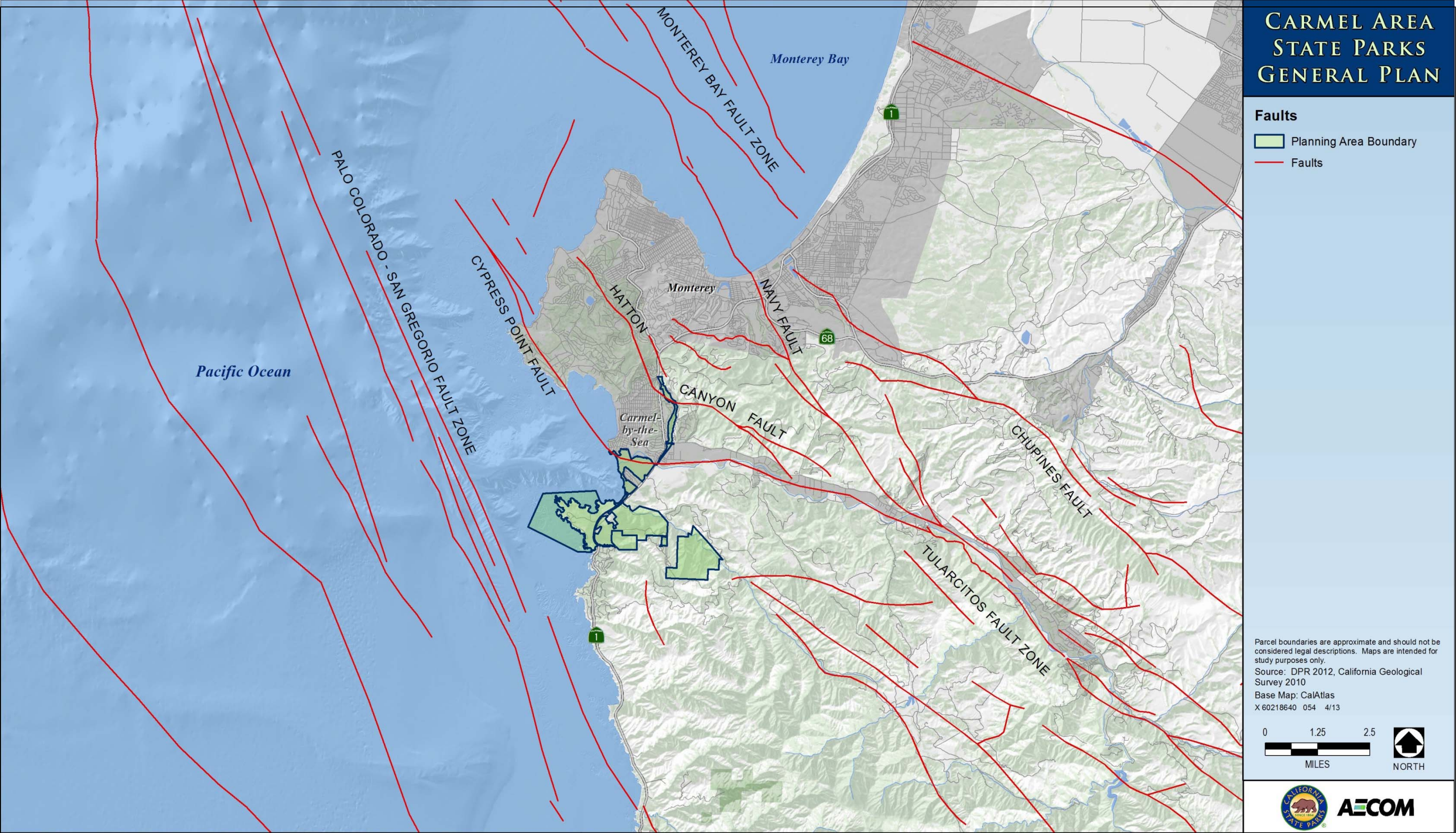


Exhibit 3-1

Faults in the Vicinity of Carmel River SB

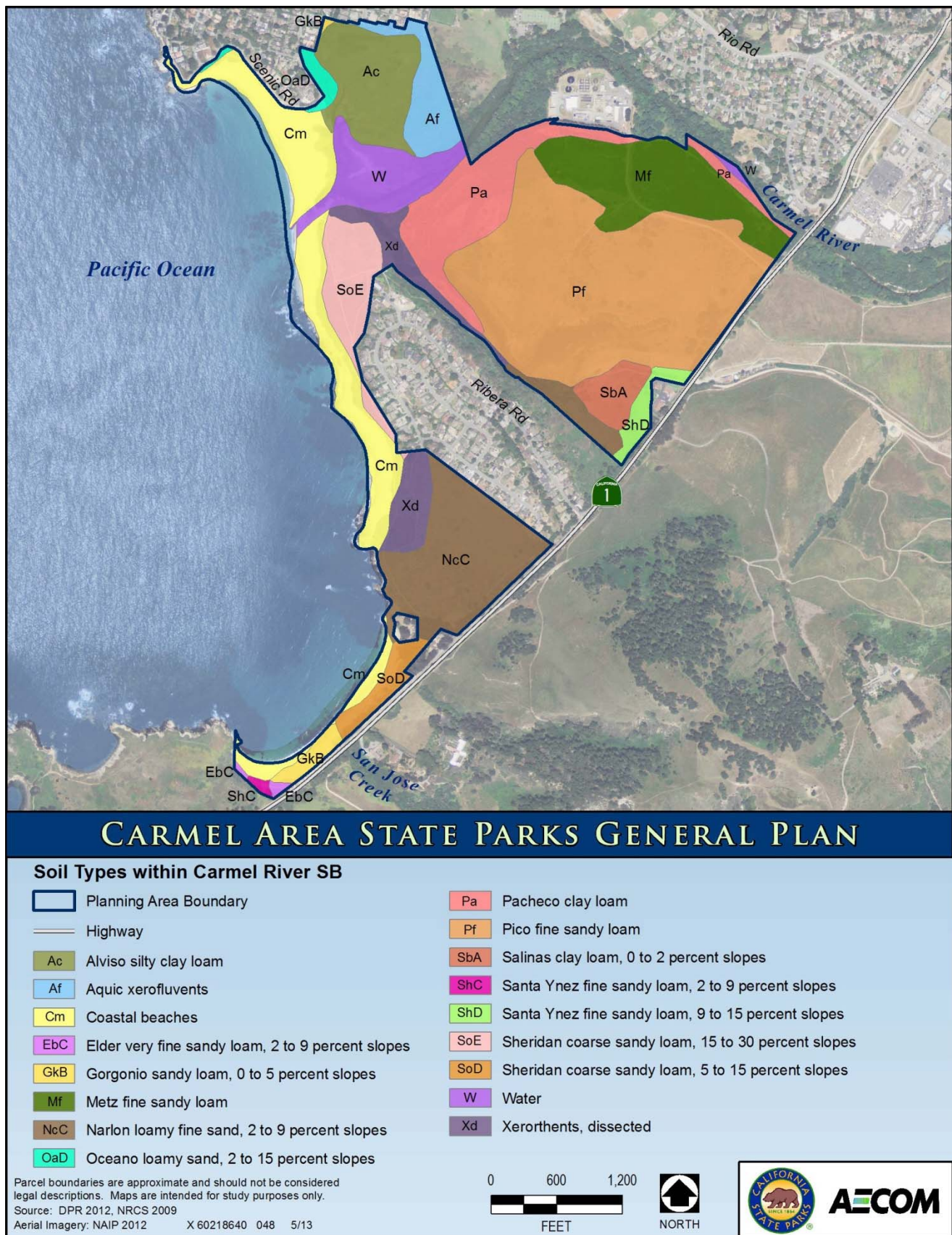


Exhibit 3-2

Soil Types within Carmel River SB

Erosion potential due to wind and wave action is high along the beaches. Soils within the undeveloped area between Monastery Beach and the Carmel Meadows subdivision also have a high erosion potential, while soils along San Jose Creek only have a slight potential for erosion (DPR 1988).

3.1.6 HYDROLOGY, WATER QUALITY, AND FLOODPLAINS

According to the NRCS watershed database, watersheds in the region include the Canyon Del Rey-Frontal Monterey Bay, Carmel River, and Big Sur River-Frontal Pacific Ocean watersheds (Exhibit 3-3). Watershed data in support of California State Parks General Plans is typically obtained from the Calwater 2.2 database; however, in the case of this planning effort, the NRCS dataset appears to contain more detailed and accurate information for this particular region. Carmel River SB is within all three watersheds: Canyon Del Rey-Frontal Monterey Bay, Carmel River, and Big Sur River-Frontal Pacific Ocean (Exhibit 3-3). The Carmel River SB unit comprises a small percentage (i.e., 1% or less) of each of these watersheds. The headwaters of the Carmel River Watershed are located within the northern portion of the Ventana Wilderness of Los Padres National Forest. The Carmel River is the primary hydrologic feature within Carmel River SB. Flow in the Carmel River is partially regulated by the upstream Los Padres and San Clemente reservoirs. Downstream of these dams, the river gathers water from its tributaries. Ninety percent of the Carmel River annual discharge occurs from January to April; peak flow can reach 8,600 cfs during that period. The lower reach of San Jose Creek and its associated floodplain are also main hydrologic features within Carmel River SB (DPR 1988).

Monterey County residents rely on the Carmel River watershed for their primary water supply. Water is supplied by California American Water Company (Cal Am). Precipitation within the Carmel River Watershed recharges the Carmel River alluvial aquifer (CSU Pomona 2005). Carmel River's surface water comes from four sources: direct run-off from rainfall, releases from dams, seeps and springs of upland groundwater, and return-flow from urban areas (The Watershed Institute 2004). During summer low flow periods, the lagoon is supplied almost entirely by groundwater.

It was determined that the Carmel River groundwater basin was being overdrafted, leading to reduced river levels, and Cal Am is under court order to reduce overdrafting. The overdrafting impacts water quality in the Carmel River Lagoon and has resulted in the need for upstream fish rescues. Well water from the Carmel River Riparian Mitigation Bank and tertiary treated water from the CAWD wastewater treatment plant are also being injected into the lagoon to improve water quality. The lagoon water level and temperatures are augmented by the groundwater well located adjacent to Highway 1.

Levees have been constructed along the Carmel River during urbanization and development along the river corridor. The majority of Carmel River SB is within the 100-year floodplain or 100-year floodplain for coastal areas (Exhibit 3-4). This area has experienced extensive flooding, most notably in 1995, 1998, and 2008. Areas designated within the 100-year floodplain have a 1% annual chance of flooding, and areas within the 100-year floodplain for coastal areas have a 1% or greater annual chance of flooding with an additional hazard associated with storm waves. Surface water flows from the Carmel River can flood most of the Odello West field (DPR 1979). The Carmel River Lagoon Restoration Project has added significant flood protection to residential neighborhoods north of the lagoon. Levees have been notched east and west of Highway 1 to relieve floodplain constriction; however, Highway 1 remains a constriction point within the floodplain (The Watershed Institute 2004).

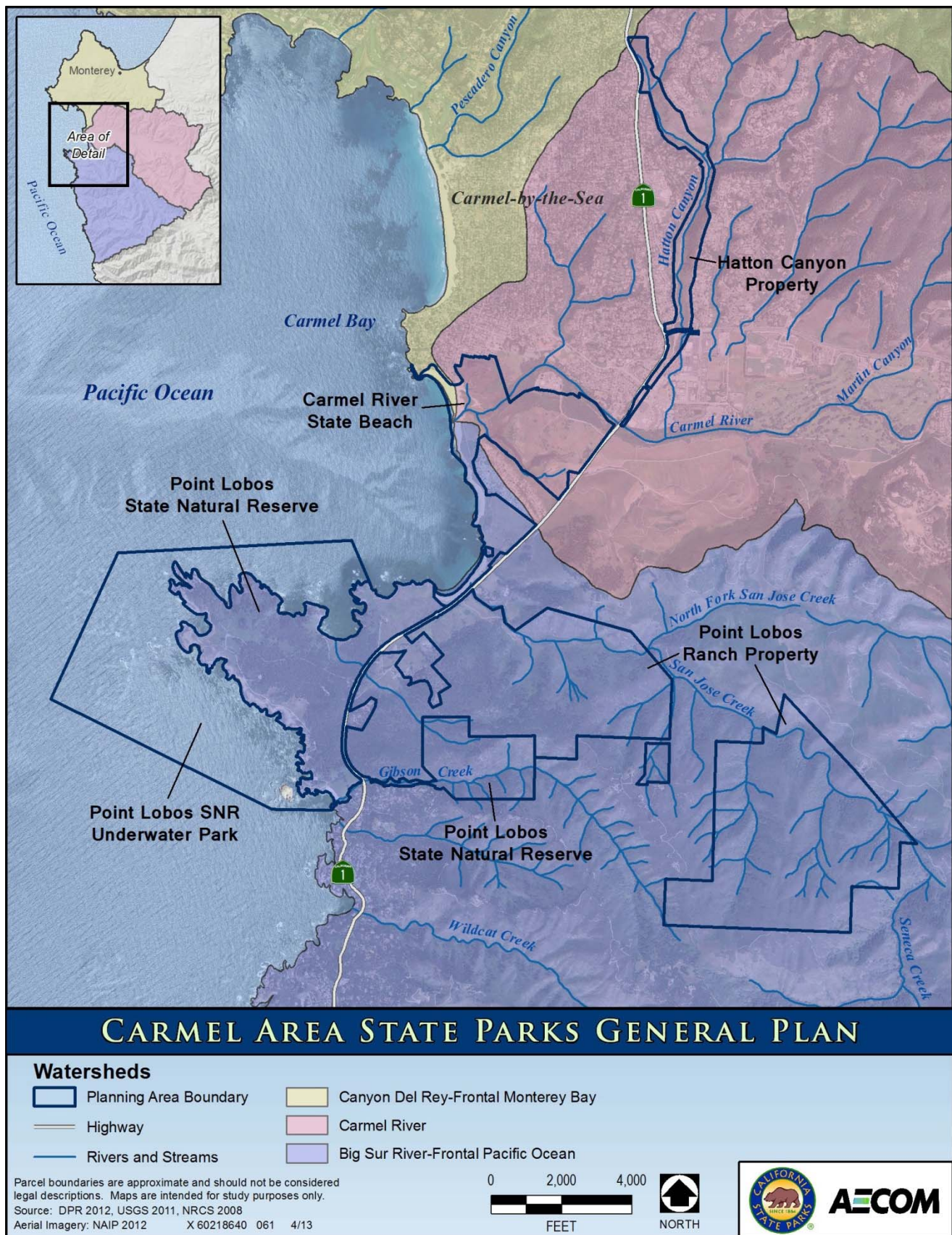


Exhibit 3-3

Watersheds



Exhibit 3-4

Floodplain Map of Carmel River SB

The Monterey County Resource Management Agency (RMA) has historically conducted sandbar management activities at the Carmel River SB to mitigate flooding impacts to low lying residential structures along the northern edges of the lagoon and this activity continues to date. When flows in the Carmel River increase, the sandbar breaches “naturally” without mechanical aide. At the conclusion of the rain season (April or May), sandbar management may include closure activity (if needed) to maintain adequate water levels in the lagoon over the summer months. The level and duration of potential flooding varies from year-to-year, and sandbar management by the RMA during the winter rainy season depends on multiple factors including: beach elevations, high tides, and river flows. The RMA requires approximately 24 to 48 hours, depending on weather conditions and the size of the sandbar, to mobilize and clear a channel through the sandbar with 1-2 bulldozers. Water levels will be managed in the Carmel River Lagoon at the beginning of the summer dry season by using heavy equipment to modify the beach that separates the lagoon from the ocean (RMA 2012a). An ecosystem protection barrier is also being considered to protect homes north of the lagoon from flooding.

Surface and groundwater within the Carmel area are generally of good mineral and bacteriological quality. However, based on data from the California Department of Water Resources, levels of iron and manganese exceed maximum contaminant levels for California secondary drinking water standards (DPR 1988). Water quality in the Carmel River is suitable for human consumption and contact. In recent years, the Carmel River has experienced extensive erosion and sedimentation while the Carmel Bay has sustained a notable decline in water clarity. Nonpoint sources of pollution include: (1) the contaminants and sediments found in urban stormwater runoff entering the Carmel River and Carmel Bay, and (2) septic system and leachfield failures in the Carmel Highlands area. The Carmel Sanitation District's sewer outfall is approximately 45 feet deep off the rocky point that separates Carmel River Beach from Monastery Beach (DPR 1979).

The Central Coast Long-term Environmental Assessment Network (CCLEAN) is a discharger-funded ocean monitoring program in the Monterey Bay area that has been monitoring water quality under the direction of the Central Coast Regional Water Quality Control Board consistent with National Pollutant Discharge Elimination System permit requirements. Ongoing monitoring is occurring for mussels and effluent adjacent to Carmel River SB (CCLEAN 2012). In addition, the Monterey Peninsula Water Management District (MPWMD) has been collecting monitoring data on baseline hydrologic and water quality information, the Carmel River steelhead fish population, the Carmel River riparian habitat, and the Carmel River Lagoon since 1991. The monitoring data is being collected as part of the mitigation program that was a required component of the MPWMD *Water Allocation Program Environmental Impact Report* (MPWMD 2012).

Water quality in the Carmel River Lagoon varies throughout the year. This is driven by changes in local weather, lagoon volume, stream flow, wave and tidal conditions, and also depends on whether the sandbar separating the river from the ocean is open or closed. During critically dry months, temperature and dissolved oxygen have to be monitored and managed to maintain water quality for steelhead.

3.1.7 SHORELINE CONDITIONS

Carmel River SB has approximately 1.5 miles of shoreline that borders Carmel Bay including Carmel River Beach, Middle Beach, and Monastery Beach. Shoreline conditions along Carmel Bay are characterized by alternating high rocky cliffs and points, sandstone areas, and extensive granitic sand beaches (Photo Exhibit 3-1).

The submarine lands adjacent to Carmel River SB are in the Carmel Bay State Marine Conservation Area. Monastery Beach is also adjacent to the Point Lobos SMR, which is 8.8 square miles. The Carmel Bay State Marine Conservation Area includes 6.7 miles of coastline and 2.12 square miles, from Granite Point north to Pescadero Point. Granite-walled Carmel Canyon, which dominates the submarine area of Carmel Bay, originates about 0.25-mile from shore near Monastery Beach (Caltrans 2004). The canyon reaches a depth of 1,200 feet a mile offshore (DPR 1988). Carmel Pinnacles SMR is also offshore from Carmel River SB and is a 0.53-square mile area of submerged granitic pinnacles and spires that is commonly visited by SCUBA divers. There is no fishing allowed within either of the state marine reserves, and recreational take of fin fish and limited commercial fishing is allowed within the marine conservation area (Clifton and Johnson 2010). Carmel Bay is also an area of significant deep water upwelling that makes the area nutrient rich and draws many species to the area (DPR 1979).

The Marine Life Protection Act requires monitoring of designated MPAs to evaluate their effectiveness. As part of this effort, the California Collaborative Fisheries Research Program (CCFRP) has actively monitored four MPAs including the Point Lobos SMR since 2007. The monitoring efforts are a collaborative effort between the California Sea Grant at Moss Landing Marine Laboratories and San Luis Obispo Science and Ecosystem Alliance/Center for Coastal Marine Sciences at Cal Poly San Luis Obispo. Data collected includes species compositions, sizes, and catch



Source: AECOM 2012

Photo Exhibit 3-1

Shoreline at Carmel River SB

rates of fishes in the region and is used to help resource managers evaluate the effectiveness of MPAs and for future fisheries management. Although the data collected during the first 5 years of monitoring are very similar between MPAs and associated reference sites, data collected from the Point Lobos SMR indicate larger sizes and higher densities of 8 out of the 11 most abundant species caught. The conflicting results produced from new and old MPAs indicate a need for longer duration of monitoring to adequately evaluate MPA performance in terms of fisheries management (California Sea Grant 2012).

3.1.8 CLIMATE CHANGE AND SEA LEVEL RISE

CLIMATE CHANGE

Climate change refers to change in the Earth's weather patterns including the rise in the Earth's temperature due to an increase in heat-trapping or greenhouse gases in the atmosphere. Greenhouse gases (GHGs) include carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride among others. Human activities are adding large amounts of GHGs to the atmosphere. Combustion of fossil fuels for heat, electricity, and transportation is the main source of these gases.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Legislation and executive orders on the subject of climate change in California have established a statewide context and process for developing adaptation and mitigation strategies to reduce the negative impacts of impending climate change.

It is anticipated that coastal areas in California will experience several negative affects related to climate change, which will compel the population in these areas to make tough choices regarding critical assets that need to be protected, relocated, or removed because of economic feasibility. Some of the anticipated extreme events and climate impacts associated with oceans and coastal resources are increased temperature, precipitation changes, sea level rise, reduced agricultural activity, biodiversity threats, public health threats, and increased wildfire risks.

Projected effects of climate change on the central California Coastal Region, including Carmel River SB, as described in the *Draft California Climate Change Adaptation Policy Guide* are summarized in Table 3-1.

SEA LEVEL RISE

Sea level rise is considered to be one of the primary effects of climate change that is already affecting California. It is anticipated that sea level rise along the California coast will increase coastal flooding and permanent inundation, deteriorate coastal wetland habitat, increase coastal erosion, cause saltwater intrusion within inland freshwater systems, and change acidity levels of the oceans. Sea level rise will also have economic impacts, threatening private and public properties and reducing tourism potential of California State Parks and other agencies that provide coastal amenities to the public through reduction in or damages to beaches, access ways, parks, scenic vistas, and trails.

In 2006, a historic sea level rise of 7 inches was reported by the Climate Change Center. The *Draft California Climate Change Adaptation Policy Guide* estimates that the entire coastal zone of California is susceptible to the effects of sea level rise including bays and estuaries. The *California Ocean Protection Council* and *Pacific Institute* estimate that even in a medium climate change scenario the sea level along the California coast will rise by 37 to 60 inches by 2100 (Table 3-2).

Table 3-1 Projected Effects of Climate Change on the Central California Coastal Region	
Effect	Ranges
Temperature Change (1990-2100)	January: 4.1°F to 5.2°F increase in average temperatures. July: 5.1°F to 6°F increase in average temperatures. (Modeled high temperatures – average of all models; high carbon emissions scenario)
Precipitation	Precipitation varies by location with a general decrease throughout the century. Big Sur's rainfall is projected to decrease by nearly 8 inches in the same timeframe, with 5 to 7 inch decreases in cities like Santa Cruz, San Luis Obispo, and Santa Barbara. Projected decreases in areas of the region that are farther inland are about 4 to 5 inches. (CCSM3 climate model; high carbon emissions scenario)
Sea Level Rise	By 2100, sea levels may rise up to 55 inches, posing threats to many areas in the region, particularly the Monterey Bay Area, Morro Bay, Avila Beach, and Santa Barbara. Overall, the estimated increased acreage in each county vulnerable to flooding will be 36% in Santa Barbara County, 15% in San Luis Obispo County, 12% in Santa Cruz County, and 11% in Monterey County.
Wildfire Risk	There is low to moderate change in projected fire risk in this region except for southwestern Monterey County, near the Big Sur, Carmel Valley, and Greenfield areas, where rates are expected to increase by 70% to 100% by 2085 (GFDL climate model; high carbon emissions scenario)
Source: Cal EMA and CNRA 2012	

Table 3-2 Sea Level Rise Projections using 2000 Sea Levels as a Baseline¹			
Year	IPCC Emission Scenario	Average of Models	Range of Models
2030		7 in (18 cm)	5-8 in (13-21 cm)
2050		14 in (36 cm)	10-17 in (26-43 cm)
2070	Low	23 in (59 cm)	17-27 in (43-70 cm)
	Medium	24 in (62 cm)	18-29 in (46-74 cm)
	High	27 in (69 cm)	20-32 in (51-81 cm)
2100	Low	40 in (101 cm)	31-50 in (78-128 cm)
	Medium	47 in (121 cm)	37-60 in (95-152 cm)
	High	55 in (140 cm)	43-69 in (110-176 cm)
Notes: ¹ Background regarding these sea level rise projections can be found in the <i>Resolution of the California Ocean Protection Council on Sea-Level Rise</i> (OPC 2011). Source: Cal EMA and CNRA 2012			

While future sea level rise estimates vary based on future GHG emissions scenarios, the *2009 California Climate Change Adaptation Strategy* has adopted six adaptation strategies for ocean and coastal resources that are important to keep in mind while understanding the existing conditions of the Carmel Area State Parks and proposing a plan for the future. The six adaptation strategies laid out by the Coastal Adaptation Working Group, including California State Parks, are:

- ▶ Strategy 1: Establish State Policy to Avoid Future Hazards and Protect Critical Habitat;
- ▶ Strategy 2: Provide Statewide Guidance for Protecting Existing Critical Ecosystems, Existing Coastal Development, and Future Investments;
- ▶ Strategy 3: State Agencies Should Prepare Sea Level Rise and Climate Adaptation Plans;
- ▶ Strategy 4: Support Regional and Local Planning for Addressing Sea Level Rise Impacts;
- ▶ Strategy 5: Complete a Statewide Sea Level Rise Vulnerability Assessment Every Five Years; and
- ▶ Strategy 6: Support Essential Data Collection and Information Sharing.

In addition, in 2011 California State Parks developed the *Sea Level Rise and Extreme Event Guidance* document that includes recommendations for addressing sea level rise at California state parks along California's coast (DPR 2011). This document anticipates effect to coastal park units resulting from the following:

- ▶ Potential loss of cultural and natural resources;
- ▶ Damage to park facilities and infrastructure (owned by State Parks and others);
- ▶ Decreased public access;
- ▶ Altered recreational opportunities;
- ▶ Change to revenue generation.

To help park planners and managers address these potential effects, the guidance document recommends a 5 step approach to managing risk in coastal park units:

1. Define Scope
2. Assess Vulnerability
3. Determine Risk
4. Manage Risk
5. Formulate Recommendation

The guidance document also includes specific considerations for State Parks (Appendix B). Specific considerations for include mapping of potential flooding areas, identifying opportunities and constraints, siting of new structures outside of potential flooding areas, and developing shoreline protection goals and guidelines.

Because of the low-lying elevation of the Carmel River SB, it is anticipated that sea level rise will greatly affect this area. The *Impacts of Sea Level Rise on the California Coast* mapped by the Pacific Institute show that presently the majority of the lands within the State Beach are at high risk of inundation even from a 100-year coastal flood event (Exhibit 3-5). Sea level rise is anticipated to impact water quality at the Carmel River Lagoon,

erode the barrier beach resulting in more frequent breaching of the Carmel River to the ocean and impacting salmonids, and could result in changes in groundwater quality via more saline groundwater.

3.2 NATURAL RESOURCES

The Monterey Peninsula supports several different climatic, topographic, and soil conditions, resulting in a wide variety of habitats. This diversity of habitats supports many native plant and wildlife species. As an example, 146 plant species reach their most southern and 156 plant species reach their most northern distributional limits in Monterey County, and at least 34 plant species are found only in Monterey County (City of Carmel-by-the-Sea 2003).

3.2.1 PLANTS

The Monterey Peninsula supports a variety of unique and important vegetation communities and landscapes, including several types of forest, coastal prairie, coastal scrub, wetlands, streams and associated riparian corridors, and beaches and rocky shoreline. The coastal scrub that covers much of the Monterey Peninsula contains several rare vegetation associations and supports several rare plant species (TMPFW 2011). Riparian woodlands are among the most biologically rich habitats in North America (CSU Pomona 2005), providing shade and structure along streams and important habitat for resident and migratory birds, mammals, reptiles, and amphibians (RHJV 2004). In California, less than 15% of these diverse woodlands remain (RHJV 2004). Coastal wetlands and streams are especially important habitat. Since the 1850s, 90% of California's original coastal wetland acreage has disappeared (California Coastal Commission 1987).

Habitats found within Carmel River SB include coastal scrub, wetlands, streams, riparian, beaches, and rocky shoreline. Beaches and rocky shoreline provide habitat for many sensitive species, and many birds, including several rare species, have been observed at the Carmel River mouth. Carmel River SB also is home to the Carmel River lagoon and marsh, the only major coastal wetland in the region (Monterey County 1983).

VEGETATION COMMUNITIES AND OTHER LANDSCAPES

Vegetation communities at Carmel River SB include coastal scrub, riparian forest, wetlands, beaches, agriculture, and eucalyptus groves. Other landscapes include the Carmel River mouth and lagoon, San Jose Creek, rocky shore, and developed areas. The location and extent of these communities and landscapes is shown in Exhibit 3-6. These communities and landscapes are mapped at a broad scale (Exhibit 3-6) because they are based on California State Parks vegetation management areas (California State Parks 2010a), rather than more detailed vegetation community mapping protocols. For general planning purposes, this level of mapping was determined to be sufficient.



Exhibit 3-5

Projected Effects of Sea Level Rise at Carmel River SB

Coastal Scrub

Coastal scrub is present on the low bluffs just above the beach south of the mouth of the Carmel River and throughout the Odello West field. It is dominated by coyote brush (*Baccharis pilularis*), mock heather (*Ericameria ericoides*), golden yarrow (*Eriophyllum confertiflorum*), bush monkeyflower (*Mimulus aurantiacus*), and wild buckwheat (*Eriogonum parvifolium*) (DPR 1988). Dominant herbs include soft chess (*Bromus hordeaceus*), quaking grass (*Briza maxima*, *B. minor*), slender wild oat (*Avena barbata*), and foxtail fescue (*Festuca myuros*) (DPR 1988). Invasive species such as French broom (*Genista monspessulana*), cape ivy (*Delairea odorata*), black mustard (*Brassica nigra*), and poison hemlock (*Conium maculatum*) are common associates (California State Parks 2010a). Additionally, sea-fig (*Carpobrotus chilensis*) and Hottentot-fig (*C. edulis*) are present throughout a large portion of the coastal scrub, and blue gum (*Eucalyptus globulus*) saplings are invading from the adjacent eucalyptus grove near the Bay School (California State Parks 2010a). Parts of the coastal scrub were fairly recently converted from annual grassland as coyote brush and other shrubs became established. A mixed coastal scrub/dune scrub community is present at the mouth of San Jose Creek. This community is dominated by California sagebrush (*Artemisia californica*), beach bur (*Ambrosia chamissonis*), golden yarrow, and bush lupine (*Lupinus arboreus*) (DPR 1988).

Riparian/Willow Forest

Riparian vegetation is present along the Carmel River, along a small channel running through the Odello West field parallel to the south arm of the lagoon, along San Jose Creek, and at the southern end of Monastery Beach. Pacific willow (*Salix lasiandra* var. *lasiandra*), black cottonwood (*Populus trichocarpa*), white alder (*Alnus rhombifolia*), arroyo willow (*Salix lasiolepis*), and red willow (*Salix laevigata*) dominate the riparian forest (DPR 1987, 1996; California State Parks 2010a). Understory species include poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), coyote brush, common horsetail (*Equisetum arvense*), Hutchinson's larkspur (*Delphinium hutchinsoniae*), common scouring rush (*E. hyemale* ssp. *affine*), salt grass (*Distichlis spicata*), California tule (*Schoenoplectus californicus*), and stinging nettle (*Urtica dioica* ssp. *holosericea*) (The Watershed Institute 2006; DPR 1989, 1988, 1996; Barry et al. 1977). The majority of these areas were in agricultural production until the late 1990s when they were restored to riparian forest (California State Parks 2010a). Hutchinson's delphinium (*Delphinium hutchinsoniae*), a rare species that is endemic to Monterey County, is found within the riparian forest along San Jose Creek (Barry et al. 1977, CNPS 2012). Riparian corridors are considered environmentally sensitive habitats in the *Carmel Area Land Use Plan* (Monterey County 1983). Protection of the Carmel River riparian corridor is of particular concern because of upstream modifications and water extraction (Monterey County 1983). The riparian vegetation at Carmel River SB is considered a freshwater forested/shrub wetland (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6).



Exhibit 3-6

Vegetation Communities and Other Landscapes at Carmel River SB

Freshwater Emergent Wetlands

Several freshwater emergent wetlands are present at Carmel River SB (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6). Seasonally inundated freshwater marsh is adjacent to the Carmel River Lagoon (California State Parks 2010a). California tule is dominant in the deeper portions of the freshwater marsh; pickleweed (*Salicornia* sp.), marsh jaumea (*Jaumea carnosa*), salt grass, spikerush (*Eleocharis macrostachya*), and Olney's three-leaved bulrush (*Schoenoplectus americanus*) dominate the mid-elevation marsh; and Baltic rush (*Juncus balticus*) and Pacific silverweed (*Potentilla anserina* ssp. *pacifica*) are dominant in the upper marsh, with marsh jaumea as a common associate species (MPWMD 1995, DPR 1985, Barry et al. 1977). Some areas of the marsh are also dominated by cattail (*Typha* sp.) and paniced bulrush (*Scirpus microcarpus*) (DPR 1996). The transition zone between the marsh and adjacent uplands is dominated mostly by weedy species, including curly dock (*Rumex crispus*), wild radish (*Raphanus sativus*), dotted knotweed (*Polygonum punctatum*), bur clover (*Medicago polymorpha*), cut-leaf geranium (*Geranium dissectum*), cut-leaf plantain (*Plantago coronopus*), sow thistle (*Sonchus* sp.), soft chess, and wall barley (*Hordeum murinum* ssp. *murinum*), along with some of the same species that are found in the marsh (The Watershed Institute 2006, DPR 1996, Barry et al. 1977). As mentioned above, the marsh wetland and lagoon is considered an environmentally sensitive habitat in the *Carmel Area Land Use Plan* and is the only major coastal wetland in the region (Monterey County 1983).

A small freshwater marsh wetland dominated by California tule is present on the beach at the base of a coastal scrub slope at the northern end of the park.

Carmel River and Lagoon

The Carmel River, which drains an approximately 256-square mile watershed (CSU Pomona 2005), is the largest freshwater stream flowing into Carmel Bay (TAC 2007). Vegetation in the channel is limited to the lower portion of the river and consists of willow saplings and non-native plants that are scoured out by high water flows each winter (The Watershed Institute 2006). Riparian vegetation is present along the banks of the river, and is described under "Riparian/Willow Forest," above. The river mouth typically remains closed for most of the year, forming a large lagoon. The south arm of the lagoon was expanded in the southeast to provide additional habitat for Pacific Coast steelhead (California State Parks 2010a). This part of the lagoon support beds of pondweed (*Potamogeton* sp.). The central portion of the lagoon lacks vegetation (The Watershed Institute 2006). When water levels are low, mudflats and sandflats are exposed in the shallower portions of the lagoon. Vegetation in these areas is limited to pioneering species, typically non-native annual plants (The Watershed Institute 2006). The marsh wetlands adjacent to the lagoon are described above under "Freshwater Emergent Wetlands". The Carmel River and Lagoon are estuarine wetlands (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6).

San Jose Creek

San Jose Creek enters the Pacific Ocean just south of the Bay School, and a small backwater lagoon develops in this area. The creek mouth is closed during the summer, and a small lagoon and wetland form here (Hagar Environmental Science 2002). The wetland is dominated by beardless wild rye (*Elymus triticoides*) with rushes (*Juncus* sp.) and salt grass is also present (DPR 1988). The lagoon and wetland are part of the marine wetlands located along the shoreline (USFWS 2012a) (Exhibit 3-6). Riparian vegetation along San Jose Creek is described above under "Riparian/Willow Forest". Until it reaches the beach, San Jose Creek is considered a riverine

wetland; once the channel reaches the beach it is part of the marine wetlands located along the shoreline (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6).

Beaches

Beaches support strand vegetation, which is made up of a sparse distribution of plants which are usually prostrate and tolerant of wind, sand, and dry soil conditions (Barry et al. 1977). Dominant plant species include beach bur, New Zealand spinach (*Tetragonia tetragonioides*), yellow sand verbena (*Abronia latifolia*), bush lupine, California poppy (*Eschscholzia californica*), seaside saltbush (*Atriplex californica*), European searocket (*Cakile maritima*), sea-fig, and Hottentot-fig (DPR 1989, Barry et al. 1977). The beach is part of the marine wetlands present along the shoreline (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6).

Eucalyptus Groves

Blue gum (*Eucalyptus globulus*) has been planted very densely with Monterey pine (*Pinus radiata*) near the southern end of Carmel River SB around a private inholding. Trees are over 50 feet high and litter from downed wood and bark is deep. Understory species are present primarily along the periphery of the grove and include poison oak and blackberry (*Rubus* sp.) (DPR 1988, California State Parks 2010a).

Rocky Shore

The rocky shoreline is the transition between marine and terrestrial habitats. It is subject to ocean waves, strong winds, and salt spray. Tidepools are a common feature along the rocky shore. Many species of algae and marine animals can grow on the rocky substrates (as described in “Aquatic Life,” below); however, no plant species are present in this landscape. This landscape is part of the marine wetlands present along the shoreline (USFWS 2012a, The Watershed Institute 2006) (Exhibit 3-6).

Agriculture

Approximately 3.06 acres of the Odello West field is currently in agricultural production and is leased as an organic farm growing row crops and providing occasional tours (California State Parks 2010a).

Developed

Developed areas within Carmel River SB include paved and unpaved roads, unpaved trails, parking areas, restrooms, beach access stairs, and several buildings on the Odello West field.

SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are of special concern to CDFW or that are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, the Porter-Cologne Act, or Section 404 of the CWA. Sensitive communities at Carmel River SB include riparian areas along the Carmel River and San Jose Creek, wetlands, and marine communities. Protection of the Carmel River riparian corridor and the lagoon and associated wetlands is of particular concern in the *Carmel Area Land Use Plan* (Monterey County 1983).

WETLANDS

Wetland habitat within Carmel River SB includes estuarine and marine deepwater wetlands located offshore, along the shoreline, and in the Carmel River Lagoon; freshwater emergent wetlands adjacent to the Carmel River Lagoon and at the northern end of Carmel River SB; freshwater forested/shrub wetlands which includes riparian areas; and riverine wetlands including the Carmel River and San Jose Creek (Exhibit 3-7). See Vegetation Communities above for descriptions of these wetlands.

NATURAL PRESERVE

The northwestern portion of Carmel River SB immediately east of Carmel River Beach is designated as the Carmel River Lagoon and Wetland Natural Preserve (Exhibit 1-3). This area is approximately 53 acres and was designated as a natural preserve in 1985. Areas set aside as natural preserves should be of sufficient size to allow, where possible, the natural dynamics of ecological interaction to continue without interference, and to provide, in all cases, a practicable management unit. Habitat manipulation within natural preserves shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the natural preserve. Current issues within the natural preserve include sandbar management for flood protection and management for special-status species including California red-legged frog and California coast steelhead.

SPECIAL-STATUS PLANT SPECIES

The diverse geologic history and climatic conditions of the Monterey area have created a mosaic of isolated and specialized environments, which support many endemic plants (CNPS 2012). At Carmel River SB, the coastal scrub, wetlands, riparian forest, and beaches are known to or could potentially support several special-status plant species. For the purposes of this document, special-status plants include the following:

- ▶ Species listed under the federal Endangered Species Act (ESA) and/or California Endangered Species Act (CESA) as rare, threatened, or endangered;
- ▶ Species considered as candidates and proposed for state or federal listing as threatened or endangered; and
- ▶ Plants ranked by CDFW to be rare, threatened, or endangered in California (these include species in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California).



Exhibit 3-7

Wetlands within Carmel River SB

The 1979 General Plan (DPR 1979) and both GPAs (DPR 1988, 1996) contain information on special-status species within Carmel River SB. The California Natural Diversity Database (CNDDDB 2012), California Native Plant Society (CNPS) Inventory of Rare Plants (CNPS 2012), and U.S. Fish and Wildlife Endangered Species list (USFWS 2012b) were also searched to gather additional information about special-status species previously documented within Carmel River SB (Exhibit 3-8) and the region. Regional occurrences of special-status species are shown in Appendix C. Special-status plant species known to occur within Carmel River SB include Monterey Indian paintbrush (*Castilleja latifolia*), branching beach aster (*Corethrogyne leucophylla*), and Hutchinson's larkspur (CNDDDB 2012; DPR 1988, 1979). Monterey pine likely historically occurred in the area now covered by coastal scrub (CNDDDB 2012, DPR 1988). There are historic records of several species with limited location information that indicate they may have occurred within Carmel River SB; these include marsh microseris (*Microseris paludosa*), sandmat manzanita (*Arctostaphylos pumila*), Santa Lucia bush-mallow (*Malacothamnus palmeri* var. *palmeri*), Eastwood's goldenbush (*Ericameria fasciculata*), Kellogg's horkelia (*Horkelia cuneata* var. *sericea*), and jolon clarkia (*Clarkia jolonensis*) (CNDDDB 2012). Detailed information on special-status plants known from or with potential to occur at Carmel River SB are listed in Table 3-3. Species that are known to occur within Carmel River SB are shown in bold. No regional locations of previously recorded special-status plants are shown in Exhibit 3-8.

The special-status plants known to occur within Carmel River SB are not federally listed, but have rare plant ranks assigned by CDFW. Monterey paintbrush is ranked 4.3, meaning it has a limited distribution and is not very threatened in California. Branching beach aster is ranked 3.2, meaning more information is needed about this species and it is fairly endangered in California. Hutchinson's larkspur is ranked 1B.2, meaning it is rare, threatened, or endangered in California and elsewhere, and it is fairly endangered in California. All of the known populations of Hutchinson's larkspur are present in Monterey County. They are threatened by road maintenance and erosion from adjacent roads, grazing, foot traffic, invasive plants, and development. No park-wide comprehensive survey for special-status plants has been conducted to date, and the extent of the populations of the species that are present is not known. Detailed inventory and monitoring of special-status plants is recommended.

INVASIVE PLANT SPECIES

The 1979 General Plan (DPR 1979), 1987 and 1996 GPAs (DPR 1988, 1996), *Invasive Plant Control Point Lobos State Reserve, Point Lobos Ranch, & Carmel River State Beach* (California State Parks 2006a), *Carmel River State Beach Vegetation Management Statement* (California State Parks 2010a), and *2009 Carmel River and Lagoon Enhancement Project Report* (DPR 2009a) all contain information on invasive plant species within

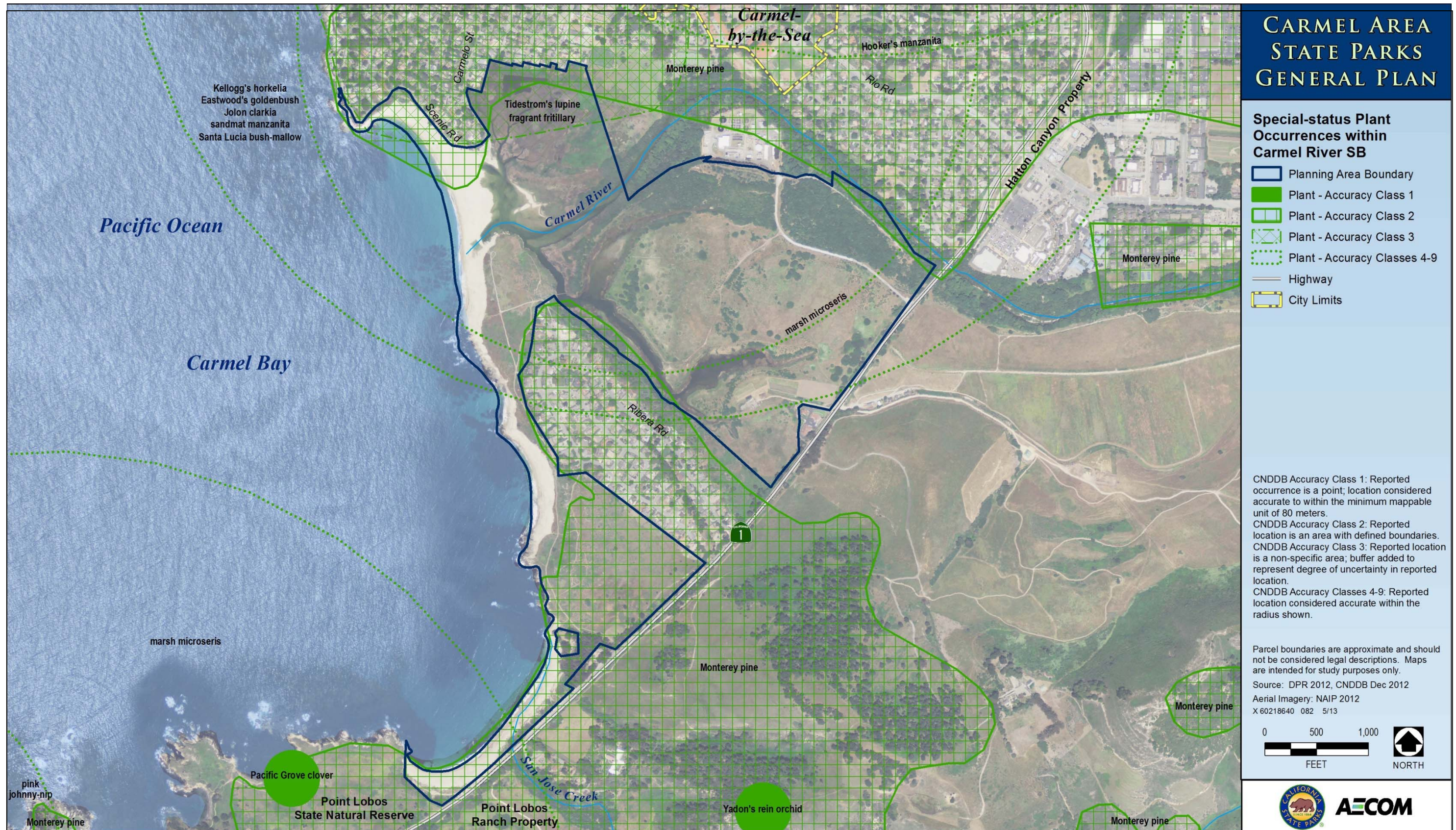


Exhibit 3-8

Special-Status Plant Occurrences

**Table 3-3
Special-Status Plants Known from or with the Potential to Occur at Carmel River SB**

Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Hickman's onion <i>Allium hickmanii</i>	-	1B.2	Closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland; 5 to 200 meters elevation; blooms March through May	Could occur in the coastal scrub.
Little Sur manzanita <i>Arctostaphylos edmundsii</i>	-	1B.2	Coastal bluff scrub and chaparral, in sandy soils; 30 to 105 meters elevation; blooms November through April	Could occur in the coastal scrub.
Hooker's manzanita <i>A. hookeri</i> ssp. <i>hookeri</i>	-	1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub, in sandy soils; 85 to 536 meters; blooms January through June	Could occur in the coastal scrub.
Monterey manzanita <i>A. montereyensis</i>	-	1B.2	Maritime chaparral, cismontane woodland, and coastal scrub, in sandy soils; 30 to 730 meters elevation; blooms February through March	Could occur in the coastal scrub.
Sandmat manzanita <i>A. pumila</i>	-	1B.2	Closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub, in sandy soils and openings; 3 to 205 meters elevation; blooms February through May	Possibly occurred historically (CNDDDB 2012, occ. no. 12), could occur in coastal scrub or on beaches.
Marsh sandwort <i>Arenaria paludicola</i>	FE	E, 1B.1	In sandy soils, in openings in freshwater and brackish marshes and swamps; 3 to 170 meters elevation; blooms May through August	Could occur in wetlands.
Ocean bluff milk-vetch <i>Astragalus nuttallii</i> var. <i>nuttallii</i>	-	4.2	Coastal bluff scrub and coastal dunes; 3 to 120 meters elevation; blooms January through November	Could occur in coastal scrub or on beaches.
Coastal dunes milk-vetch <i>A. tener</i> var. <i>titi</i>	E	E, 1B.1	Coastal bluff scrub, coastal dunes, and mesic coastal prairie, in sandy soils, often in vernal mesic areas; 1 to 50 meters elevation; blooms March through May	Could occur in coastal scrub or on beaches.

Table 3-3 Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Pink johnny-nip <i>Castilleja ambigua</i> ssp. <i>insalutata</i>	-	1B.1	Coastal prairie and coastal scrub; 0 to 100 meters elevation; blooms May through August	Could occur in the coastal scrub.
Monterey Indian paintbrush <i>Castilleja latifolia</i>	-	4.3	Closed-cone coniferous forest, openings in cismontane woodland, coastal dunes, and coastal scrub, in sandy soils; 0 to 185 meters elevation; blooms February to September	Known to occur in the coastal scrub (DPR 1988).
Monterey ceanothus <i>Ceanothus rigidus</i>	-	4.2	Closed-cone coniferous forest, chaparral, and coastal scrub, in sandy soils; 3 to 550 meters elevation; blooms February through April (sometimes June)	Could occur in the coastal scrub.
Monterey spineflower <i>Chorizanthe pungens</i> var. <i>pungens</i>	T	1B.2	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland, in sandy soils; 3 to 450 meters elevation, blooms April through June	Could occur in coastal scrub or on beaches.
Robust spineflower <i>C. robusta</i> var. <i>robusta</i>	E	1B.1	Maritime chaparral, openings in cismontane woodland, coastal dunes, and coastal scrub, in sandy or gravelly soils; 3 to 300 meters elevation; blooms April through June	Could occur in coastal scrub or on beaches.
Jolon clarkia <i>Clarkia jolonensis</i>	-	1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland; 20 to 660 meters elevation; blooms April through June	Possibly occurred historically (CNDDDB 2012, occ. no. 15), could occur in coastal scrub or riparian forest.
Lewis' clarkia <i>Clarkia lewisii</i>	-	4.3	Broadleaf upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub; 30 to 610 meters elevation; blooms May through June	Could occur in coastal scrub.

Table 3-3 Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
San Francisco collinsia <i>Collinsia multicolor</i>	-	1B.2	Closed-cone coniferous forest and coastal scrub, sometimes in serpentine soils; 30 to 250 meters elevation; blooms March through May	Could occur in coastal scrub.
Seaside bird's-beak <i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	-	E, 1B.1	Closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub, in sandy soils, often in disturbed sites; 0 to 425 meters elevation; blooms May through October	Could occur in coastal scrub or on beaches.
Branching beach aster <i>Corethrogyne leucophylla</i>	-	3.2	Closed-cone coniferous forest and coastal dunes; 3 to 60 meters elevation; blooms May through June	Known to occur on the beaches (DPR 1988).
Hospital Canyon larkspur <i>Delphinium californicum</i> ssp. <i>interius</i>	-	1B.2	Chaparral, mesic areas in cismontane woodland, and coastal scrub, in openings; 230 to 1,095 meters elevation; blooms April through June	Could occur in coastal scrub, though elevation may be too low in the park.
Hutchinson's larkspur <i>D. hutchinsoniae</i>	-	1B.2	Broadleaf upland forest, chaparral, coastal prairie, and coastal scrub; 0 to 427 meters elevation; blooms March through June	Known to occur in the riparian community on Monastery Beach (DPR 1979).
Eastwood's goldenbush <i>Ericameria fasciculata</i>	-	1B.1	Closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub, in sandy soils and openings; 30 to 275 meters elevation; blooms July through October	Possibly occurred historically (CNDDB 2012, occ. no. 8), could occur in coastal scrub or on beaches.
Sand-loving wallflower <i>Erysimum ammodendrum</i>	-	1B.2	Maritime chaparral, coastal dunes, and coastal scrub, in sandy soils and openings; 0 to 60 meters elevation; blooms February through June	Could occur in coastal scrub or on beaches.
Menzies' wallflower <i>E. menziesii</i> ssp. <i>menziesii</i>	E	E, 1B.1	Coastal dunes; 0 to 35 meters elevation; blooms March through June	Could occur on beaches.

Table 3-3 Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Yadon's wallflower <i>E. menziesii</i> ssp. <i>yadonii</i>	E	E, 1B.1	Coastal dunes; 0 to 10 meters elevation; blooms May through September	Could occur on beaches.
Fragrant fritillary <i>Fritillaria liliacea</i>	-	1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often on serpentine soils; 3 to 410 meters elevation; blooms February through April	Could occur in coastal scrub.
Monterey gilia <i>Gilia tenuifolia</i> ssp. <i>arenaria</i>	E	T, 1B.2	Maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub, in sandy soils and openings; 0 to 45 meters elevation; blooms April through June	Could occur in coastal scrub or on beaches.
San Francisco gumplant <i>Grindelia hirsutula</i> var. <i>maritima</i>	-	3.2	Coastal bluff scrub, coastal scrub, and valley and foothill grassland, in sandy or serpentine soils; 15 to 400 meters elevation; blooms June through September	Could occur in coastal scrub.
Kellogg's horkelia <i>Horkelia cuneata</i> var. <i>sericea</i>	-	1B.1	Closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub, in sandy or gravelly soils and openings; 10 to 200 meters elevation; blooms April through September	Possibly occurred historically (CNDDDB 2012, occ. no. 7), could occur in coastal scrub or on beaches.
Beach layia <i>Layia carnosa</i>	E	E, 1B.1	Coastal dunes and coastal scrub, in sandy soils; 0 to 60 meters elevation; blooms March through July	Could occur in coastal scrub or on beaches.
Coast yellow leptosiphon <i>Leptosiphon croceus</i>	-	1B.1	Coastal bluff scrub and coastal prairie; 10 to 150 meters elevation; blooms April through May	Could occur in coastal scrub.

Table 3-3 Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Large-flowered leptosiphon <i>L. grandiflorus</i>	-	4.2	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grassland, usually in sandy soils; 5 to 1,220 meters elevation; blooms April through August	Could occur in coastal scrub or on beaches.
Small-leaved lomatium <i>Lomatium parvifolium</i>	-	4.2	Closed-cone coniferous forest, chaparral, coastal scrub, and riparian woodland, in serpentine soils; 20 to 700 meters elevation; blooms January through June	Could occur in coastal scrub or riparian forest.
Tidestrom's lupine <i>Lupinus tidestromii</i>	E	E, 1B.1	Coastal dunes; 1 to 100 meters elevation; blooms April through June	Could occur on beaches.
Carmel Valley bush-mallow <i>Malacothamnus palmeri</i> var. <i>involucratus</i>	-	1B.2	Chaparral, cismontane woodland, and coastal scrub; 30 to 1,100 meters elevation, blooms May through August (sometimes October)	Could occur in coastal scrub.
Santa Lucia bush-mallow <i>M. palmeri</i> var. <i>palmeri</i>	-	1B.2	Chaparral; 60 to 365 meters elevation; blooms May through July	Possibly occurred historically (CNDDDB 2012, occ. no. 15).
Carmel Valley malacothrix <i>Malacothrix saxatilis</i> var. <i>arachnoidea</i>	-	1B.2	Rocky soils in chaparral and coastal scrub; 25 to 1,036 meters elevation; blooms June through December	Could occur in coastal scrub.
Marsh microseris <i>Microseris paludosa</i>	-	1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland; 5 to 300 meters elevation; blooms April through June (sometimes July)	Possibly occurred historically (CNDDDB 2012, occ. no. 4), could occur in coastal scrub.
South coast branching phacelia <i>Phacelia ramosissima</i> var. <i>austrolitoralis</i>	-	3.2	Chaparral, coastal dunes, coastal scrub, and coastal salt marshes and swamps, in sandy and sometimes rocky soils; 5 to 300 meters elevation; blooms March through August	Could occur in coastal scrub or on beaches.

Table 3-3 Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Monterey pine <i>Pinus radiata</i>	-	1B.1	Closed-cone coniferous forest and cismontane woodland; 25 to 185 meters elevation	Possibly occurred historically (CNDDDB 2012, occ. no. 3).
Yadon's rein orchid <i>Piperia yadonii</i>	E	1B.1	Coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral, in sandy soils; 10 to 510 meters elevation; blooms May through August	Could occur in coastal scrub.
Hickman's cinquefoil <i>Potentilla hickmanii</i>	E	E, 1B.1	Coastal bluff scrub, closed-cone coniferous forest, vernal mesic meadows and seeps, and freshwater marshes and swamps; 10 to 149 meters elevation; blooms April through August	Could occur in coastal scrub or wetlands.
Maple-leaved checkerbloom <i>Sidalcea malachroides</i>	-	4.2	Broadleaf upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, and riparian woodland, often in disturbed areas; 2 to 730 meters elevation; blooms April through August	Could occur in coastal scrub or riparian forest.
Santa Cruz microseris <i>Stebbinsoseris decipiens</i>	-	1B.2	Broadleaf upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland, in open areas, sometimes on serpentine soils; 10 to 500 meters elevation; blooms April through May	Could occur in coastal scrub.
Saline clover <i>Trifolium hydrophilum</i>	-	1B.2	Marshes and swamps, mesic areas in alkaline soils in valley and foothill grassland, and vernal pools; 0 to 300 meters elevation; blooms April through June	Could occur in wetlands.

Table 3-3				
Special-Status Plants Known from or with the Potential to Occur at Carmel River SB				
Species	Status		Habitat and Blooming Period	Potential for Occurrence
	USFWS	CDFW		
Notes:			<u>California Department of Fish and Wildlife California Rare Plant</u>	
¹ Legal Status Definitions:			<u>Ranks:</u>	
<u>U.S. Fish and Wildlife Service:</u>			^{1B} = plant species considered rare, threatened, or endangered in California and elsewhere.	
E = endangered			² = plant species considered rare, threatened, or endangered in California but more common elsewhere.	
T = threatened			³ = plant species about which we need more information – a review list.	
– = no status			⁴ = plant species of limited distribution – a watch list.	
<u>California Department of Fish and Wildlife:</u>			<u>California Rare Plant Rank Extensions:</u>	
E = endangered			¹ = seriously endangered in California (>80% of occurrences are threatened and/or have high degree and immediacy of threat).	
T = threatened			² = fairly endangered in California (20–80% of occurrences are threatened and/or have moderate degree and immediacy of threat).	
R = rare			³ = not very threatened in California (<20% of occurrences are threatened and/or have low degree and immediacy of threat or no current threats known).	
– = no status				
Sources: CNDDB 2012; CNPS 2012; DPR 1979; USFWS 2012b; data compiled by AECOM in 2012				

Carmel River SB. Invasive plant species of most concern in the park include blue gum, sea-fig, Hottentot-fig, cape ivy (*Delairea odorata*), black mustard (*Brassica nigra*), jubata grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), French broom, and poison hemlock, all found in the coastal scrub. The restoration area in the Odello West field is heavily infested with several species of invasive plants. Select invasive species are controlled through manual, mechanical, and chemical treatments. Additional invasive plant species of concern include acacia (*Acacia* sp.), myoporum (*Myoporum laetum*), and periwinkle (*Vinca major*).

Vegetation Management Goals and Recommendations

The Vegetation Management Statement for Carmel River SB (California State Parks 2010a) contains park-wide Vegetation Management Goals including protection of special-status species and special plant communities, and management to support a richness of native species and sustainable populations. The Vegetation Management Strategy also has specific management actions related to these goals including maintaining current sensitive habitats, invasive species removal, and maintaining small corridors between Odello West field and the Carmel River to allow unimpeded water flow in the event of a flood.

Ongoing management of the eucalyptus stand in Carmel River SB includes the removal of young trees from the coastal scrub habitat. Currently there are approximately 3 acres of eucalyptus within Carmel River SB. Containment or reduction of the spatial extent of the eucalyptus stand is a specific management goal (Photo Exhibit 3-2).

Restoration of the Odello West field to riparian and wetland habitats with a diverse assemblage of native species is a resource management goal at Carmel River SB. Planting native species and invasive plant species control are on-going management actions in this area.

Wildfire Management

Historically, fires burned regularly through the Carmel area, although historic grazing in the surrounding area reduced fuel loads and fire risk. Fire hazard ratings in the immediate vicinity of Carmel River SB are designated as moderate or undetermined by Cal Fire. A map of the fire hazard ratings and previous fires in the region are shown on Exhibit 3-9. The absence of frequent, low intensity natural fires within the property has created fuel buildups.

Wildfire management in California State Parks is guided by Department Operations Manual (DOM) Section 0300-Natural Resources (section 0313.2.1 Wildfire Management), the Natural Resources Handbook, the *Wildfire Management Planning Guidelines and Policy* (California State Parks 2008), and the *Guidelines for Protection of Structures from Wildland Fires* (DPR 2009b). These guidelines state that parks with wildland vegetation must have a wildfire management plan, and the guidelines provide a template for preparing wildfire management plans. Key components of the wildfire management plans include managing for wildfires before, during, and after a wildfire incident (California State Parks 2008). A wildfire management plan has not yet been prepared for Carmel River SB.

If a park unit contains structures, California State Parks is required to maintain vegetation around those structures in accordance with the *Guidelines for Protection of Structures from Wildland Fires*. The amount of vegetation clearing depends on the type of structure, the slope and distance of vegetation from a structure, and type of vegetation. These guidelines also include resource management goals to reduce fuel loads including removal of invasive species, retaining sensitive native species, and retaining snags that are not touching any structures (DPR 2009b). Current vegetation management activities include mowing and limited vegetation clearing to reduce fuel load. Controlled burns have not been conducted at Carmel River SB.

Emergency response to wildfires is discussed in Section 7.5.5, “Security and Emergency Services,” below.

ANIMALS

Information about the animal species found within Carmel River SB was gathered from the 1987 GPA (DPR 1988) and the *Point Lobos State Reserve and Carmel River State Beach Resource Inventory* (Barry et al. 1977), unless otherwise noted below.

The varied plant communities and landscapes of Carmel River SB provide habitat for diverse and abundant wildlife. The Carmel River and San Jose Creek channels are important wildlife corridors for animals, and several special-status animal species are known to occur within Carmel River SB.

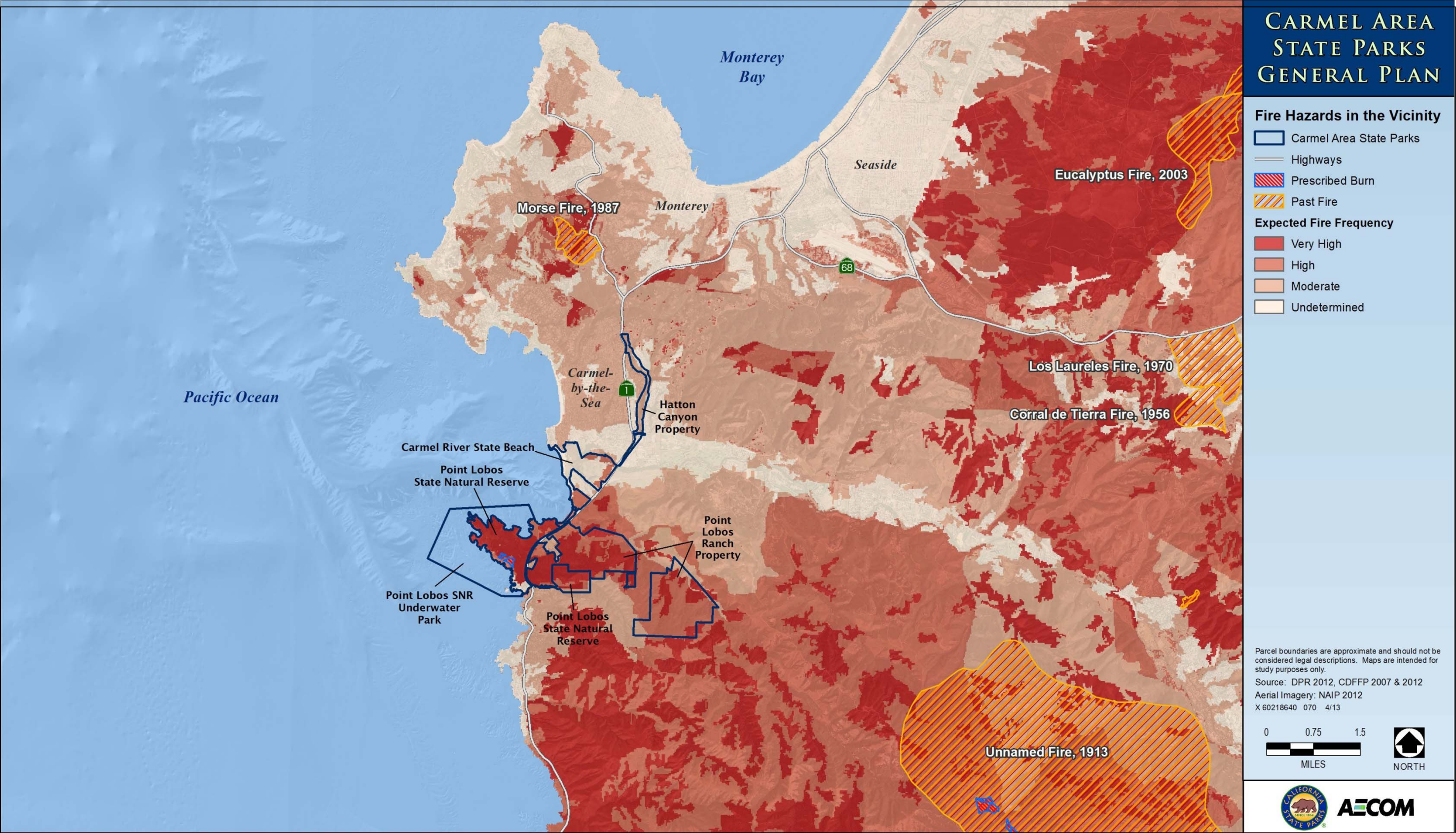


Exhibit 3-9 Fire Hazards in the Vicinity of Carmel River SB



Source: AECOM 2012

Photo Exhibit 3-2 Eucalyptus Seedlings Invading Coastal Scrub Habitat behind Bay School

CARMEL RIVER, LAGOON, AND MARSH

The Carmel River, lagoon, and marsh provide important habitat for several special-status species. The California red-legged frog (*Rana draytonii*), a species federally listed as threatened, is known to inhabit the Carmel River Lagoon (The Watershed Institute 2007), and the majority of Carmel River SB is considered critical habitat for this species by the U.S. Fish and Wildlife Service (USFWS). Western pond turtle (*Emys marmorata*), a federal and California Species of Special Concern, is also found in the lagoon (MPRPD, CSCC, and DPR 1999). South/central California coast steelhead (*Oncorhynchus mykiss irideus*), federally listed as threatened, travel through the Carmel River during their seasonal migrations and use the lagoon for juvenile rearing in the summer and fall (The Watershed Institute 2008; MPRPD, CSCC, and DPR 1999). The Carmel River is considered critical habitat for steelhead by the USFWS. This steelhead run is one of the southernmost major steelhead runs remaining in North America (DPR 1985).

Other fish species found in the lagoon include Pacific staghorn sculpin (*Leptocottus armatus*), Sacramento hitch (*Lavinia exilicauda*), threespine stickleback (*Gasterosteus aculeatus*), starry flounder (*Platichthys stellatus*), and striped bass (*Morone saxatilis*) (The Watershed Institute 2006; MPRPD, CSCC, and DPR 1999).

A total of 345 bird species have been sighted in the vicinity of the Carmel River mouth, many of which have returned to the restored wetland within the lagoon (CSU Pomona 2005). The marsh adjacent to the lagoon is known for its diversity of resident and migratory waterfowl. PRBO Conservation Science (now known as Point

Blue Conservation Science, as of 6/2013) has compiled a list of songbirds observed within the Carmel River Lagoon. The complete list is included in Appendix D. In the spring the lagoon and marsh attract mergansers (sub-family Anatinae), grebes (family Podicipedidae), American coot (*Fulica americana*), shorebirds (families Scolopidae and Charadriidae), and gulls (family Larinae). Gulls also nest in the marsh. By late spring the number of species is considerably reduced. Mallard (*Anas platyrhynchos*) and cinnamon teal (*A. cyanoptera*) can be found in the marsh, while red-winged blackbird (*Agelaius phoeniceus*) and song sparrow (*Melospiza melodia*) perch in the tule. Violet-green swallow (*Tachycineta thalassina*) and cliff swallow (*Petrochelidon pyrrhonota*) are commonly seen feeding over the marsh. Marsh birds such as herons (family Ardeidae) and rails (family Rallidae) are found in the marsh throughout the year. The Virginia rail (*Rallus limicola*) has been known to breed at the river mouth. The extremely rare emperor goose (*Chen canagica*) was seen in the lagoon in the winter of 1948-1949. Other birds observed in the lagoon and marsh include double-crested cormorant (*Phalacrocorax auritus*), black-crowned night-heron (*Nycticorax nycticorax*), snowy egret (*Egretta thula*), long-billed curlew (*Numenius americanus*), short-billed dowitcher (*Limnodromus griseus*), long-billed dowitcher (*L. scolopaceus*), Forster's tern (*Sterna forsteri*), American kestrel (*Falco sparverius*), belted kingfisher (*Megaceryle alcyon*), and marsh wren (*Cistothorus palustris*) (DPR 1996).

Many invertebrates have been observed in the Carmel River Lagoon and marsh. Isopods and amphipods are detritivores that provide food for many wading birds. Gnats (Diptera) are abundant in the air over the lagoon where they provide food for swallows. Pollinators such as bees and wasps are abundant in the spring when Pacific silverweed is in bloom. Beetles (Coleoptera), thrips (*Thysanoptera* sp.), spiders (Theridiidae, Araneidae, and Lycosidae), and red mites are common. Other invertebrates observed in the lagoon include opossum shrimp (*Neomysis* sp.), scuds (*Eogammarus* sp.), midge larvae (Chironomidae), mayfly larvae (Baetidae), water mites, copepods, water boatmen (Corixidae), roundworms (Nematoda), caddisflies (Trichoptera), stoneflies (Plecoptera), and aquatic snails (De Lay 2010, The Watershed Institute 2008). The aquatic invertebrates in the lagoon provide a relatively diverse and abundant food source for fish; the most important aquatic invertebrates which provide food for steelhead include scuds, amphipods (*Corophium spinicorne*), isopods (*Gnorimosphaeroma* sp.), and opossum shrimp (De Lay 2010, The Watershed Institute 2007).

SAN JOSE CREEK

Steelhead have also been observed in San Jose Creek (The Watershed Institute 2012; Nelson, Baglivio, and Kahles 2006). San Jose Creek is considered critical habitat for steelhead by the USFWS. Other fish observed in San Jose Creek include coast range sculpin (*Cottus aleuticus*), prickly scuplin (*C. asper*), and threespine stickleback (Nelson, Baglivio, and Kahles 2006, Hagar Environmental Science 2002). California red-legged frog (*Rana draytonii*) has been observed in the lower end of San Jose Creek (Hagar Environmental Science 2002). Invertebrates observed in San Jose Creek include caddisfly larvae, mayfly larvae, and stonefly larvae (Hagar Environmental Science 2002). Coyote (*Canis latrans*), black-tailed deer (*Odocoileus hemionus*), Audubon's cottontail (*Sylvilagus audubonii*), and dusky-footed woodrat (*Neotoma fuscipes luciana*) have also been observed in this area.

COASTAL SCRUB

Woody perennial shrubs in the coastal scrub provide numerous niches for birds, mammals, reptiles, and invertebrates. The song sparrow, black phoebe (*Sayornis nigricans*), California ground squirrel (*Spermophilus beecheyi*), and western fence lizard (*Sceloporus occidentalis*) are commonly observed in this community. Birds

commonly found in coastal scrub include lazuli bunting (*Passerina amoena*), wrentit (*Chamaea fasciata*), California towhee (*Melospiza crissalis*), sage sparrow (*Amphispiza belli*), and rufous-crowned sparrow (*Aimophila ruficeps*). Butterflies often found in coastal scrub include common ringlet (*Coenonympha inornata*), Northern checkerspot (*Chlosyne palla*), Leanira checkerspot (*Thessalia leanira*), bramble hairstreak (*Callophrys dumetorum*), and Mormon metalmark (*Apodemia mormo*). Reptiles found in coastal scrub include California striped racer (*Coluber lateralis lateralis*) and western rattlesnake (*Crotalus oreganus*). Mammals in this area include coyote, black-tailed deer, Audubon's cottontail, and dusky-footed woodrat.

RIPARIAN/WILLOW FOREST

The trees and shrubs in the riparian forest provide roosting and foraging sites for many of the birds found in the lagoon and marsh, such as yellow-rumped warbler (*Dendroica coronata*), bushtit (*Psaltiriparus minimus*), red-winged blackbird, and black-crowned night-heron (Small 1994, DPR 1996). Common yellowthroat (*Geothlypis trichas*) use riparian forest as a corridor, and Swainson's thrush (*Catharus ustulatus*) and Pacific-slope flycatcher (*Empidonax difficilis*) breed in riparian woodland (RHJV 2004, DPR 1996, Small 1994). Black-crowned night-heron and snowy egret (*Egretta thula*) will nest in the low trees near the lagoon, and, in winter, golden-crowned sparrow (*Zonotrichia atricapilla*) can be found in riparian thickets (Small 1994, DPR 1996).

ROCKY SHORES AND BEACHES

The shoreline provides important habitat for seabirds and shorebirds, including the California brown pelican (*Pelecanus occidentalis californicus*), which can often be found roosting on the beach (California State Parks 2010a). The uncommon Baird's sandpiper (*Calidris bairdii*) is regularly seen at the Carmel River mouth, and snowy plover (*Charadrius alexandrinus nivosus*) are known to occur on the beach (Palkovic, pers. comm., 2012a). Other commonly observed birds on beaches include Wilson's snipe (*Gallinago delicata*), sandpipers, American avocet (*Recurvirostra americana*), phalarope (*Phalaropus* sp.), western gull (*Larus occidentalis*), California gull (*L. californicus*), oyster catchers (*Haematopus palliatus*), and sanderling (*Calidris alba*). Cliff swallows nest in the bluffs to the south of the lagoon.

Beachhoppers (Talitridae) are typical of the high tide zone. The black legless lizard, a California Species of Special Concern, can be found on the beach near the Carmel River Lagoon wetland (DPR 1985).

Subtidal and marine fauna found along the rocky shoreline are described in "Aquatic Life," below.

SPECIAL-STATUS WILDLIFE SPECIES

Information on special-status wildlife species within Carmel River SB is based on the 1979 General Plan (DPR 1979) and observations by California State Parks staff (Palkovic, pers. comm., 2012a). The CNDDDB (2012) and USFWS Endangered Species list (USFWS 2012b) were also searched to gather additional information about special-status wildlife species previously documented within Carmel River SB (Exhibit 3-10) and the region. Regional occurrences of special-status species are shown in Appendix C. Special-status wildlife species known to occur within Carmel River SB include south/central California coast steelhead, California red-legged frog, western snowy plover, western pond turtle, southern sea otter, and black legless lizard (Photo Exhibit 3-3). Detailed information of special-status wildlife species known from or with potential to occur within Carmel River SB are listed in Table 3-4. Species that are known to occur within Carmel River SB are shown in bold.



Source: California State Parks 2011

Photo Exhibit 3-3

Black Legless Lizard at Carmel River SB

South/central California coast steelhead, California red-legged frog, western snowy plover, and Southern sea otter are federally listed as threatened. Threats to steelhead include sedimentation, water diversions and dams, gravel extraction, and high water temperatures (CNDDDB 2012). In Carmel River Lagoon, specifically, steelhead are threatened by sedimentation, lack of freshwater inflows in the summer due to groundwater extractions and other upstream diversions along the Carmel River, and breaching the sandbar in the winter which can displace steelhead and subject them to increased predation and salinity-related stress (MPWMD 1995; MPRPD, CCC, and DPR 1999). California red-legged frog populations are threatened by groundwater extractions and other upstream diversions along Carmel River which dewater portions of the river, predation by and competition from bullfrogs, road maintenance and traffic at San Jose Creek, and invasive plants altering upland habitat (CNDDDB 2012). Western snowy plovers are threatened by human activity along the beaches where the birds nest and predation of eggs by crows and ravens (CNDDDB 2012). Sea otters are threatened by boat traffic in their ocean habitat (CNDDDB 2012).

No park-wide comprehensive survey for special-status animals has been conducted to date, and the extent of the populations of some of the species is not known. Detailed inventory and monitoring of special-status animals is recommended.



Exhibit 3-10

Special-Status Animal Occurrences

Table 3-4
Special-Status Wildlife Known from or with the Potential to Occur at Carmel River SB

Class	Species	Status ¹	Habitat	Potential for Occurrence
Fish	Tidewater goby <i>Eucyclogobius newberryi</i>	CE, FE	Coastal lagoons and the uppermost brackish zone of larger estuaries, rarely marine or freshwater habitats, throughout the California coast	Could occur in Carmel River Lagoon.
	Steelhead—South/Central California coast DPS <i>Oncorhynchus mykiss irideus</i>	CSC, FT	Streams in coastal basins from the Pajaro River south to, but not including, the Santa Maria River	Known to occur in Carmel River and Lagoon and San Jose Creek (DPR 1988; Palkovic, pers. comm., 2012a).
Amphibians	California tiger salamander <i>Ambystoma californiense</i>	CSC, CT, FT	Nests in underground burrows, especially ground squirrel burrows; breeds in vernal pools and other seasonal wetlands	Could aestivate in ground squirrel burrows in coastal scrub; could breed in seasonally inundated wetlands such as shallower portions of lagoons.
	California red-legged frog <i>Rana draytonii</i>	CSC, FT	Ponds and slow moving streams with overhanging vegetation	Known to occur in Carmel River and Lagoon and San Jose Creek (Palkovic, pers. comm., 2012a; MPRPD and USFWS 2011).
Reptiles	Northwestern pond turtle <i>Emys</i> (= <i>Clemmys</i>) <i>marmorata marmorata</i>	CSC, CFP	Forage in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation	Known to occur in Carmel River and Lagoon (Palkovic, pers. comm., 2012a).
	Black legless lizard <i>Anniella pulchra nigra</i>	CSC	Moist areas in sand dunes where bush lupine and mock heather are dominant plants	Known to occur in the coastal scrub (DPR 1988; Palkovic, pers. comm., 2012a).
Birds	Western burrowing owl <i>Athene cunicularia hypugaea</i>	CSC	Burrows in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-lying vegetation; breed in open, well-drained grasslands, steppes, deserts, prairies, and agricultural land	Could burrow in coastal scrub.
	Marbled murrelet <i>Brachyramphus marmoratus</i>	CE, FT	Forage in coastal/ocean habitats and nest in low-elevation forest stands, near the coast dominated by large, old-growth and mature redwood trees	Could forage along shoreline and ocean.

Table 3-4
Special-Status Wildlife Known from or with the Potential to Occur at Carmel River SB

Class	Species	Status ¹	Habitat	Potential for Occurrence
	Western snowy plover <i>Charadrius alexandrinus nivosus</i>	CSC, FT	Breed/nest above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries	Known to occur on beaches (Palkovic, pers. comm., 2012a).
	Black swift <i>Cypseloides ngra</i>	BCC, CSC	Nest on cliffs although forage in a variety of habitats	Could forage in Carmel River SB.
	Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	CE, FE	Riparian woodlands	Could occur in riparian/willow forest.
	California condor <i>Gymnocyps californianus</i>	CE, FE	Currently restricted to chaparral, coniferous forests, and oak savannah habitats in southern and central California. Formerly occurred more widely throughout the Southwest and also fed on beaches and large rivers along the Pacific coast. Nests in cavities in cliffs, in large rock outcrops, or in large trees. Roosts on cliffs or large trees, often near feeding sites. Forages mostly in grasslands, openings in chaparral, or in oak savannahs	Could have historically foraged on beaches and Carmel River, but not likely to occur presently.
	California brown pelican <i>Pelecanus occidentalis californicus</i>		Nests in colonies on small to moderately sized coastal islands just above the surf line	Forages within Carmel River SB (DPR 1988).
	California least tern <i>Sterna antillarum browni</i>	FE	Nests along the coast from San Francisco Bay to northern Baja California in colonies on bare or sparsely vegetated flat areas (beaches, alkali flats, landfills, paved areas)	Could nest on beaches.
	Least Bell's vireo <i>Vireo bellii pusillus</i>	CE, FE	Riparian	Could occur in riparian/willow forest.

Table 3-4
Special-Status Wildlife Known from or with the Potential to Occur at Carmel River SB

Class	Species	Status ¹	Habitat	Potential for Occurrence
Mammals	Southern sea otter <i>Enhydra lutris nereis</i>	CFP, FT	Nearshore marine environments from about Año Nuevo to Point Sal. Needs canopies of giant kelp and bull kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates	Known to occur in the waters off Carmel River SB (DPR 1988).
	Hoary bat <i>Lasiurus cinereus</i>	WBWG: M	Forages in open or patchy habitats with trees for cover; roosts in dense foliage of medium to large trees; near water	Could occur in riparian/willow forest.
	Monterey dusky-footed woodrat <i>Neotoma fuscipes luciana</i>	CSC	Forest and chaparral	Could occur in riparian/willow forest.
Insects	Globose dune beetle <i>Coelus globosus</i>		Coastal dunes from Sonoma county to Baja California	Could occur on beaches.
	Monarch butterfly <i>Danaus plexippus</i>	G5 S3	Roosts along the Pacific coast in winter in wind-protected tree groves with nectar and water sources nearby	Could roost in riparian/willow forest.
	Smith's blue butterfly <i>Euphilotes enoptes smithi</i>	FE	Coastal dunes and coastal sage scrub in Monterey and Santa Cruz counties	Could occur in coastal scrub and on beaches. Host plant (coast buckwheat) is present in the coastal scrub (DPR 1988).

Notes:

¹ Status Codes: BCC = US Fish and Wildlife Service Birds of Conservation Concern; CE = California Endangered; CFP = California Fully Protected; CSC = California Species of Special Concern; CT = California Threatened; FE = Federal Endangered; FT = Federal Threatened; G5 S3 = Global rank: demonstrably secure, common; State rank: restricted range; WBWG:M = Western Bat Working Group - Medium Priority.

Source: CNDDDB 2012; DPR 1979; Palkovic, pers. comm., 2012a; USFWS 2012b; data compiled by AECOM in 2012.

INVASIVE ANIMAL SPECIES

The 1979 General Plan (DPR 1979), 1987 and 1996 GPAs (DPR 1988, 1996), *Carmel River State Beach Vegetation Management Statement* (California State Parks 2010a), and *2009 Carmel River and Lagoon Enhancement Project Report* (DPR 2009a) all contain information on invasive animal species within Carmel River SB. The non-native American bullfrog (*Rana catesbeiana*) has been observed throughout the Carmel River Lagoon and has the potential to occur in San Jose Creek (Palkovic, pers. comm., 2012b). Bullfrogs are known to cause declines in native frogs through competition and predation, including the federally threatened California red-legged frog. A bullfrog management plan is in place to control bullfrog populations in the lagoon. This includes removal of bullfrogs from the lagoon and annual assessments of the population. Wild pigs (*Sus scrofa*) are present in the Odello West field and surrounding wetlands. Their foraging habits cause extensive ground disturbance and damage to vegetation. Eighty-four wild pigs were removed as part of the Carmel River Lagoon

Enhancement Project, and active trapping of the pigs has since ceased (Palkovic, pers. comm., 2012b); however, evidence suggests wild pigs are still present.

3.2.2 AQUATIC LIFE

Aquatic habitats within Carmel River SB include the Carmel River and Lagoon and the mouth of San Jose Creek. The Carmel River Lagoon forms at the mouth of the Carmel River. The entire lagoon area consists of diverse seasonal and perennial wetland habitats that serve as critical wildlife habitat for a wide range of species including several federally-listed species. Ecologically, the lagoon serves as keystone habitat for multiple threatened and protected species, including a distinct population segment of steelhead and California red-legged frog. The ecosystem is a dynamic interface between the marine and freshwater river system that incorporates freshwater wetlands and open water habitat. As such, this area provides an extremely rich and abundant environment for fish and wildlife (CCC et al. 2007).

San Jose Creek flows north through the center of Monastery Beach. A small lagoon has formed at the mouth of the creek extending from the back side of the beach upstream underneath Highway 1 and beyond for approximately 500 feet. San Jose Creek provides important wildlife habitat including habitat for steelhead and California red-legged frog (Hagar Environmental Science 2002).

The submarine lands adjacent to Carmel River SB are in the Carmel Bay Ecological Reserve and the Carmel Bay Area of Special Biological Significance.

The marine aquatic areas of Carmel River SB contain rocky tidepools, giant kelp forests, and rocky and sandy bottoms, which provide habitat for a diverse and abundant assemblage of species. Assemblages of species found in sandy and rocky habitats are detailed in the *Point Lobos State Reserve and Carmel River State Beach Resource Inventory* (Barry et al. 1977) unless otherwise noted below. Common species found in the rocky tidepools include acorn barnacle (*Balanus* sp.), aggregating anemone (*Anthopleura elegantissima*), California mussel (*Mytilus californianus*), purple sea urchin (*Strongylocentrotus purpuratus*), tide pool sculpin (*Oligocottus maculosus*), Pacific staghorn sculpin, and several species of macroalgae (The Watershed Institute 2006).

Rocky and sandy bottoms support coralline algae and many types of invertebrates. Invertebrates observed in the waters off Carmel River SB include sponges, jellyfish and other hydrozoans, coral, anemones, bryozoans, polychaete worms, acorn barnacle, isopods, crabs, chitons, gastropods, scallops, sea stars, brittlestars (*Ophiopteris* sp.), sea cucumbers, chestnut cowry (*Cypraea spadicea*), and tunicates. Fish observed include flatfish (*Citharichthys* sp.), blackeye goby (*Coryphopterus nicholi*), surfperch (Embiotocids), kelpfish (*Gibbonsia* sp.), greenling (*Hexagrammus* sp., *Oxylebius* sp.), cod (*Ophiodon* sp.), seniorita fish (*Oxyjulus* sp.), sea bass (*Paralabrax* sp.), plainfin midshipman (*Porichthys notatus*), and rockfish (*Sebastes caurinus*, *S. chrysomelas*, *S. mystinus*). Other species commonly found in sandy bottom habitats include sharks, rays, and skates (Elasmobranchii) (Monterey Bay Aquarium 1999).

Kelp beds are found on rocky bottoms and at the head of Carmel Canyon and are dominated by giant kelp (*Macrocystis pyrifera*), Laminaria dentigera, southern sea palm (*Eisenia arborea*), and woody-stemmed kelp (*Pterygophera californica*). Sea otters use the kelp beds for pupping and rafting, and the canopy serves as an important energy supply.

3.2.3 ECOLOGY

WILDLIFE CORRIDORS

A functional network of connected wildlands is essential to the maintenance of diverse natural communities in a region. Wildlife populations depend on habitat connectivity to survive in the face of human development and climate change, and wide-ranging wildlife need unfragmented habitat and linkages between natural areas to support activities such as reproduction, foraging and migration. The presence of highways and other infrastructure can create barriers that limit access to seasonal ranges and other vital habitats, reduce genetic interchange, constrain dispersal of young, and reduce the long-term viability of wildlife populations. Maintaining connectivity between natural areas and minimizing further fragmentation is crucial to the long-term viability of California's natural heritage. Critical wildlife corridors in the area are typically north-south, connecting large open space north and south of the Carmel Valley. Carmel River SB and the other three park units included in this planning effort provide important habitat linkages for wildlife. Together with other protected public lands in the area, such as Palo Corona Regional Park, Palo Corona Ranch, the Santa Lucia Preserve, Garrapata State Park, and Odello East field located on the east side of Highway 1 directly across from the Odello West field, Point Lobos SNR, Carmel River SB, and the Point Lobos Ranch Property form an important regional network of wildland habitats (Exhibit 2-1). Carmel River is a wildlife corridor for California coast steelhead and California red-legged frog. San Jose Creek is also a wildlife corridor for California red-legged frog, as well as other reptiles and amphibians. In addition, mammals, birds, and amphibians use the riparian areas along Carmel River and San Jose Creek as wildlife corridors.

NATURAL PROCESSES

Fire

The vegetation communities on the Monterey Peninsula are largely shaped by fire. Scrub communities are known to be well adapted to recurring fires; many species resprout from stumps and have long-lived seed banks that germinate following fires (DPR 1979). The 1987 GPA notes that one of the primary considerations for managing coastal scrub communities and reintroducing Monterey pine within Carmel River SB is reintroduction of fire. Historically fires burned regularly through Carmel River SB. Since fire suppression began on the Monterey Peninsula, habitat quality of the coastal scrub has declined for special-status plants and animals dependent on a frequently disturbed scrub community (Ford and Hayes 2007).

Flooding

The *Carmel Lagoon Enhancement Plan* (MPRPD, CCC, and DPR 1999) describes the flooding and breaching activities that have historically taken place at Carmel River SB. The Carmel River forms a lagoon at its mouth when ocean waves and sediment transported by the river build a sand bar on the beach, which blocks the river from flowing into the ocean. Fresh water from the river floods the lagoon, providing important habitat for many species, including steelhead which use the lagoon during their migration. The level and duration of this flooding would naturally vary from year to year, and the sand bar would naturally breach at an elevation of approximately 11.8 to 13.1 feet National Geodetic Vertical Datum (NGDV). This level of flooding threatens surrounding homes and infrastructure, however, so Monterey County has previously artificially breached the Carmel River mouth during the winter rainy season. These artificial breaches substantially alter the river and lagoon hydrology, and are

believed to be detrimental to animal populations in the lagoon. Breaching events can radically change salinity levels, rapidly drain the water, and displace aquatic animals from the lagoon. A 2012 Memorandum of Understanding (MOU) between Monterey County and California State Parks has been drafted which outlines flood-related activities for the next 5 years. This is intended to serve as an interim plan while a long-term plan is developed. Several local, state and federal agencies, together with several non-governmental organizations have been working together since about 2000 to develop a sustainable, long-term management plan for the Lower Carmel River and Carmel Lagoon. The ultimate goal is to allow for natural flooding and breaching, while pre-emptively protecting homes and infrastructure.

Monitoring

The former Inventory, Monitoring, and Assessment Program (IMAP) provided goals, guidance, and standards for California State Parks efforts to systematically evaluate the vegetation, wildlife, and physical natural resources of the state park system (California State Parks 2012a). Evaluations consisted of collecting data through various scientific means in each state park system unit. Data was generally quantitative and consisted of counts and measures of natural resources. The data was used to make status assessments of a unit's natural resources, such as what resources are present, where the resources are distributed, and how much of a resource is present. Data was also used to detect changes in resources over time so that trends in the unit's health could be ascertained and corrective management action could be taken.

The adjacent Point Lobos SNR was one of the pilot parks for IMAP monitoring, and aquatic resources monitoring was started in San Jose Creek and Gibson Creek (Swolgaard 2003). Because of a lack of funding, however, IMAP monitoring has not been conducted in recent years in either park unit. Developing and implementing a monitoring system for the long-term monitoring of the natural resources in the park could build on previous monitoring efforts and document baseline conditions to measure change over time and guide management.

3.2.4 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan did not include any proposals related to natural resources within Carmel River SB. The 1987 GPA called for a Monterey pine restoration plan in the undeveloped area behind the Bay School. This plan has not been developed or implemented due to lack of support by local neighbors. The GPA also called for reduction of exotic plants or their removal from the unit. Invasive plant control is an ongoing effort at Carmel River SB as described above. The 1987 GPA proposed the development of a management program for threatened animal species, a survey for Smith's blue butterfly, and the preparation of a wetland management plan. The Carmel River Lagoon Enhancement Plan, described above, addressed wetland and threatened species management. No comprehensive surveys for Smith's blue butterfly have been conducted, but the host plant for the species is known to occur in the unit. The 1996 GPA called for changing the land use designation on the Odello West field from agriculture to riparian and wetland habitat to bring the General Plan in conformance with the Carmel River Lagoon Enhancement Plan. This land has been restored to riparian and habitat.

3.3 CULTURAL RESOURCES

3.3.1 PREHISTORIC BACKGROUND

Information on the prehistoric background presented here is summarized primarily from the following report that documented the results of test and data recovery excavations conducted at Point Lobos SNR: *Test and Data Recovery Excavations at Sites CA-MNT-261, -217/H, and -263, for the Point Lobos State Reserve Bird Island Trail Accessibility Improvements Project, Monterey County, California*, prepared for California State Parks, Monterey District by Far Western Anthropological Research Group, Inc. (FWARG) in July 2010 (Mikkelsen and Jones 2010). That work is in turn based on the most recent chronological sequence developed for the Monterey Bay area which includes five general time periods (Jones et al. 2007). Additional background and citations are provided as appropriate.

PALEOINDIAN PERIOD

The Paleoindian Period starts at the end of the Pleistocene and dates prior to 10,000 years before present in calibrated radiocarbon years (cal. BP). There are very few known archaeological sites in the area of Carmel River SB dating to this earliest period and many important questions about settlement patterns, subsistence activities, tool making, and social organization remain unanswered (Jones et al. 2007, Mikkelsen and Jones 2010). The Scotts Valley site (CA-SCR-177), located 30 miles north of the Carmel River SB yielded radiocarbon dates as early as 13,500 cal. BP, however the deposit was too mixed to allow an assignment of a specific assemblage to the time period (Cartier 1989, 1993; Mikkelsen and Jones 2010). Likely reasons so few sites dating to this period have been found include sea level rise at the end of the Pleistocene Period that submerged much of the California coast that had previously been exposed, destruction of sites by coastal erosion, and deep burial of sites by alluvial deposition (Jones and Waugh 1997).

MILLINGSTONE PERIOD

The Paleoindian Period is followed by the Millingstone Period, which lasted from 10,000 to 5500 cal. BP (Jones et al. 2007, Mikkelsen and Jones 2010). Few sites dating to this period have been identified for the same reasons that few Paleoindian sites have been found (Jones and Waugh 1997). Flooding of sloped coastline areas during this period produced estuaries that were highly utilized by prehistoric groups of this period, however interior areas were also used. Sites dating to this period tend to have shell middens containing more ground and battered stone tools relative to flaked stone tools; indicating that shellfish and seeds were more important food resources than large terrestrial and marine animals during this period. Diagnostic artifacts that are indicative of the period include eccentric crescents, long-stemmed projectile points, and thick rectangular (L-series) *Olivella* beads (Jones et al. 2007, Mikkelsen and Jones 2010). Prehistoric inhabitants of the area were likely highly mobile, moving in accordance with the seasons to obtain both inland and coastal resources (Jones and Waugh 1997, Mikkelsen and Jones 2010).

Sites dating to this period are most often found in southern California, but Millingstone Period components have been found at Elkhorn Slough at CA-MNT-229 and CA-MNT-234, near Castroville at CA-MNT-228 and CA-MNT-1570, and at CA-SCL-178 in the southern Santa Clara Valley (Mikkelsen and Jones 2010). A Millingstone Period component was also found at the Scotts Valley Site (CA-SCR-177) and, unlike the Paleoindian

component, produced three reliable radiocarbon dates from this period and a discrete component with abundant amounts of ground stone artifacts (Jones and Waugh 1997, Mikkelsen and Jones 2010).

EARLY PERIOD

The Millingstone Period is followed by the Early Period, which lasted from 5500 to 2600 cal. BP (Jones et al. 2007, Mikkelsen and Jones 2010). This period is characterized by adoption of new land use patterns, new tools, and new forms of social organization (Mikkelsen and Jones 2010). While use of estuaries remained important, settlements expanded to include open coast locales, which was likely the result of environmental fluctuations and population increases (Jones and Waugh 1997, Mikkelsen and Jones 2010). This trend did not follow at Elkhorn Slough where the closing of the slough and the decline in its estuary resources probably led to the abandonment of some sites such as CA-MNT-229 (Mikkelsen and Jones 2010). Some researchers also believe that increasing aridity in the Great Basin not only put pressure on populations in that area, but caused a ripple effect putting pressure on coastal groups, triggering a greater reliance on trade networks, increased use of local resources, and more rigid territorial boundaries (Jones and Waugh 1997, Mikkelsen and Jones 2010).

Mortars and pestles first appear during this period, likely signaling the incorporation of acorns into the diet (Mikkelsen and Jones 2010). Some researchers question the link between mortars, pestles, and acorn use this early in the archaeological record; however, burnt acorn remains in an Early Period component at Morro Bay support the idea of a relationship between mortars and pestles and the intensified use of acorns in this period (Mikkelsen and Jones 2010). Researchers further speculate that acorn intensification may have occurred to balance a protein-rich marine diet (Mikkelsen and Jones 2010). Artifact assemblages also contain greater proportions of hunting and fishing tools during this period, indicating these activities were increasing in importance (Jones and Waugh 1997, Mikkelsen and Jones 2010).

Artifacts common or indicative of this period include thick rectangular (Class L), end-ground (Class B), and split (Class C) *Olivella* beads and square *Haliotis* forms; projectile points of the period include Contracting-stemmed, Rossi Square-stemmed, and Side-notched types (Jones et al. 2007, Mikkelsen and Jones 2010). There is conflicting evidence regarding whether populations were highly mobile or if they were becoming increasingly constrained (Mikkelsen and Jones 2010).

Sites in Monterey County with components dating to the Early Period include CA-MNT-108, where the abundance of fish remains has led some researchers to speculate if fish were being harvested for trade (Breschini and Haversat 1993). The site also appears to represent a large summer occupation village (Breschini and Haversat 1989). Smaller village sites in the Monterey region include CA-MNT-17C and CA-MNT-95. Other sites in the Monterey area dating to this time period include CA-MNT-116, -148, -170A, -170C, -387, and -391 (Mikkelsen and Jones 2010). Many of the sites in the Cultural Preserve, such as CA-MNT-14/633, -473, and -474, likely date to this period (DPR 1987).

MIDDLE PERIOD

The Early Period is followed by the Middle Period which lasted from 2600 to 1000 cal. BP (Jones et al. 2007, Mikkelsen and Jones 2010). The large number of sites dating to this period most likely reflect an increase in population (Mikkelsen and Jones 2010). Not all of the changes that occurred from the former period are obvious; some changes represented continuations of previous trends; for example, mortars and pestles continued to

increase in importance indicating that the use of acorns was also increasing in importance (Garlinghouse et al. 2009). At sites in Santa Clara County, however, shellfish decreased in importance possibly because of a decrease in coastal access (Mikkelsen and Jones 2010). Typical artifacts of the Middle Period include Contracting-stem, Side-notched, and Concave-base projectile points, mortars and pestles, hand stones, millingslabs, F and G series *Olivella* beads (Garlinghouse et al. 2009, Mikkelsen and Jones 2010). Probably the most important technological event during this period was the first appearance of circular shell fishhooks (Garlinghouse et al. 2009). Although, fishhooks are mostly found on rocky coasts, in slough habitats, fish were probably gathered by baskets, nets, or other methods. Fishhooks likely represent an increase in exploitation in fish (or specific kinds of fish) but also may have resulted in a decrease in the efficiency of collecting high calorie resources (Garlinghouse et al. 2009). Trade across the Sierra Nevada Mountain Range also appears to increase, with obsidian from the Casa Diablo source being very important in the Monterey Bay area while obsidian from the Coso source is important to the south (Garlinghouse et al. 2009, Mikkelsen and Jones 2010).

Archaeological sites or components of sites that date to the Middle Period have been found at many locations in the broader region including San Luis Obispo County and Santa Cruz County and possibly further inland in Merced County and Kern County (Jones et al. 2007, Mikkelsen and Jones 2010). One of the largest sites in the Monterey region is CA-MNT-12. Located to the southeast of the project area in Point Lobos Ranch, the site contains a large and diverse artifact assemblage and human remains (Howard and Cook 1971; Schwaderer 2004). CA-MNT-207, CA-MNT-212, and CA-MNT-216 all have components dating to the Middle Period and are located in Point Lobos SNR (Schwaderer 2005, 2007; Mikkelsen and Jones 2010). Near Little Pico Creek in San Luis Obispo County, CA-SLO-175 also had a large Middle Period component with a diverse assemblage of tools and some burials (Jones and Waugh 1995). Other Middle Period components have been found at CA-MNT-229 and CA-MNT-282 in southern Monterey County near Cape San Martin, CA-SCR-9 in the Santa Cruz Mountains, and CA-SCR-7 in Santa Cruz County also contains a Middle Period component (Jones et al. 2007). Artifacts found at these sites include Side-notched and Square-stemmed projectile points as well as Contracting-Stem and concave base types, saucer-shaped *Olivella* shell beads, mortars, pestles, hand stones, and milling stones (Mikkelsen and Jones 2010). There is likely a component of CA-MNT-14/633 that dates to this period (Garlinghouse et al. 2009).

MIDDLE/LATE TRANSITION

The Middle Period is followed by the Middle/Late Transition, which lasted from 1000 to 700 cal. BP (Jones et al. 2007, Mikkelsen and Jones 2010). Peak use of coastal areas occurred during the beginning of this period, but was followed by abandonment of coastal sites in the region (Mikkelsen and Jones 2010). Originally, most researchers thought these changes were caused by over-exploitation of marine resources and increased population pressure leading to intensification of the use of inland terrestrial resources. There is evidence, however, that the changes may have been caused by environmental stress. At about this same time, western North America had a strong warming event, the “Medieval Climatic Anomaly” (Stine 1990, 1994).

Among the environmental changes associated with the warming event was decreased precipitation that may have had a very large impact among coastal populations. Researchers have argued that populations “de-intensified” how they gathered food resources during the climatic event. During this period population growth declined, trade systems collapsed, fewer kinds of food resources were exploited, and in Monterey County several coastal sites were abandoned in favor of areas located in the interior. Obsidian from eastern sources almost disappears from the

archaeological record (Garlinghouse et al. 2009). Recent studies, however, indicate stable, seasonal use of coastal areas from the Middle to Late periods (Mikkelsen and Jones 2010).

CA-MNT-12, -17A, -17C, -107, -111, -112, -116, -117, -170A, -170C, -187, -438, -1084, and -1348 all contain components that date to the Middle/Late Transition Period. Sites within the Point Lobos SNR dating to this period include CA-MNT-203, -207, and -218 (Schwaderer 2005). Ten miles east of Carmel Valley, sites CA-MNT-1485/H and -1486/H yielded reliable data indicating they date to this period (Breschini and Haversat 1992). CA-MNT-12 is one of a small number of sites that contain components spanning from the Middle to Late periods, including the Middle/Late Transition Period (Schwaderer 2007; Mikkelsen and Jones 2010).

LATE PERIOD

The Middle/Late Transition Period is followed by the Late Period, which lasted from 700 cal. BP to European contact. Many researchers believe that during this period groups in the Monterey region maintained an inland focus and concentrated on using acorns and other terrestrial resources, though there is contradictory data as well (Garlinghouse et al. 2009). Villages were generally located in valley bottoms and near lakes or rivers, while coastal sites were used as short-term processing camps by inland inhabitants (Mikkelsen and Jones 2010). Large amounts of ground stone tools and high diversity of botanical remains signal a continuing reliance on plant processing though in inland areas there appears to be a heavy reliance on the hunting of deer (Garlinghouse et al. 2009, Mikkelsen and Jones 2010). Oxygen isotope studies and ethnographic information have been used to investigate settlement distribution in the central California coast. These studies have recognized two groups exploiting the region, one inland-focused group and the other a year-round, semi-sedentary coastal population focusing on a marine resource base with acorn having a less important role in their diet (Mikkelsen and Jones 2010).

Most of the coastal sites dating to this period represent specialized shellfish processing stations, although there are some sites that evidence a broader range of activities including marine and terrestrial mammal hunting (Mikkelsen and Jones 2010). Some researchers believe these sites may have functioned as temporary residential sites used seasonally in coordination with the shellfish processing sites and inland villages (Garlinghouse et al. 2009). Other locations show evidence of red abalone procurement by specialized task groups (Mikkelsen and Jones 2010). Very late in the period, there is evidence of changing subsistence strategies and settlement patterns either related to the resumption of past activities or as a reaction to European contact. Evidence for this includes a greater diversity of botanical remains from coastal sites than would be expected from a specialized processing camp and an emphasis on shellfish at other locations (Mikkelsen and Jones 2010). Likewise, the identified changes may be the result of a population rebound following the presumed population drop during the Middle/Late Transition Period, as evidenced by an increase in the number of burials and features (Mikkelsen and Jones 2010).

Artifacts marking the Late Period include Desert Side-notched projectile points and Class E (lipped), K (callus), and M (thin rectangular) *Olivella* shell beads (Garlinghouse et al. 2009, Mikkelsen and Jones 2010). Bead drills and waste from bead manufacture at several sites indicate that bead manufacture was widespread but not intensive (Garlinghouse et al. 2009).

A large number of sites date to the Late Period in the Monterey region (Garlinghouse et al. 2009, Mikkelsen and Jones 2010). CA-MNT-1485/H and -1486/H may represent at least a portion of the Rumsien ethnographic village *Echilat* (Breschini and Haversat 1992). CA-MNT-12 may represent at least a portion of the Rumsien ethnographic

village of *Ichxenta* (Howard and Cook 1971). CA-MNT-170 is located at the south end of Monterey Bay and consists of a large, multi-component midden site. CA-MNT-156 and -436 are coastal sites showing a broader range of activities than shellfish procurement. CA-MNT-1942 is on the Big Sur coast and contains an artifact assemblage suggesting to researchers that coastal sites during the Late Period were not as well-developed as they were prior to the Medieval Climatic Anomaly, although there appears to have been a rebound in coastal populations.

3.3.2 ETHNOGRAPHIC BACKGROUND

OVERVIEW

The Carmel area is located in the traditional territory of the Costanoan or Ohlone people. “Costanoan” is derived from the Spanish word for “coast dweller”. Ohlone (or Alchone, Olchone, Oljon, or Olhon) was the name of a tribe between San Francisco and Santa Cruz. Ohlone has come to be used to describe a related set of languages as well as the people who speak these languages (Bean 1994, Heizer 1967, Levy 1978).

Ohlone groups inhabited the San Francisco Peninsula, the eastern Bay Area south to the San Joaquin Delta, and the Santa Clara Valley to Monterey and inland south to San Juan Bautista when Europeans first arrived in the region in the 1760s. Ohlone territory encompassed a variety of ecological zones including grasslands, woodlands, chaparral, redwood forests, sea coasts, bay estuaries, and tidal marshes. Miwok people lived to the north and northeast and Yokuts groups lived to the east. South of the Ohlone territory lived Esselen and Salinan, whose languages were of the Hokan language stock. Costanoan is part of the Utian family of languages and likewise part of the larger Penutian language stock. Penutian speakers include Maidu, Wintu, Miwok, and Yokuts people. Costanoan is divided into eight languages (Levy 1978). Esselen and Salinan speaking people would gather food in the area, and the Esselen likely occupied the Carmel area prior to the arrival of the Ohlone (Broadbent 1972, Milliken 1987).

Ohlone may have come into the San Francisco and Monterey Bay Area relatively late in time, perhaps as late as 1450 B.P., originating in the San Joaquin-Sacramento River system and displacing earlier Hokan speaking people (Levy 1978). The migration to the Bay Area may have come much earlier according to some researchers, who propose Penutian speakers may have entered the Bay Area at approximately 4950 B.P. (Whistler 1977).

Researchers disagree on the exact number of the Ohlone population at European contact. Estimates vary from 7,000 to 11,000 (Cook 1943, Heizer 1974, Kroeber 1925, Levy 1978). Modern estimates based on Mission records suggest a population density of 2.5 individuals per square mile in the San Francisco Peninsula (Milliken 1995). Milliken notes that large villages were located near the Carquinez Strait, San Francisquito Creek, and Point Año Nuevo.

European contact, through Spanish colonization, missionization, and introduction of foreign diseases, brought drastic, cataclysmic changes to California Indians. Spanish missionaries actively discouraged or banned traditional practices, and populations drastically declined because of increases in deaths and a declining birth rate. By the time anthropologists such as Harrington (1985), Kroeber (1925), and Merriam (1967) began studying California Indians many customs, rituals, and rites had been forgotten or lost. Many aspects of Ohlone culture were nevertheless passed down to later generations. Ethnographers have been able to use this information, as well

as Spanish diaries, letters, and other documents and archaeological investigations, to develop a broad outline of past Ohlone culture (Bean 1994, Broadbent 1972, Kroeber 1925, Levy 1978, Milliken 1995).

The Ohlone lived in approximately 50 politically autonomous villages called tribelets (Kroeber 1925). Tribelet chiefs could be male or female, but the office was generally inherited through the male line usually passing from father to son (Levy 1978). Tribelets usually included one large, centralized, permanent village and one or more, smaller satellite villages that were occupied for several months of the year depending on what resources were available during the season. Families came together during winter months both to share food and to participate in annual ceremonies. Warfare was common, with many Spanish accounts noting tribelets battling over land rights or points of honor (Broadbent 1972, Margolin 1978, Milliken 1995).

Men and boys usually did not wear any clothing, though they covered themselves in mud on cold mornings. Ornaments included *Olivella* bead necklaces, abalone pendants, and pierced ears and nasal septums with ornaments. Men allowed their facial hair to grow out and, if it was long, would braid their hair or tie it on the top of their heads. Women braided plant fibers for a front apron and used sea otter or deer skin for a rear apron. Many women had chin tattoos, usually consisting of lines and rows of dots. Men and women wore robes woven from animal skins when it was cold. Men often applied dyes and other decorations to their bodies during rituals or warfare (Levy 1978, Milliken 1995).

Ohlone followed a seasonal round of resource availability, hunting and gathering whatever food resources were available depending on the season. Family groups were generally spread out across their territory, but came together whenever a large number of people were required to harvest large amounts of food resources, which were usually stored for winter and early spring when the tribelet would gather (Levy 1978).

The most important food source for the Ohlone consisted of acorns (Beechy 1968, Bickel 1981, Broadbent 1972, King 1974, Milliken 1995). The favorite acorns of the Ohlone came from tanbark oak, valley oak, coast live oak, and California black oak. Preparing acorns so they could be eaten was a long process. The acorns were collected during the fall season and then ground into flour using pestles and either bedrock mortars or portable mortars. The flour was then leached in streams to remove tannic acids. The acorn meal was made into cakes or mush and eaten during the winter. Other important foods included buckeye nuts and dock, gray pine, and tarweed seeds. Gooseberries, blackberries, madrone, and wild grapes were among the berries harvested. Roots that were eaten included wild onion, cattail, and wild carrot. Kelp, which was sundried and roasted, was eaten by groups living on the coast (Broadbent 1972).

Shellfish were also immensely important in the Ohlone diet, as evidenced by large shell mounds and Spanish accounts of Ohlone collecting and processing shellfish. Various shellfish species that were collected and eaten by the Ohlone included mussels, abalone, clam, oyster and scallop species. Many of these species were gathered year-round with prying sticks or by hand, but were likely mostly collected during winter. Clams would have been dug from tidal flats while a variety of fish such as salmon, sturgeon, steelhead, and others would have been taken with nets or spears (Broadbent 1972, Levy 1978). Marine mammals such as sea lions, seals, and sea otters were clubbed on beaches and meat from beached whales was also taken and roasted (Baumhoff 1963).

Land animals that were hunted included deer, pronghorn, and tule elk (Baumhoff 1963). Controlled burns were used in grassland and woodland settings to help in hunting activities. Controlled burns also helped clear dense vegetation and increased the productivity of grasses which attracted game animals. Other animals that were

hunted included rabbits, which were taken using nets in large communal drives, squirrels, woodrat, mice, and moles (Levy 1978).

CONTACT PERIOD

When contact was first made with Spanish explorers, the Rumsien, the local Ohlone group, occupied Point Lobos and the lower Carmel River Valley. A study of Spanish mission registers shows that there were between 400 and 500 Rumsien with a population density of between two and two and a half people per square mile. Accounts by Spanish explorers indicate that the Rumsien lived inland and only came to the coast for fish and shellfish, with a heavy reliance on deer and acorns (Mikkelsen and Jones 2010).

Milliken, using census information from the Mission San Carlos baptismal register for 1770, estimates that the Rumsien were distributed between five villages much of the year. Baptized village populations ranged from 40 to 150 individuals. The villages included *Tucutnut*, likely located 4 miles inland along the Carmel River; *Socorronda*, located approximately 7 miles up the Carmel River; *Echilat*, located 5 miles southwest of the Carmel River Valley; *Achasta*, located either at the San Carlos Mission or at Monterey; and *Ichenta*, which although generally associated with the Hudson Mound (CA-MNT-12), Milliken believes was situated approximately 5.5 miles up the Carmel River. There were at least four other campsites and likely numerous more that were never recorded (Mikkelsen and Jones 2010).

The local Rumsien were bordered by three other Rumsien-speaking peoples and an Esselen-speaking group. Their populations were likely divided among multiple villages. Despite borders usually being defended, there were at least certain occasions or times of the year when neighboring tribes were allowed to enter their neighbor's territory and collect resources. Traditional food sources declined greatly, however, because of the introduction of Spanish cattle herds, and alteration of the landscape to make it more accommodating for grazing and agriculture. Although introduced diseases were the major cause for Rumsien population decline, the impact upon local food resources was also factor (Mikkelsen and Jones 2010).

3.3.3 ARCHAEOLOGICAL INVESTIGATIONS

The information in this section has been gathered from the *Management Plan for the Ohlone Coastal Cultural Preserve in Carmel River State Beach* (DPR 1987), *A Cultural Resource Inventory of Carmel River State Beach* (Woodward 1986a) for California State Parks, and *Archaeological Evaluation of CA-MNT-14 for the Carmel River Lagoon*, by Albion Environmental, Inc. (Garlinghouse 2009) for California State Parks, and personal communication with California State Parks Archaeologist Rae Schwaderer and California State Parks Historian Matt Bischoff.

There are currently four prehistoric archaeological sites located entirely within Carmel River SB. Three additional sites are partially located within the unit. In 1987, 25 acres of Carmel River SB were classified as a cultural preserve, the Ohlone Coastal Cultural Preserve, by the California State Park and Recreation Commission. The area designated as the preserve included four archaeological sites located along the Middle Beach area of Carmel River SB, as described in *Management Plan for the Ohlone Coastal Cultural Preserve in Carmel River State Beach*. As stated in the management plan for the preserve, the intent of the plan is to provide additional protection to the sites within the preserve, noting that the sites had not been disturbed as well as to recognize significant

cultural resource values within the park unit, with the goals to protect and preserve the archaeological sites within the preserve (DPR 1987).

Cultural preserves consist of distinct nonmarine areas of outstanding cultural interest established within the boundaries of other state park system units for the purpose of protecting such features as sites, which represent significant places or events in the flow of human experience in California. The cultural preserve designation provides for the protection of prime cultural resources from potentially damaging influences, and permits the effective management and interpretation of the resources. Within cultural preserves, no structures or improvements that conflict with that integrity shall be permitted.

At the time the cultural preserve was established none of the sites had been formally evaluated to determine if they met state and federal criteria for listing in the California Register of Historical Resources (CRHR) or National Register of Historic Places (NRHP) and therefore considered significant resources under the California Environmental Quality Act or the National Historic Preservation Act. The sites had, however, undergone very limited subsurface testing in order to determine site boundaries and had been surveyed (DPR 1987). Sites in the cultural preserve are described as having well developed shell middens and some also contain bedrock mortars (Woodward 1986a). Depth of archaeological deposits range from about 35 cm to more than a meter.

Since the Cultural Preserve was established, subsurface archaeological testing has taken place at one site there. The purpose of the investigation was to evaluate site significance and impacts from Monterey County Public Works Department repeatedly driving heavy equipment over the site to access the Carmel River mouth for sandbar management activities. Results of the investigation indicate that the site functioned as an Early Period seasonal campsite, possibly during the fall and winter, focused primarily on hunting of terrestrial and marine mammals. Other activities represented include fishing, minor bird hunting, shellfish gathering, and plant processing. The site was determined eligible for listing on the CRHR for its ability to answer important questions in prehistory, more specifically regarding subsistence practices during the Early Period.

The area of the Cultural Preserve has a special significance to local Ohlone and Esselen people, who have held Park-sanctioned gatherings and ceremonies on the beach below the sensitive archaeological sites in the Preserve.

Little is known about the other sites within Carmel River SB, which lie predominantly on adjoining private property or another park unit. Processing plants seems to have been an important activity throughout the unit as bedrock milling stations are found at three of the four sites within the Preserve, and at two other Carmel River SB sites outside the Preserve.

Impacts to the sites in Carmel River SB include coastal erosion, trail erosion, trampling of deposits and erosion from user-created trails, the crushing and displacement of archaeological materials from driving heavy equipment over sites, and from weddings, which were a CSP permitted activity within the Preserve.

3.3.4 HISTORIC BACKGROUND

SPANISH SETTLEMENT

Sebastián Vizcaíno, a successful merchant trader, was appointed by the Viceroy of New Spain, Monterey, to head the exploratory party to map the coast of California. Vizcaíno sailed into Monterey Bay in 1602 and thought it

was an ideal harbor where Spanish ships could rest, make repairs, and take on supplies. Vizcaíno gave an exaggerated description of the bay and its harbor when he recommended that Monterey Bay be the site of a Spanish colony (Beck and Haase 1974:14). The Viceroy Monterey was succeeded by Marqués de Montesclaros who distrusted Vizcaíno and did not believe Vizcaíno's report of a splendid harbor and thus never allowed for a colony's establishment (Bean 1973:23). One hundred and sixty-seven years later, the Don Gaspar de Portolá-Father Crespi expedition arrived in the Monterey Bay area with plans to establish a permanent settlement in Upper California. The expedition left San Diego on July 14, 1769, to find Monterey Bay. After a difficult passage over the Santa Lucia Mountains they followed the Salinas River and reached the ocean on September 30, 1769. The expedition mistook the Salinas River as the Carmelo River described by Vizcaíno. Therefore, the landmarks, the peninsula and Point Pinos, described by Vizcaíno were not in the correct location and the bay did not resemble Vizcaíno's description. The expedition also anticipated that their ship, *San José*, would be waiting for them. Each of these factors convinced the expedition that they were not at Monterey Bay (Beck and Haase 1974:17; Bean 1973:38).

The expedition was short on supplies and the decision was made to return to San Diego. Before leaving, they erected a cross on a knoll near the lagoon near the Carmel River SB. Buried beneath the cross was a letter inside a bottle with instructions for the San José to look for them along the coast and the explanation that they had decided to return to San Diego because a lack of supplies made it too difficult to continue. A second cross was erected at the northeast side of the Point Pinos where the harbor was supposed to have been located. The expedition reached San Diego on January 24, 1770 (Brown 2001:633; Bean 1973:39).

Portolá, still seeking the location of Monterey Bay, set out on a land expedition to the bay on April 17, 1770. The ship *San Antonio* carried Father Junipero Serra, Lieutenant Pedro Fages and Miguel Costansó, a cartographer and engineer, towards Monterey Bay. Portolá followed practically the same route as the previous year. On May 24th, the party reached Monterey Bay and discovered the cross that was placed in 1769 at Point Pinos. The cross was surrounded by feather-topped arrows, sticks and other artifacts, which were placed there by the Native Americans. The expedition camped in the same location as they had previously. As the fog burned off they had a clear view of the region and realized that the bay, which they had previously mistaken for a lake was actually Monterey Bay (Engelhardt 1912:72–73; Brown 2001:733). After Portola left the area, Serra established a permanent presence in the area with the construction of Presidio of Monterey and Mission San Carlos de Borromeo in Monterey. Later in 1771, Father Serra moved the Mission San Carlos de Borromeo in Monterey to Carmel Bay, north of the mouth of the Carmel River (Hoover and Kyle 1990:214–215; Stammerjohan 1980:1). Herds of cattle and flocks of sheep were raised at the Mission and with the establishment of nearby ranchos an early industry developed. Meanwhile, a marine resource centered industry was also established centering on hunting otter and seal. Eventually, the point south of the Carmel River was named *Punta de los Lobos Marinos*, or Point of the Sea Wolves, after the numerous sea lions living in that area (Stammerjohan 1980:1).

RANCHO PERIOD

After the secularization of California's missions in 1834, Teodoro Gonzales applied for a land grant for 8,876 acres for land that stretched from the Carmel River to Big Sur. Gonzales was likely interested in the land because he owned a commercial otter hunting license (Lydon 2006). Although the grant was issued, Gonzales did not keep it and settled elsewhere under a different land grant. In 1839, Marcelino Escobar was re-granted the land and named it Rancho San Jose y Sur Chiquito. Escobar bequeathed the rancho to his two oldest sons in 1840. They in

turn sold it to Josefa de Abrego in 1841. By 1844, the rancho was owned by Captain Jose Castro (Stammerjohan 1980).

After California became a state in 1850, the California Lands Commission was established to determine the validity of land claims granted during Mexican rule. Castro petitioned for a land patent, but before one was issued he sold the rancho to Joseph S. Emery and Abner Bassett (Stammerjohan 1980). The process for determining the legal status of ranchos was long. Castro pursued his claim to Rancho San Jose y Sur Chiquito with the California Lands Commission to have the title verified and transferred to Emery and Bassett. The claim was denied and Emery and Bassett were left to pursue the claim (Stammerjohan 1980, Lydon 2006).

EARLY AMERICAN PERIOD

As Emery and Bassett continued the legal process to have their rancho title confirmed others started to settle on their land. None of these groups paid rent to Emery and Bassett because doing so would be an admission that the two were the legal owners. These squatters were hoping that Emery and Bassett's claim would be rejected and the land opened for homesteading. For the next several decades more claimants came forward as the rightful owners of Rancho San Jose y Sur Chiquito. Finally in 1888, the land patent was settled and the title listed a series of owners (Stammerjohan 1980, Lydon 2006).

SETTLEMENT AND DEVELOPMENT

The sand from the beach at San Jose Creek was a rich source of quartzite, which was used in glassmaking. As early as 1899, Alexander MacMillan Allan, a businessman and engineer who had purchased acres of land in what would become Point Lobos SNR, established a mining business and shipped the sand to Alameda. A sand plant remained in operation in this area until 1954 when the Monterey Sand Company closed its plant at San Jose Creek (Hudson and Wood 2004:43–44).

This region was also developed by settlers like the Greggs, Olivers, and Odellos who engaged in cattle ranching, dairying, and farming. Joseph Gregg came to California in the early 1850s and by 1871 he had established his ranch at the mouth of the Carmel River. It became known as the Gregg Ranch (Schwaderer 2013:4). This ranch ultimately stretched from Carmel River on the north to San Jose Creek on the south, and eastward to the Rancho El Potrero de San Carlos, which was owned by Bradley Sargen (Pers. Comm 2013). Gregg made improvements on his ranch and by 1880 it was one of the most successful butter-producing dairies in the Monterey region. By 1900, Joseph Gregg was retired, but remained on his ranch with his daughter Mary Ann and her husband Montague Steadman and two of his grandchildren. In 1905, after moving to Monterey, Gregg died and his ranch was inherited by his three daughters. The oldest daughter, Elizabeth Gregg Oliver took controlling interest of the ranch (Schwaderer 2013:4–5). She and her husband, Tom Oliver, changed the name of the ranch to the Oliver Ranch (Bishoff 2007:5). The dairies originally focused butter production, however by 1920, the changes in butter production technology forced individual ranches to shift to cooperative creameries. In 1924, the Oliver Ranch focused on milk production because it was more profitable (Schwaderer 2013:6). Tom Oliver died in 1925 and in 1927 his wife sold a large section of the ranch to Sidney Fish. This became the Palo Corona Ranch, and was often referred to as the Fish Ranch. The Oliver family operated a grade B dairy and also owned the Molera Ranch at Big Sur, and the September Ranch in the near vicinity of their San Jose Creek Ranch (Bishoff 2007:3–4). Between 1943 and 1950, the dairy sold its milk to the Carmel Dairy, which operated in the Carmel Valley

southeast of Point Lobos. Elizabeth Oliver died in 1953 and her heirs sold the Oliver Ranch to the Odello family (Pers. Comm. 2013).

The Odello family arrived in the area in the early 1920s when Batista Odello moved his family from South San Francisco. They leased approximately 300 acres from the Oliver family and established an artichoke farm and grew Globe artichokes. Around 1925, Batista Odello purchased the farm from the Olivers. The Odellos also eventually acquired property west of today's Highway 1 to expand their artichoke farming operations. When they acquired the Oliver property the Odellos utilized some of the existing buildings, including the barn and cookhouse/creamery building and demolished others, including a bunkhouse and horse barn. When the family expanded its operations to the west side of Highway 1 they moved the blacksmith shed to its present location near the family's old residence. To prevent the Carmel River floods from reaching their ranch, the Odellos would open up the sand bar and create a channel for the water to drain. Originally, they would hire M. J. Murphy who would use a bulldozer for the task. In later years it would either be Calabries or Granite Construction. Not only did their efforts protect their ranch, it also aided the neighbors whose backyards were close to the river and were at risk of being inundated with water. The Odellos continued this practice until about 1957 (Bishoff 2007:8, 18–19, 21, 31–33).

Although it was one of several artichoke farms in the region, it was one of the largest and most successful operations in the area. Odello shipped his artichokes to East Coast markets including New York City through three different distributors. He named his company L&O, for Darrell Lance, one of Odello's partners and for the Odello family (Bischoff 2007). The management of the Odello ranch passed from Odello to his sons Emilio and Bruno in 1945. Bruno had worked on the farm full-time since 1939. The artichoke farm continued under Emilio and Bruno's leadership and ceased farming in 1995 (Carmel Valley California 2012, Bischoff 2007).

CARMEL RIVER SB ACQUISITION AND DEVELOPMENT

After World War II there was tremendous support for expanding and developing a large state park system in California. The legislature passed bills to allocate General Fund monies to preserve the existing parks, and to expand and acquire more land to create new state parks (Roland 2003). The recreation activities at Point Lobos were limited by Master Plan-approved improvements. During the post-World War II period, Point Lobos, like most parks in the system, was experiencing an overwhelming number of visitors. In 1947, the Park and Recreation Commission proposed the acquisition of Monastery Beach and Carmel River Beach on an equal cost sharing basis with Monterey County as a means for alleviating the heavy volume of park visitors at Point Lobos SNR. In 1952, the State acquired 27 acres on the north side of the Carmel River lagoon, owned by James C. Doud and his wife, and Corum B. Jackson. This was followed by acquisition of 22 acres on the south side of the lagoon in 1953 from Helen A. Burnette. The area was renamed Carmel River SB and was officially an operating unit of the state park system in 1953. The following year, the unit was expanded when the Carmel Development Company deeded another four acres on the north side of the river's mouth (DPR 1988).

Little conservation activity occurred in the region over the next 15–20 years, however, the 1970s proved to be a period of heightened awareness of conservation and the environment in general. There was growing concern that there would not be adequate outdoor recreation facilities for the public and that development would increasingly encroach upon wildlife and agricultural lands. In 1974, Californians approved Proposition 1, a \$250 million California State Park bond issue. Ninety million of that money was spent on land acquisition, including the 155-acre agricultural area known as the Odello West field (Engbeck 1980). In 1974, the agricultural land was deeded by the Odello family to the State with a stipulation that the Odello family would lease the land in five year

increments and continue their farming operations (DPR 1988, Bishoff 2007). Thirty-five additional acres located south of the Carmel Meadows subdivision was added to the park unit in 1981. In 1995, after extensive flooding, farming operations on the Odello West field ended and in 1996, plans to convert the agricultural land to riparian and wetland habitat were underway (Bishoff 2007, DPR 1996). The land conversion also aided with flood control efforts in the area, because the Odello family historically kept flooding at bay by cutting a channel in the sandbar to prevent the Carmel River from overrunning its banks (Bischoff 2007).

In 1979, a combined General Plan for Point Lobos SNR (then called Point Lobos State Reserve) and Carmel River SB was approved by the California Park and Recreation Commission on May 11, 1979 (DPR 1979). A GPA was approved in June 1987 to designate 36 acres of newly acquired property for day use and to allow visitor facility development including new parking facilities (DPR 1988). A second GPA was approved in March 1996 to change the land use designation of the 155-acre Odello West field within Carmel River SB from agricultural use to riparian and wetland habitat to help reduce the risk of flooding and to address resource enhancement goals (DPR 1996).

Today, Carmel River SB offers visitors the opportunity to hike on various informal trails, including a trail traveling up a small hill where the Crespi Cross, a commemorative replica of the 1769 Portola-Crespi expedition, is located (DPR 1988). The Carmel River Lagoon and Wetland Natural Preserve, which was historically part of the Odello property, provides bird watching opportunities to its visitors.

3.3.5 ARCHITECTURAL RESOURCES

Carmel River SB contains the Odello farm complex, which consists of four architectural resources. None of the resources have been formally evaluated for the NRHP or the CRHR. Information on each resource is discussed below.

1. **Old Odello Residence (Residence).** The Residence is a one-story wood-frame building with a rectangular plan, gable roof and wood siding. Its estimated date of construction is between 1932 and 1935. California State Parks inventoried the building in 1986 and stated that the building had no historical or architectural significance under the themes of agriculture and settlement (Woodward 1986b). That inventory, however, did not consider the residence's associated resources and did not consider the residence as part of a district. In 2007, Buehler and Buehler Structural Engineers, Inc. (Buehler and Buehler) conducted a preliminary structural stabilization and assessment of the building. The assessment noted that the structure contained extensive dry rot, portions were collapsed, there was sag in some of the floors, and that front and side stairs needed to be replaced.
2. **The Creamery/Cookhouse.** The creamery/cookhouse was constructed between 1890 and 1915. It is a gable end building with shed roof additions on three elevations that were likely added to the building in 1925 (Woodward 1986c). The building is sheathed in wood and all entrances and windows are boarded. In addition to a cookhouse and creamery, the structure has also been used as a bunkhouse. California State Parks inventoried the building in 1986 and stated that the building had a California Office of Historic Preservation (OHP) National Register Status Code of 4B: May Become Eligible for Listing When the Property is Restored to an Earlier Appearance (Woodward 1986c). That inventory, however, did not consider the residence's associated resources and did not look at the residence as part of a district. OHP has since revised those status codes and the creamery/cookhouse now has a status code 7N: Needs

to be Reevaluated. The structure had temporary stabilization added to several rooms in 1999. In 2002, Architectural Resources Group (ARG) conducted a conditions assessment. The creamery/cookhouse was described as being in fair/serious condition (serious condition meaning repairs were immediately needed to prevent additional deterioration of the structure) because of extensive dry rot and weathering because of contact with the soil. In 2007, Buehler and Buehler conducted a preliminary structural stabilization and assessment on the creamery/cookhouse and noted dry rot on the exterior siding and trim of the building.

3. **Barn.** The barn (Photo Exhibit 3-4) was constructed between 1880 and 1910. The barn has three bays, gable roof, and wood siding. Roofing material is missing in several places and there are bird nests beneath the barn's eaves. The northeast corner of the barn was partially rebuilt in 1982 because of a fire. The structure was inventoried in 1986 by California State Parks. The inventory stated the barn was not eligible for the NRHP; however, it did not consider the residence's associated resources and did not consider the barn as part of a district. The same inventory indicated that in 1982, the barn was given a local designation as having local significance (Woodward 1986b). In 2002, the barn underwent a conditions assessment by ARG and was reported to be in fair/serious condition because of weathering, water infiltration, and pest infestation. The barn was also said to have instability evidenced by the failure of some roof structural elements and significant leaning to the west. In 2007, Buehler and Buehler conducted a preliminary structural stabilization and assessment on the barn and recommended a complete reconstruction at the north bay of the structure. Several sections of the barn on the south elevation have already collapsed, rendering the building hazardous.
4. **The Blacksmith Shed.** The blacksmith shed features a rectangular plan, a gable roof and wood siding. The shed has an estimated built date between 1925 and 1935. It was moved to its current location in 1955. A part of the blacksmith shed burned in the same 1982 fire that destroyed a portion of the barn. The shed building was inventoried in 1986 by California State Parks and that inventory stated the barn was not eligible for the NRHP (Woodward 1986b). ARG conducted a conditions assessment in 2002 and described the shed as being in fair/serious condition because of extensive weathering and pest infestation. Buehler and Buehler performed a preliminary structural stabilization and assessment on the shed in 2007. That assessment recommended further investigation for dry rot and reinforcing the walls. In 2008, California State Parks maintenance staff added exterior shoring to keep the building from collapsing.

3.3.6 COLLECTIONS

There is one archaeological collection from testing and evaluation of CA-MNT-14 within Carmel River SB by Albion Environmental, Inc., which is currently curated at the Monterey District office. The collection consists of a variety of shell, debitage, bone, fire affected rocks, hand stones, milling stones, ground stones, glass, burned wood, and soil samples (DPR 2009c).

3.3.7 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan called for continuation of agricultural use of the Odello West field as an important historic activity. Agriculture has continued on a small portion of the Odello West field. The 1987 GPA called for the protection of archaeological sites and designation of the coastal terrace between the Carmel River and San Jose Creek as a cultural preserve. The Ohlone Coastal Cultural Preserve has been established to protect archaeological sites. The 1987 GPA also stated that the Odello barn, blacksmith shed, or cookhouse should not be permitted to be

demolished without prior additional study and evaluation. These structures have been further studied and are still standing. There were no proposals related to cultural resources within Carmel River SB in the 1996 GPA.



Source: AECOM 2011

Photo Exhibit 3-4

Odello Barn

3.4 AESTHETIC RESOURCES

Scenic resources provide a unique sense of place to an individual park as a whole, and to specific areas within a park unit. Scenery can be defined as the general appearance of a place and the features that contribute to its views or landscapes. Scenery consists of biophysical elements (landforms, water, and vegetation) and cultural or human-made elements (structures, water features, and managed landscapes). Many of the resources referred to as “scenery” or “scenic resources” also may be considered cultural landscape features in many instances (e.g., viewsheds, landforms, water vegetation, human-made elements). Scenic quality is an important and valuable resource, especially on public lands. Many people value the quality of the scenery and have high expectations of scenic quality when visiting California State Parks.

3.4.1 VISUAL RESOURCES AND VIEWSHEDS

The primary viewer groups of Carmel River SB include recreational users, surrounding residences in the Carmel Meadows subdivision and in Carmel-by-the-Sea, as well as other developments at higher elevations, and California State Parks staff. Portions of Carmel River SB area are also visible to motorists on Highway 1 and the private road providing access to the wastewater treatment plant. Similar to the adjacent Point Lobos SNR, Carmel River SB is an

area of high scenic value. From north to south along the beach, the downcoast scenic vistas change constantly and increase in prominence. The headlands at the western end of the beach are the focal point for mid-ground vistas. However, there are several prominent negative features in the viewshed of Carmel River SB. These include automobile traffic, power lines paralleling Highway 1, and nearby development (DPR 1988). Exhibit 3-11 shows some of the many scenic viewsheds within and of Carmel River SB.

The unique landscape and its special aesthetic qualities and inspiring nature have been an inspiration for artists, photographers, poets, and writers for many generations. The landscape of Carmel River SB also changes seasonally. Summer fog is frequent, producing a cool, misty, and quiet quality as it moves into the Carmel River lagoon. The changing seasons and a variety of weather conditions (e.g., fog, wind, rain) contribute to a transformation of vegetation in form, texture, and color. In May, a sandbar forms, turning the river mouth into a tranquil lagoon. During winter, the river bursts through the berm and rushes to the sea. Steelhead trout swim upriver to spawn. The predominant sounds at Carmel River SB are natural: the ocean waves and surf, wind, and abundant shorebirds that come to feed in the lagoon. There is also some noise produced by traffic from Highway 1 and the nearby wastewater treatment plant. However, much of the noise from traffic and the wastewater treatment plant is reduced by intervening vegetation, except at Monastery Beach where the highway is immediately adjacent to the beach.

3.4.2 DESIGNATED SCENIC AREAS AND ROUTES

There are no designated scenic areas within Carmel River SB; however, portions of Carmel River SB are within the scenic corridor for Highway 1, which is designated as a State Scenic Highway.

Highway 1 is designated as an All-American Road by the National Scenic Byways program and was designated as the first State Scenic Highway in California. The 1996 All-American Road designation was limited to the 72-miles of coast within Monterey County; in 2002, the designation was extended south to the City of San Luis Obispo. To be designated as an All-American Road, a roadway must meet the criteria for at least two of the following intrinsic qualities: scenic, historic, recreational, cultural, archaeological, and/or natural (FHWA 1995). The portion of Highway 1 with the All-American Road designation is recognized as having the following four intrinsic qualities: scenic, natural, recreational and historic. All-American Roads are so distinctive they are themselves considered a destination (Caltrans 2004). Advertisements along designated scenic byways are restricted (FHWA 2005). The goal of the State Scenic Highway program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. Official designation requires a local jurisdiction to enact a scenic corridor protection program that protects and enhances scenic resources. In addition, Carmel Area Land Use Plan contains policies that the existing forested corridor along Highway 1 shall be maintained as a scenic resource and any new development along the highway shall be sufficiently set back to minimize visual impact (Caltrans 2004).

The most vivid images along Highway 1 are of beach and open ocean. Natural features of the corridor such as the geology, climate, streams, vegetation, and wildlife all contribute to the viewshed. Human-made features that contribute to the viewshed include the historic structures at the Odello farm complex.

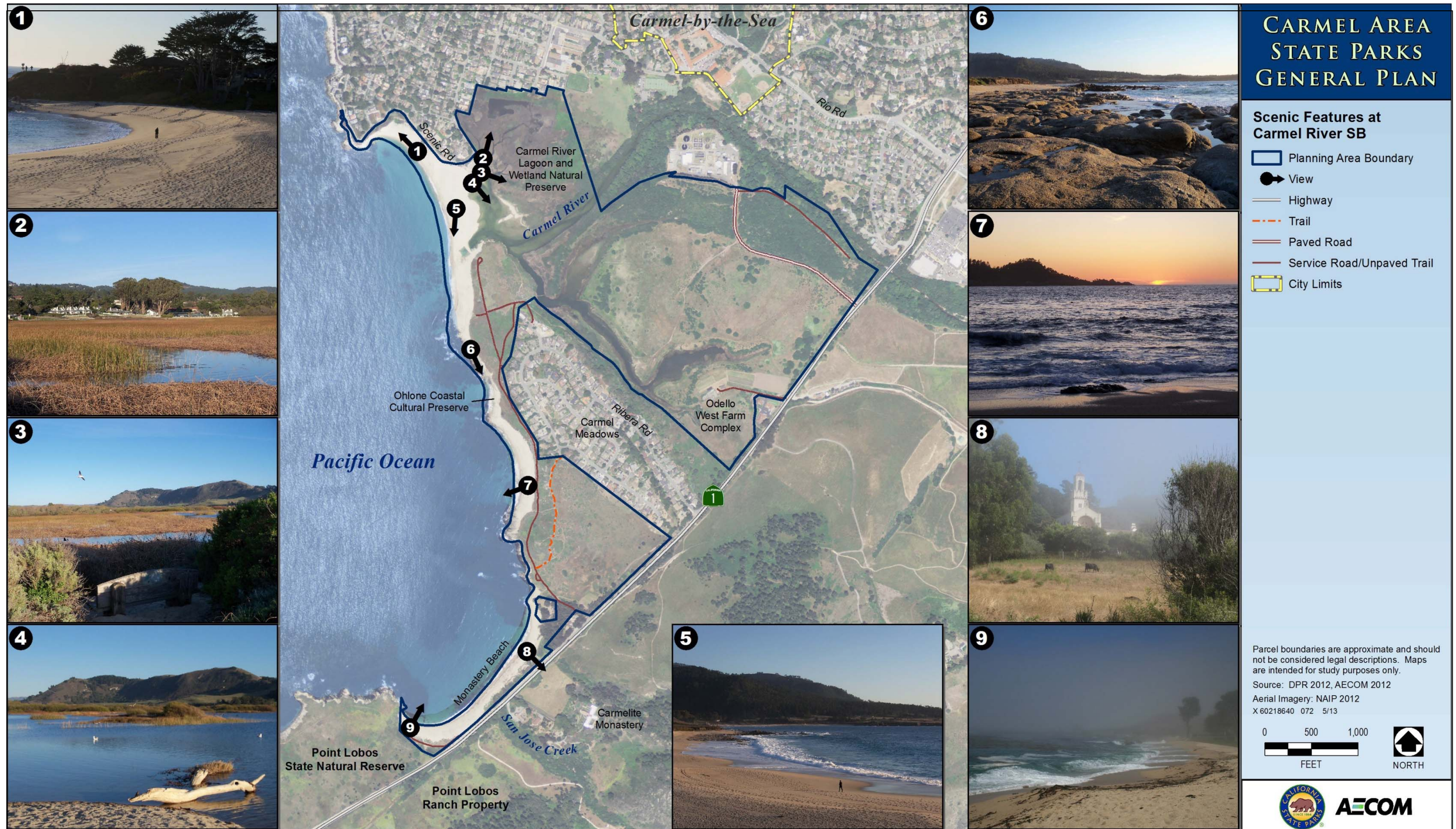


Exhibit 3-11

Scenic Features at Carmel River SB

4 RECREATION RESOURCES

4.1 REGIONAL RECREATION

4.1.1 FEDERAL PARKS

BLM lands in the Monterey vicinity provide a variety of recreation opportunities including mountain bike events, hiking, birding, wildlife viewing, and equestrian events. The recently designated Fort Ord National Monument is approximately 14,650 acres, with 7,200 acres currently administered by BLM for recreation, and the another 7,450 that will be administered by BLM once environmental remediation is completed by the U.S. Army. This property has 86 miles of trail for hiking, mountain biking, equestrian use, and wildlife/wildflower photography (BLM 2012). The Juan Bautista de Anza National Historic Trail, which is managed by the National Park Service, is also in Monterey County and transverses the Fort Ord National Monument. This trail follows the historic route of the 1775-1776 Anza expedition throughout Arizona and California. Portions of the 1,200-mile trail are accessible by automobile, and 300 miles of the trail are accessible for hiking, biking, and equestrian use (NPS 2013).

The Los Padres National Forest, which is owned and managed by the U.S. Forest Service (USFS), has 1,257 miles of maintained trails that provide both day-use and extended backpacking opportunities. Los Padres National Forest has 10 congressionally-designated wildernesses comprising approximately 875,000 acres or about 48% of the forest. The Ventana Wilderness portion of the Los Padres National Forest is the closest of those wildernesses and is more than 240,000 acres. The Ventana Wilderness is located approximately 30 miles southeast of Carmel River SB. Because it is a wilderness area, recreation opportunities are limited to activities that will not alter the natural qualities of the area including camping, backpacking, and hiking (USFS 2012).

4.1.2 CALIFORNIA STATE PARKS

California State Parks properties in the immediate vicinity of Carmel River SB include Point Lobos SNR immediately to the south, the unclassified Point Lobos Ranch property immediately to the southeast, the unclassified Hatton Canyon property northeast of Carmel River SB, and Garrapata State Park to the south along Highway 1. California state parks to the north of Carmel River SB include Asilomar State Beach and Conference Grounds, Monterey State Historic Park, Monterey State Beach, Fort Ord Dunes State Park, Marina State Beach, and Salinas River State Beach. These areas provide important open space and recreational opportunities and areas for resource protection (Caltrans 2004). There are also a number of state parks in the Big Sur area, approximately 30 miles south of the Carmel area, including Point Sur State Historic Park, Andrew Molera State Park, Pfeiffer Big Sur State Park, Limekiln State Park, and Julia Pfeiffer Burns State Park.

4.1.3 REGIONAL PARKS

The MPRPD operates a number of regional parks in the vicinity of Carmel River SB including Garland Ranch Regional Park, Thomas Open Space, Blomquist Open Space Preserve, Cachagua Community Park, and Carmel Valley Community Park. The MPRPD also owns Palo Corona Regional Park, part of Palo Corona Ranch, which is 10,000 acres of open space (MPRPD 2012a). Palo Corona Regional Park is within 1 mile of Carmel River SB, and is open to the public via access permits that are processed on a “first come, first served” basis. Recreation

within Palo Corona is limited to hiking, wildlife viewing, and picnicking (MPRPD 2012a). Because of the proximity of Palo Corona Regional Park, there is much opportunity for providing important connections between this property and the California State Parks properties, including trail connections and improving wildlife corridors.

The Monterey County Parks Department owns several parks in the area including the 525 acre Jacks Peak County Park, Toro Regional Park, and Martin Canyon, which provides a vital corridor to Jacks Peak County Park. The Monterey County Parks Department also owns the Laguna Seca Raceway, which provides camping. Mission Trails Regional Park, owned by the City of Carmel, is also a well-used corridor connecting the Carmel Mission to surrounding neighborhoods (Monterey County Parks 2012).

Regional recreation in the area also includes trail connections such as BSLT's South Bank Trail. The South Bank Trail is a 1.5-mile ADA accessible trail south of Carmel River connecting the area near Quail Lodge in Carmel Valley to Palo Corona Regional Park. This trail is an important milestone in the BSLT's "Experience Carmel River" program, a community-based program to extend access to and enjoyment of the Carmel River. Additional trail connections are proposed as part of this program including trail connections throughout the Whisler-Wilson Ranch (BSLT 2011). BSLT is also evaluating the feasibility of constructing the San Jose Creek Trail project, which would include construction of a 1.75 mile trail, three creek crossings, a 30-car parking area, a picnic facility, and interpretive signage along San Jose Creek.

4.2 PARKWIDE RECREATION

4.2.1 RECREATIONAL ACTIVITIES

Recreational activities at Carmel River SB are focused on providing public opportunities for ocean beach-oriented recreation in a high-quality environment consistent with its designation as a state beach. Recreation activities within Carmel River SB include sightseeing, walking/running (Photo Exhibit 4-1), photography, sunbathing (Photo Exhibit 4-2), sunset viewing, painting, nature study, bird watching, whale watching, beachcombing, surf fishing, picnicking, swimming, and SCUBA diving. Monastery Beach is the most heavily used SCUBA diving beach in Northern California and is used by various diving schools because of the proximity of the submarine canyon. Many visitors also use the beaches for walking their dogs on leash and local cross country teams use the beaches for training. Unofficial recreation at the lagoon also includes kayaking. All recreation within Carmel River SB is currently limited to day uses (DPR 1979, 1988).

Recreation activities that could have a negative effect on resources and are incompatible with the state beach designation are not allowed at Carmel River SB. Geocaching, which is a sport where participants use global positioning system (GPS) receivers to locate caches hidden in various locations by other GPS users, may be occurring in Carmel River SB, although it is not currently an allowable use.



Source: AECOM 2012

Photo Exhibit 4-1

Walkers Enjoying the Beach at Carmel River Lagoon



Source: AECOM 2011

Photo Exhibit 4-2

Beach Users Enjoying Monastery Beach

4.2.2 RECREATION FACILITIES AND TRAILS

Recreation facilities within Carmel River SB are limited to low-intensity day-use facilities and include one trail/service road providing beach access, restrooms at Carmel River Beach and Monastery Beach, and interpretive displays (Photo Exhibit 4-3). The Odello West portion of the unit is used informally for bird watching; however, there is currently no formal public access or trails within this portion of the unit.



Source: AECOM 2011

Photo Exhibit 4-3

Interpretive Panels at Parking Area off Scenic Road

TRAILS

The 2-mile round-trip Carmel River Beach Service Road and Trail follows the shoreline between Carmel River Lagoon and Monastery Beach. During the summer and fall months, the sandy berm at the Carmel River mouth provides a path between the river and ocean that provides visitors access to the trail at the north end of Carmel River SB. The northern end of the trail can also be accessed from Carmelo Street. The southern end of the trail can also be accessed from the southern end of Carmel River SB via a trail connection from the area behind the Bay School. There are also unofficial trails through the lagoon area and south of Carmel Meadows subdivision providing access to Monastery Beach.

PICNIC AREAS/BENCHES/RESTROOMS

There are ADA accessible restrooms at the southern end of Monastery Beach, and at Carmel River Beach off Scenic Road. Both of the restrooms are currently open. There are no formal picnic areas within Carmel River SB.

BEACH ACCESS

Carmel River Beach can be accessed via the Scenic Road parking area, directly off of Scenic Road at Stewart's Cove, and through the Carmel Meadows subdivision via Ribera Road and Cuesta Way. Middle Beach can be accessed by through Carmel River Beach and the Carmel Meadows subdivision, and Monastery Beach can be accessed directly off Highway 1 and behind the Bay School (Photo Exhibit 4-4).



Source: AECOM 2012

Photo Exhibit 4-4

Trail Access via Stairs from Carmel Meadows Subdivision

DIVING

Diving access is provided at Monastery Beach. Divers park along the shoulder of Highway 1 and walk to the ocean.

4.2.3 ACCESSIBILITY

The Americans with Disabilities Act, commonly known as ADA, is the federal law that prohibits discrimination on the basis of disability, and applies to all actions by the states, including the preparation of state park general plans. In compliance with the ADA, California State Parks published the *Accessibility Guidelines* (DPR 2009b), which states that accessibility is influenced by the location and type of park and that basic services and experiences need to be accessible to all people with disabilities, while maintaining the intrinsic qualities of the place.

The *Accessibility Guidelines* detail the procedure to make California's state parks universally accessible while maintaining the quality of park resources. Also included in the guidelines are recommendations and regulations for complying with the standards for accessibility. California State Parks has also published the *All Visitors Welcome: Accessibility in State Park Interpretive Programs and Facilities* (DPR 2011a), which provides guidance on developing accessible interpretive programs and facilities.

California State Park's *Transition and Trail Plans for Accessibility in State Parks* (DPR 2003a) outlines California State Park's commitment to achieving programmatic access throughout the state park system and in each of the parks.

The parking area off of Scenic Road has three ADA accessible parking spaces (Photo Exhibit 4-5) and both restrooms at Carmel River Beach and Monastery Beach are ADA accessible. California State Parks is currently working on improving the accessibility throughout this unit, but currently there are no accessible recreational facilities at the state beach (DPR 2004).



Source: AECOM 2012

Photo Exhibit 4-5

ADA Accessible Parking and Restroom at Scenic Road

4.3 PATTERNS AND LEVELS OF RECREATIONAL USE

4.3.1 REGIONAL PATTERNS AND USE

STATEWIDE TRENDS

As recorded within the *Complete Findings of the Survey on Public Opinions and Attitudes on Outdoor Recreation in California* (DPR 2009c), respondents to a 2008 recreation survey were asked about the activities in which they participated. The top 10 activities mentioned by the highest percentage of participants were the following:

- ▶ Walking for fitness or pleasure (74.2%)
- ▶ Picnicking in picnic areas (67.0%)
- ▶ Driving for pleasure, sightseeing, driving through natural scenery (59.8%)
- ▶ Beach activities (59.2%)
- ▶ Visiting outdoor nature museums, zoos, gardens or arboretums (58.4%)
- ▶ Attending outdoor cultural events (56.3%)
- ▶ Visiting historic or cultural sites (54.8%)
- ▶ Wildlife viewing, bird watching, viewing natural scenery (45.9%)
- ▶ Jogging and running for exercise (39.8%)
- ▶ Camping in developed sites (39.0%)

The majority of the most popular activities are available at Carmel River SB except for driving for pleasure, visiting outdoor nature museums, and camping. In addition, the top four recreation activities that survey respondents would like to participate in more often include walking for fitness or pleasure, camping in developed sites, bicycling on paved surfaces, and day hiking on trails. The most common facilities and amenities used by respondents included the following:

- ▶ Community/facility buildings (64%)
- ▶ Open spaces to play (59%)
- ▶ Picnic tables/pavilions (58%)
- ▶ Unpaved multipurpose trails (53%)
- ▶ Paved trails (50%)

REGIONAL PATTERNS AND USE

Monterey County is a tourist destination that attracts visitors year round; however, peak visitation in the Monterey region is between Memorial Day weekend and Labor Day weekend. Almost 14% of the County's land area is devoted to parks and recreation facilities operated by various governmental agencies. The County parks system makes up about 10% of the County's total park acreage (Monterey County 2010). Visitation to other state parks in the region is shown in Table 4-1.

Overall visitation to state parks in the region declined between the 2008/2009 and 2009/2010 fiscal years, but increased slightly in fiscal year 2010/2011 (DPR 2010b, 2010c, 2011b). The *Complete Findings of the Survey on Public Opinions and Attitudes on Outdoor Recreation in California* reports recreation trends for regions within California including the Central Coast region that encompasses Monterey. The type of park that Central Coast

Table 4-1 Annual Visitation to Regional State Parks			
	2008 / 2009	2009/2010	2010/2011
Monterey SB	558,490	443,641	458,313
Monterey SHP	318,547	171,161	136,795
Asilomar SB	787,040	622,790	657,555
Garrapata SP	147,662	132,109	119,156
Andrew Molera SP	45,647	58,955	62,741
Julia Pfeiffer Burns SP	53,376	75,705	78,192
Point Lobos SNR	324,449	331,431	370,409
Total	2,235,211	1,835,792	1,883,161
Source: DPR 2010b, 2010c, 2011b			

region respondents visited most frequently was highly developed parks and recreation areas. The majority of Central Coast region respondents reported driving for 5 minutes or less or walking to reach their most visited recreation destination (DPR 2009c).

The top five activities that Central Coast participants would like to participate in more often include the following (DPR 2009c):

- ▶ Camping in developed sites;
- ▶ Day hiking on trails;
- ▶ Walking for fitness or pleasure;
- ▶ Beach activities (i.e., swimming, sunbathing, surf play, wading, playing on beach); and
- ▶ Visiting historic or cultural sites.

4.3.2 PATTERNS AND USE AT CARMEL RIVER SB

Carmel River SB is accessible from multiple access points with no entrance stations or means to capture accurate visitation rates; therefore, no visitation data is collected for this unit.

Special events held within Carmel River SB include weddings, photo shoots, and “outstanding in the field”. In 2011, there were 146 weddings with approximately 5,490 people in attendance, and 1 photo shoot tour with 8 people at Carmel River SB (California State Parks 2011). Weddings can be held at Stewart’s Cove, the river mouth and lagoon adjacent to the parking area at Scenic Road, Wedding Rock, Middle Beach, and Monastery Beach (Exhibit 1-3). Wedding Rock is a distinctive rock outcropping adjacent to Middle Beach. For events, Wedding Rock can accommodate 50 people, while all other locations can accommodate up to 200 people (DPR 2012). “Outstanding in the field,” is a mobile event that re-connects diners to the land and the origins of their food with a guided tour of the host farm followed by dinner prepared from local foods.

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5 INTERPRETATION AND EDUCATION

Interpretation and education heightens and increases public understanding, appreciation, and enjoyment of natural, cultural, and recreational values. Providing meaningful, powerful, and inspiring experiences and opportunities is one of the core initiatives of California State Parks. The educational and interpretive programs and facilities provided at Carmel River SB attempt to describe the unit's physical and cultural aspects in such a way as to create relevant meaning for visitors and foster personal and lasting connections to the natural resources and history of the unit. The interpretive opportunities and facilities within Carmel River SB are described in more detail below.

5.1 FACILITIES

Presently, the interpretive facilities at the Carmel River SB are limited. The following interpretive panels are available at the Carmel River Lagoon and Wetlands Natural Reserve:

- ▶ Endangered Species in the Carmel River
- ▶ The Dynamic Lagoon
- ▶ A Question of Balance



Source: AECOM 2011

Photo Exhibit 5-1

The Dynamic Lagoon Panel at Carmel River SB

These panels interpret the delicate balance between the historic and current uses of the Carmel River for drinking and irrigation water, the needs of endangered species such as steelhead and California red-legged frogs in the lagoon and river, and the need for flood control to protect adjacent homes and businesses. Additional information on regulations pertaining to dogs on the beach and beach safety is provided at a kiosk near the restroom.

Signs regarding beach safety are posted at Monastery Beach.

No specific interpretive brochures have been developed for Carmel River SB.

5.2 THEMES

Primary interpretive themes identified in the 1979 General Plan for Carmel River SB include the Formation and Dynamics of Waves and Beaches, Carmel River Lagoon and Marsh Area, Shore Birds, and Beach and Shoreline Recreation. Secondary interpretive themes identified for the unit include SCUBA diving and fishing, and cultural history. Carmel River SB does not have an entrance station or visitor center; therefore, interpretive resources are limited to several interpretive displays at key locations throughout the property, such as interpretive panels at the lagoon (DPR 1979).

5.3 REGIONAL INTERPRETATION

Major interpretation topics in the region are recreation; marine life and its protection, including marine mammals and tidepools; wetlands; Native California Indians; special-status species; and geology.

Following is a list of interpretive and educational programs in the regional area, with their primary topics, listed:

- ▶ California State Parks Monterey District – natural history field trips; cultural history field trips; environmental studies programs; Junior Rangers Programs; Litter-Getter Programs (engages children in trash collecting activities while explaining the environmental value of acting responsibly in parks); Monterey District Habitats Van; and the Junior Lifeguard Programs (California State Parks 2008);
- ▶ MPRPD Interpretive walks/hikes – includes hikes through various MPRPD parks focusing on natural and recreation resources;
- ▶ MPRPD Let's Go Outdoors Program – environmental education and outdoor related programs, classes, and activities on topics such as photography, star gazing, hiking, kayaking, wildlife watching, art and writing, gardening, composting, and horseback riding;
- ▶ MPRPD Nature Camp – camps include hands-on activities and outdoor adventures such as camping and hiking (MPRPD 2012b);
- ▶ Big Sur Land Trust education programs – science and environmental camps, art-in-nature classes, Plant-a-Thons, wilderness challenge experiences, and interactive history, agriculture and nature exhibits (BSLT 2012a);
- ▶ Pacific Grove Museum of Natural History – includes field trips and classroom visits, summer camps, Science Saturdays, Long-term Monitoring Program and Experiential Training for Students, and Monarch butterfly monitoring (Pacific Grove Museum of Natural History 2013);
- ▶ Carmel Mission – includes museums, exhibitions, and tours (Carmel Mission Basilica 2013);

- ▶ Monterey Bay Aquarium – includes field trips, classroom curriculum, Teen Conservation Leaders volunteer program (Monterey Bay Aquarium Foundation 2013);
- ▶ Monterey County Toro Park field trips for grades 1-4 (Monterey County Parks 2007); and
- ▶ CSU, Monterey Bay Camp Sea Lab – programs include day and residential summer camps for ages 8-17, outdoor school for ages 3-8, workshops/curriculum for teachers to incorporate marine science in the classroom, and family workshops for children of all ages (CSU, Monterey Bay 2010).

Other interpretive and educational facilities in the region include the following:

- ▶ Monterey State Historic Park – classrooms, a collection of significant historic houses and buildings including the Pacific House Museum;
- ▶ Julia Pfeiffer Burns SP Information Center;
- ▶ MPRPD Garland Ranch Visitor Center;
- ▶ Monterey County Visitor Center;
- ▶ Monterey County Agriculture and Rural Life Museum; and
- ▶ Monterey County Toro Park Environmental Center.

Interpretive and educational opportunities offered in the region are primarily related to natural and cultural resources in the area and provide opportunities for educational hikes and programs for school groups and families. Many of the interpretive and educational opportunities offered in the region are not offered at Carmel River SB because of the limited facilities and access within this unit.

5.4 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan and 1987 and 1996 GPAs did not contain any specific proposals pertaining to interpretation and education at Carmel River SB.

6 ACCESS, CIRCULATION, AND TRANSPORTATION

6.1 ACCESS

Carmel River SB contains 1-mile of beach which includes Carmel River Beach, Middle Beach, and Monastery Beach. The designated public access points for vehicles are the Monastery Beach parking area directly accessible from Highway 1, and a parking area accessible from Scenic Road and Carmelo Street. Carmel River SB is also accessed by pedestrians via the stairs at Scenic Road, the Carmel River Beach Service Road and Trail that traverses the shoreline between Carmel River Lagoon and Monastery Beach, and from three public access points in the Carmel Meadows subdivision: from Cuesta Way, Ribera Road, and Calle La Cruz. Authorized vehicles/personnel can also access Carmel River SB through driveways at Odello Farm complex and at the Bay School that are both accessible directly from Highway 1. There is no direct access to the adjacent Point Lobos SNR from the State Beach.

6.2 ROADS/CIRCULATION

Carmel River SB is adjacent to Highway 1 just south of Carmel-by-the-Sea and north of Point Lobos SNR. Highway 1 varies in width from as narrow as 20 feet (10-foot travel lanes with no paved shoulders) to 40-feet (12-foot lanes and 8-foot shoulders). The transportation concept for Highway 1 consists of two 12-foot lanes with 4-foot paved shoulders. The transportation concept for a roadway is defined as long-range improvements needed to bring an existing facility up to the standards needed to adequately serve 20-year traffic forecasts (Exhibit 6-1).

Roadways within Carmel River SB include the unpaved Carmel River Beach Service Road and Trail and an unpaved road that leads to the Odello Farm complex. Vehicle access on these roadways is limited to authorized vehicles/personnel; however, the Carmel River Beach Service Road and Trail is also used for pedestrian access. There is also a paved roadway within a 20-foot roadway easement that runs through Carmel River SB from Highway 1 north to the CAWD wastewater treatment plant located on an adjacent property.

6.2.1 PLANNED ROADWAY IMPROVEMENTS

The *Monterey Bay Area Mobility 2035* is a long range transportation plan for Monterey, San Benito, and Santa Cruz counties. The plan contains projects which can be implemented anytime over the span between Year 2010 and 2035. The only programmed improvement near Carmel River SB is a truck climbing lane on Highway 1. The project would consist of a northbound truck-climbing lane from Rio Road to Carmel Valley Road (AMBAG 2010a). According to Caltrans' 2013 *Status of Projects Central Region District 5* report, this project is currently in the design phase (Caltrans 2013).

6.3 PARKING

There is currently a paved parking area at Carmel River Beach off Scenic Road in the City of Carmel-by-the-Sea. To access this parking area from Highway 1, visitors would travel west on Rio Road, turn left on Santa Lucia Avenue, and then left onto Carmelo Street. This parking area has 22 standard parking spaces and three ADA accessible parking spaces; however a portion of the parking area has been washed away by floodwaters and only a portion of the 22 parking spaces are currently available. Parking at Monastery Beach is within the Caltrans right-of-way west of Highway 1. Parking spaces are not delineated at this parking area; however, the area can generally

accommodate between 75 and 100 vehicles, depending on their size and direction of parking (Photo Exhibit 6-1). Visitors also park on the shoulder east of Highway 1 although this is not designated as a parking area.



Source: AECOM 2011

Photo Exhibit 6-1

Parking Area off Highway 1 at Monastery Beach

6.4 TRAFFIC VOLUMES

Based on 2011 Caltrans traffic counts, the annual average daily traffic (AADT) volumes on Highway 1 in the vicinity of Point Lobos SNR, Point Lobos Ranch, and Carmel River SB was 14,200 in 2011. The AADT is the total volume for the year divided by 365 days. The peak hour volume along Highway 1 in 2011 was 1,550 (Caltrans 2011). As compared to the past 3 years, the AADT at this location has slightly decreased (Photo Exhibit 6-2).

Highway 1 from Carmel to Carmel Highlands is the only roadway segment in the Carmel area identified as being congested or that are projected to be congested based on the 2010 Metropolitan Transportation Plan. The portion of Highway 1 adjacent to Point Lobos Ranch is not identified as a congestion area (AMBAG 2010b). In addition, Caltrans' *Transportation Concept Report for State Route 1 in District 5* characterizes Highway 1 in the Monterey area as having intense local and regional traffic in addition to through traffic bound for the Big Sur coast and recreational attractions, and long wait times for turns at intersections with Rio Road and Carmel Valley Road (Caltrans 2006).

6.5 ALTERNATIVE MODES OF TRANSPORTATION

Carmel River SB can also be accessed via non-motorized and public transportation. Highway 1 is classified as a Caltrans Class III Bikeway (Bike Route), which provides for shared use with pedestrian or motor vehicle traffic. This designation would allow visitors to ride their bicycles to Carmel River SB, although bicycles are not allowed within the state beach.

The 2011 TAMC Bicycle and Pedestrian Master Plan identified several proposed pedestrian improvements including a separated softscape walkway/Class II bicycle lane for Scenic Road, renovation of the existing pedestrian bridge and construction of a second bridge providing access across Carmel River and Lagoon, and a separated walkway/Class III bicycle path at Monastery Beach (TAMC 2011).

In addition, the Monterey-Salinas Transit (MST) operates Line 22 seasonally and runs between Big Sur and Monterey. Line 22 operates between 10:15 AM and 7:05 PM from Memorial Day weekend to Labor Day (MST 2012). The nearest bus stops are located just outside the entrance to Point Lobos SNR and at Carmel Rancho Boulevard near the Hatton Canyon property (Exhibit 6-1).

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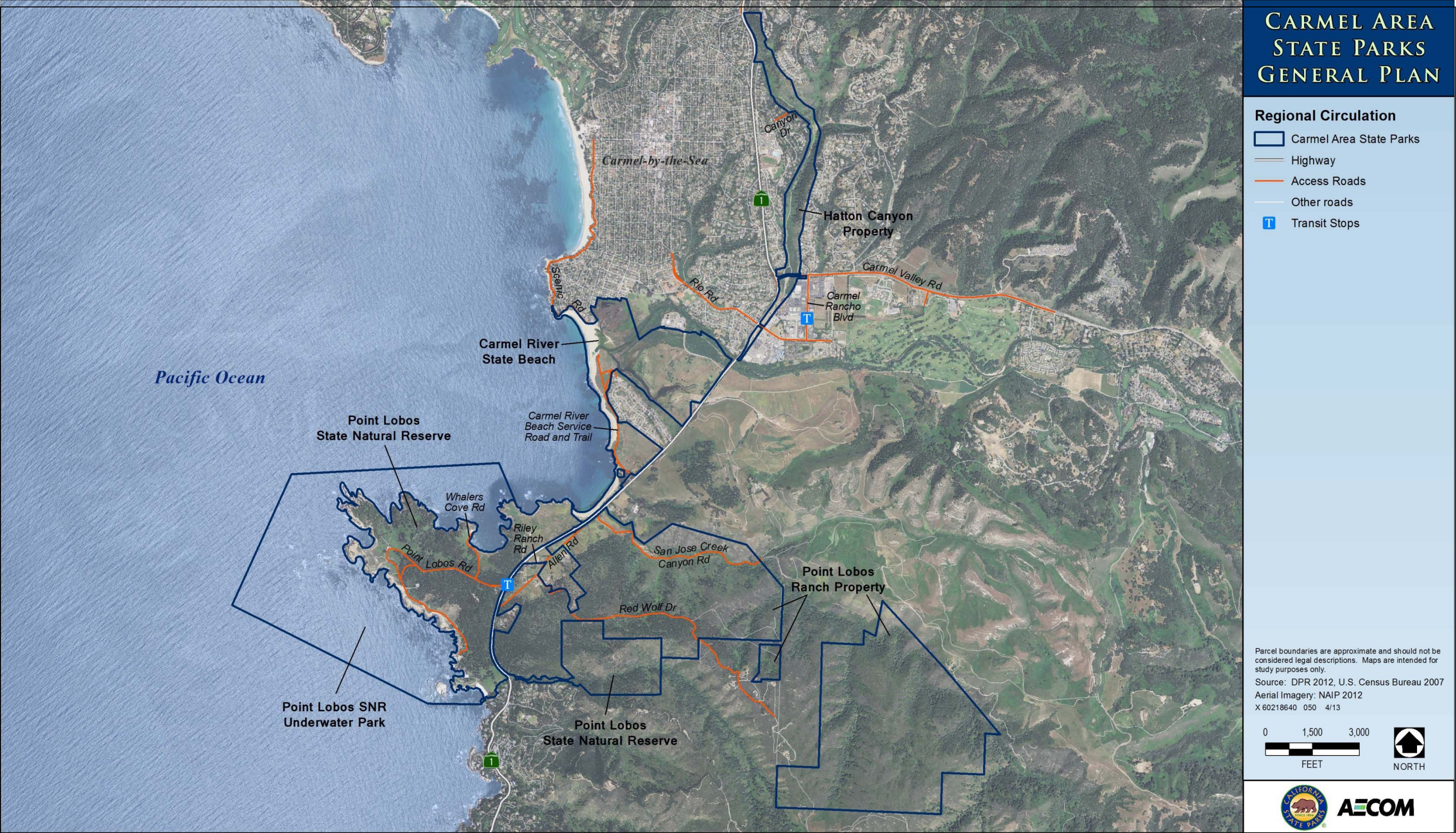


Exhibit 6-1 Regional Circulation



Source: AECOM 2011

Photo Exhibit 6-2

Traffic along Highway 1 at Monastery Beach

6.6 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan called for the removal of shoulder parking at Monastery Beach and the establishment of parking at an alternate location. The document specifically called for the development of a 75-car parking area with restrooms, picnic tables, and an improved interpretive program. These proposals were not implemented because of lack of public support, and restrictions on other alternative locations including cultural resources and land ownership.

The 1987 GPA called for the development of a 75-car parking area in the undeveloped area behind the Bay School, including a new access road, possible contact station, comfort station, trail access to the beach, utility connections, and related improvements such as screen planting, signing and fencing. It also called for the establishment of a left turn lane from Highway 1 into the South San Jose Creek parking area. Neither of these proposals were implemented because of a lack of support and opposition from neighbors that wanted the area to stay as open space.

The 1987 GPA also called for the development of a 10-car parking area with a turn-around/drop off area at the Monastery Beach, including a new or improved comfort station, utility connections, screen planting and signage. The restroom in this area has been improved and a phone is available for visitor use. However, a parking area and comfort station with showers were never constructed because of a lack of support.

The 1996 GPA did not include any proposals related to access, traffic, or circulation with Carmel River SB.

7 PARK OPERATIONS AND MAINTENANCE

7.1 EXISTING FACILITIES

Facilities include two parking areas and two restrooms, one of each at Scenic Road and Monastery Beach. Facilities also include the Carmel River Beach Service Road and Trail, interpretive panels, warning signs, Odello Ranch barn, blacksmith shed, creamery/cookhouse, and old Odello residence (Exhibit 7-1). All of the Odello complex buildings are in disrepair and not safe to use for operations or maintenance activities.

7.2 STAFF AND SERVICES

California State Parks' facilities maintenance staff maintains the existing structures and infrastructure (water, sewer, electric, gas, and telecommunication services) for Carmel River SB. Carmel River SB is served by the Monterey District maintenance shop located on Garden Road in Monterey. California State Parks maintains all utilities in coordination with the respective utility providers. Facilities maintenance staff also maintains roads, trails, interpretive signage, and other facilities needed to maintain a safe and comfortable park experience. California State Parks Peace Officers are primarily responsible for public safety and law enforcement at Carmel River SB.

7.3 CONCESSIONS

According to the *Concessions Annual Report 2010-11*, Carmel River SB has Serendipity Farms, a demonstration organic farm, under contract (DPR 2011c). The organic farm is 3.06 acres located in the southeast portion of the Odello West field. Serendipity Farms staff grow row crops on-site, and give occasional tours while recreating the historic agricultural landscape. This concession contract was recently extended until January 31, 2018.

7.4 CONTRACTS AND AGREEMENTS

There is currently a MOU between Monterey County and California State Parks for flood prevention and habitat protection within the Carmel River Lagoon. This MOU provides for implementation of an interim plan for flood prevention and habitat protection in the lagoon and mutual planning for long-term solutions to resolve these issues. The long-term plan for the lagoon will balance the natural environment and built environment including the following:

- ▶ Enhancing ecological conditions along the Carmel River and within the Carmel Lagoon, including habitat for certain threatened or endangered species (California red-legged frog, Central coast steelhead trout, Western snowy plover, Smith's blue butterfly).
- ▶ Protection from flooding; existing homes, commercial businesses, school.
- ▶ Maintaining public infrastructure with anticipated sea level rise; Highway 1, Scenic Road, California State Parks facilities (parking areas, restroom).
- ▶ Retaining beach area for public enjoyment.
- ▶ Creating trails for public access.
- ▶ Carmel River Steelhead Association – managing the lagoon water levels via pump operation.

7.5 UTILITIES AND SERVICES

7.5.1 WATER AND WASTEWATER SERVICES

There are two restroom facilities at Carmel River SB, one two-stall restroom at Carmel River Beach near the lagoon and the other two-stall restroom at the southern end of Monastery Beach (DPR 1979). Both restrooms were renovated in 2000 to make them ADA accessible. There is a main sewer line adjacent to Carmel River SB that serves the Carmel Meadows neighborhood. There is also a 100-foot sewer easement through Carmel River SB that serves CAWD's outfall. The restroom at Monastery Beach is served by a propane generator that powers a pump station that pumps sewage to the small force main (owned by California State Parks) located in Caltrans right-of-way. The sewage from Monastery Beach and the Reserve go to the CAWD treatment plant.

Water facilities at Carmel River SB include a pump and two wells; one was installed by Caltrans for the mitigation bank and it has been used regularly to bring water to the lower lagoon during dry months to maintain water quality for steelhead. There is also a second well that was the water source for the Odello West field near the edge of Highway 1. This well is used by the farming concession, and is also used to augment lagoon levels and temperatures during periods when the lagoon levels are low.

7.5.2 ELECTRICITY

Electrical service to this area is via a 12 kV overhead PG&E electrical line adjacent to Highway 1. This line serves several facilities within the unit including the Odello Farm complex in the southeast corner of the property. An additional overhead power line runs along the southern portion of the property along the access road to the sewer treatment plant (MPRPD, CSCC, and DPR 1999).

7.5.3 PHONE AND TELECOMMUNICATIONS

Phone lines run adjacent to Carmel River SB along Highway 1; however, there are no phones within the unit.

7.5.4 SOLID WASTE

Solid waste in the Monterey area is transported to the Monterey Peninsula Landfill and Recycling Facility in the City of Marina, which is operated by the Monterey Regional Waste Management District (MRWMD). This facility serves the solid waste and recycling needs of an estimated 170,000 residents. The facility accepts basic solid waste, liquid waste and sewage sludge (biosolids), wood waste, yard waste, concrete, tires, appliances, and furniture. The facility also has off-site local recycling centers that collect household recyclables (glass, aluminum, paper, and plastics).

The MRWMD Landfill and Recycling Facility receives approximately 300,000 tons of solid waste per year. The Monterey Peninsula Landfill and Recycling Facility has a remaining capacity of approximately 40 million tons or 74 million cubic yards. Assuming MRWMD continues to achieve the State-mandated 50% recycling goal, the landfill will continue to serve the present service area through the year 2107 (MRWMD 2007).

Solid waste is collected throughout all park units by California State Parks staff. Thirty-three gallon solid waste containers are located throughout Carmel River SB. All of these smaller solid waste containers are then emptied into two dumpsters that are serviced by a contracted waste hauler. A recycling station is located at the Carmel River Beach parking area.



Exhibit 7-1 Facilities within Carmel River SB

7.5.5 SECURITY AND EMERGENCY SERVICES

California State Parks rangers and lifeguards are trained peace officers that help to operate and manage the park units. They provide public safety law enforcement, aquatic rescue services, and public education through interpretation (DPR 2010d).

California State Parks Peace Officers have the primary public safety and law enforcement responsibility for all of the California State Parks properties. The Monterey County Sheriff’s Office has concurrent law enforcement jurisdiction for park property that is located in the unincorporated area of Monterey County. The California Highway Patrol has concurrent law enforcement jurisdiction for all state facilities. California State Parks Peace Officers occasionally are called to assist or back up a local police officer, California Highway Patrol Officer, or other law enforcement officers. California State Parks Peace Officers also provide emergency medical response for all of the California State Parks properties. California State Parks Peace Officers routinely patrol Carmel River SB.

Water and beach safety are top priorities for Carmel River SB. There were six water-related fatalities in Carmel River SB in the last 5 years, and all but one occurred at Monastery Beach. The steepness of Monastery Beach and dangerous waves/tides have resulted in yearly drownings. Activities that lead to these fatalities include people walking on the beach, swimming, SCUBA diving, posing for photographs, and attempting to rescue other people in the water. Large warning signs are posted at Monastery Beach describing beach safety and the dangers associated with this beach (Photo Exhibit 7-1). The majority of enforcement citations at Carmel River SB are related to dogs off leash.



Source: AECOM 2011

Photo Exhibit 7-1 **Beach Safety Sign at Monastery Beach**

Carmel River SB is currently being reviewed by Cal Fire for annexation into the Cypress Fire Protection District. California State Parks staff conducts vegetation clearing for fire management to maintain defensible space. The nearest fire station to Carmel River SB is the Cypress Fire Protection District located approximately 0.5 mile northeast of the park on Rio Road. This fire protection district has a 4-person paramedic engine, and is operated under a cooperative agreement with Cal Fire (Cypress Fire Protection District 2012).

7.6 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan and 1996 GPA did not include any proposals related to operations and maintenance of Carmel River SB. The 1987 GPA stated that no demolition of the Odello barn, blacksmith shed, or creamery/cookhouse buildings shall be permitted without prior additional studies and evaluations. No buildings have been demolished, but they have fallen into disrepair.

8 PARK SUPPORT

8.1 VOLUNTEERS

Volunteers at Carmel River SB help with cleanup activities, such as the Coastal Cleanup Day. School and volunteer groups are working on the restoration areas and steelhead protection. Volunteers from the Monterey Bay National Marine Sanctuary also assist with beach monitoring activities at Carmel River SB, including Carmel River steelhead counts, monitoring rates of stranding for all species of marine birds and mammals, and water quality monitoring.

8.2 PARTNERSHIPS

There are a number of current and proposed projects within Carmel River SB being undertaken by various agencies and partners. A summary of those projects, including the participating partners, is provided in Appendix F.

8.2.1 BIG SUR LAND TRUST

The BSLT's mission has been to conserve the significant lands and waters of California's central coast for all generations. The BSLT recently adopted a new mission, which is to inspire love of the land and conservation of our treasured landscapes. The BSLT partners with government agencies in a variety of ways including sharing technical expertise, providing funding, and partnering on innovative projects (BSLT 2012b). The BSLT acquired the 317-acre Whisler-Wilson Ranch in December 2010 located adjacent to the Point Lobos Ranch property. The Whisler-Wilson Ranch was recently sold to the MPRPD. California State Parks meets with BSLT monthly to discuss management issues and collaborate on land use and natural resource management issues. BSLT is working on the Odello East project, which is directly east of Carmel River SB. This project will include a flood protection bypass/causeway, trails and parking, and 90 acres of restoration. BSLT has also contracted with PRBO Conservation Science/Point Blue Conservation Science to prepare a comprehensive bird plan for the lower Carmel River watershed.

In 2013 the BSLT, California State Parks, MPRPD, and the Point Lobos Foundation initiated a partnership effort known as the "Big Sur Gateway" to support the creation and implementation of a collaborative, long-term regional vision for the collective landscape of state and local parklands and open space located adjacent to or nearby one another, from Carmel south to Garrapata State Park. The Gateway partners are working together to develop a model partnership that will result in improved coordination and enhanced land management practices, trail planning and networks, public access and safety, and visitor educational and recreational experiences across the landscape that will better serve the community and the land. This planning effort will create a significant recreation and open space experience and enhance management opportunities by linking the Palo Corona lands with BSLT and State Parks adjoining park and open space lands.

8.2.2 CARMEL RIVER STEELHEAD ASSOCIATION

The mission of the CRSA is the restoration and conservation of the steelhead fishery on the Carmel River and its watershed (CRSA 2012). The primary goal of the CRSA is to return the Carmel River watershed to as natural a state as possible so that it will maintain an annual run of adult steelhead in excess of 2,000 fish. An important

annual project is the rescue of fingerlings in the lower river and tributaries as water dries up in the summer. For the last 29 years, CRSA members have volunteered an average of 500 hours per year and rescued approximately 10,000 young steelhead per year (CRSA 2012). Rescued fish are put in the lagoon or areas of the river where they have a chance for survival. Other CRSA projects include the following:

- ▶ Construction of a fish rearing facility to operate a captive brood-stock program during the drought years 1987 to 1991. This program enabled CRSA to release 300,000 juvenile steelhead into the Carmel River during a 4-year period after the drought ended.
- ▶ In partnership with California State Parks, repair of the “Odello West Pump” to provide supplemental water for the lagoon (CRSA 2012).

8.2.3 CALTRANS

Caltrans maintains a mitigation bank within Carmel River SB and located along the Carmel River for impacts from regional transportation projects. The location and extent of this mitigation bank is shown in Exhibit 1-3. The Carmel River Mitigation Bank Project was a Caltrans mitigation effort for the Carmel River transportation project, which included construction on Highway 1 in Hatton Canyon. Affected resources from the project included unvegetated water resources. The Carmel River Mitigation Bank Project aimed to restore 43 acres of riparian and wetland habitat, enhance riparian and wetland habitat through revegetation of disturbed levees, enhance the south arm of Carmel River Lagoon for fish and birds, and restore hydrology to the south overbank of the Carmel River. After construction, the project was turned over to California State Parks for management of the site. Caltrans maintains the Highway 1 right-of-way adjacent to Carmel River SB along the Odello West field and Monastery Beach. Caltrans also engages in planning efforts, such as the current General Plan, with technical support, such as advice on the potential need for acceleration/deceleration lanes and turning lanes. Caltrans and Monterey County are also designing a causeway under Highway 1 to connect the Odello East floodplain with the Odello West floodplain. This causeway project may also create an underpass for vehicles to access the Odello West barns.

8.2.4 MONTEREY COUNTY RESOURCE MANAGEMENT AGENCY

The Monterey County Resource Management Agency (RMA) works collaboratively with interested parties to develop a comprehensive strategy and coordinated approach for the management of the Carmel River Lagoon. The RMA is in the process of developing a MOU in coordination with California State Parks for short and long term management of the lagoon (RMA 2012a). The RMA also recently issued a request for proposal (RFP) for the preparation of a programmatic Biological Assessment and CEQA Initial Study for the River Floodplain Restoration and Environmental Enhancement Project in the Carmel River Lagoon area and potential preparation of a Restoration and Management Plan (RMA 2012b). This project would include grading the existing farmland and access road to create an elevated agricultural preserve, above the 100-year floodplain elevation; grading to restore the site’s ecological function as a floodplain; replacing a portion of the Highway 1 roadway embankment with a 520-foot long causeway section; removing approximately 2,400 linear feet of non-structural earthen levees on the south side of the Carmel River channel; and grading at the eastern boundary of the project site on property owned by MPRPD to encourage flood flows to enter into the south floodplain area at Odello East.

Ultimately, the RMA is exploring the development of a Restoration and Management Plan for the Carmel River Lagoon area that would serve as the framework and structure for the design, environmental review and permitting, and implementation of inter-related restoration and management projects within the lagoon area along the lower Carmel River. No funding has been secured to date for this plan (RMA 2012b).

8.2.5 MONTEREY PENINSULA REGIONAL PARK DISTRICT

The MPRPD's mission is to acquire and maintain open space in the District for preservation and use, working with partners and the community, for public benefit, enjoyment, and environmental protection. One of the MPRPD's values is to foster new and creative collaborative partnerships and projects to better meet their mission and serve the community (MPRPD 2012a). California State Parks continues to work with the MPRPD to coordinate recreational uses on the nearby park properties so there are similar and compatible uses on adjoining properties (using a landscape relevant approach) and maintaining continuity between properties.

8.2.6 CARMEL RIVER WATERSHED COUNCIL

The CRWC participates with CRSA members and the Monterey Peninsula Water Management District staff in fish rescues from Carmel River when the river flows begin to trap or isolate steelhead. Also, CRWC periodically works with other organizations in cleanup activities along Carmel River and in tributary streams and creeks. CRWC is investigating the feasibility of conducting watershed tours in several locations along the Carmel River to school or college student groups.

8.2.7 CARMEL RIVER TASK FORCE

The Carmel River Task Force (CRTF) is a group that meets four times a year to discuss issues concerning the Carmel River Watershed. The CRTF includes representatives from local, state, and federal agencies, from non-governmental organizations, and individuals with a special interest in the watershed, such as researchers and graduate students. The Resource Conservation District of Monterey County, the Carmel River Watershed Conservancy, the Planning & Conservation League Foundation, and the Monterey Peninsula Water Management District collaborate to organize the CRTF meetings. The CRTF constitutes an exceptional opportunity for the watershed stakeholders to get together and learn about all the projects and programs that are taking place, and provides a unique platform for networking and collaboration.

8.2.8 CARMEL RIVER WATERSHED CONSERVANCY

The primary mission of the Carmel River Watershed Conservancy is protection of the natural resources (including threatened species of steelhead and California red-legged frogs) that form the Carmel River Watershed. The Conservancy balances environmental protection and the diverse needs of the Community. Carmel River Watershed Conservancy's accomplishments include the preparation of the Carmel River Watershed Assessment and Action Plan (Carmel River Watershed Conservancy 2004) and in conjunction with the Planning Conservation League Foundation, preparation of the Supplemental Watershed Action Plan (Planning Conservation League Foundation and Carmel River Watershed Conservancy 2007), providing a comprehensive guide for restoring key watershed resources, including the threatened steelhead population.

8.2.9 MONTEREY BAY AND CHANNEL ISLANDS SANCTUARY FOUNDATION

The Monterey Bay and Channel Islands Sanctuary Foundation partners with the National Marine Sanctuary Program and other ocean and coastal management agencies to help facilitate their work. As a fiscal sponsor, the Sanctuary Foundation is able to solicit funds from many sources and implement projects to aid in the understanding and protection of the Monterey Bay and Channel Islands National Marine Sanctuaries, and other coastal and ocean resources in California (MBSF 2011). Monterey Bay and Channel Islands Sanctuary Foundation has also been an active partner of the California State Parks properties by funding community outreach programs and workshops to raise awareness about the marine protected areas that are part of Point Lobos SNR and Carmel River SB.

8.3 PRIOR GENERAL PLAN PROPOSALS

The 1979 General Plan and 1987 and 1996 GPAs did not contain specific proposal related to park support.

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APPENDIX A

1979 General Plan and 1987 and 1996
General Plan Amendment Proposals

1979 General Plan and 1987 and 1996 General Plan Amendment Proposals by Topic and State of Completion Carmel River SB				
Proposal	completed	why/why not	challenges	current opportunities and constraints
1979 General Plan				
Parking				
Removal of shoulder parking at Monastery Beach; alternative parking at Eucalyptus Grove or Polo Field (preferred location); neither property owned by State Parks at the time of GP approval	no	Cultural resource sensitivities at polo field; lack of public support and potential neighbor conflicts at Eucalyptus grove; property not owned at the time	Safe parking remains a limiting factor for visitations	Explore opportunities for joint use of parking area with Palo Corona; explore opportunities on Point Lobos Ranch; explore opportunities for offsite solutions; expansion of regional transit?
Develop a 75-car parking area with restrooms, a few picnic tables, and an improved interpretive program	no; restroom was improved at different location later – see below	Lack of opportunity	Lack of opportunity; safe parking remains an issue	See above
Land Use				
Classification of the Carmel River Lagoon as a Natural Preserve	yes	None regarding land use designation	None regarding land use designation	None – current designation is well accepted
Retention of the agricultural use of the Odello property as an important historic activity	Partial; organic farm on part of Odello West; partial re-designation of Odello West in 1996 GP Amendment – see below	Need for restoration to address flooding issues; desire for floodplain restoration	Multiagency interest in lagoon management; presence of federally listed species; feasibility of farming	Partnerships with multiple agencies to address complex issues such as flooding, resource protection; listed species management

**1979 General Plan and 1987 and 1996 General Plan Amendment Proposals by Topic and State of Completion
Carmel River SB**

Proposal	completed	why/why not	challenges	current opportunities and constraints
1987 General Plan Amendment				
Land Use				
Add 36 acres recently acquired to Carmel River State Beach and designate them for day use (parcel is referred to as the Amended Area in the 1987 GPA)	yes	Parcel in California State Park ownership	None for designation	Area currently remains as open space
Facilities				
Develop a 75-car parking area in the undeveloped area behind the Bay School, including access road, possible contact station, comfort station, trail access to beach, utility connections, and related improvements such as screen planting, signing, and fencing	no	Lack of support; opposition by neighbors and those that wish to see the area remain as open space	Conflicting views regarding best use of parcel; parking challenges	Explore joint use of parking areas by multiple park units; explore best long term designation for undeveloped area behind Bay School
Develop a 10-car parking area with turn-around/drop off area at South Monastery Beach area; include new or improved comfort station, utility connections, screen planting, signing	no	Lack of support	Area does not have a lot of capacity and parking on shoulder of Highway 1 remains the main option for parking	Explore joint use of parking area by multiple park units
Left turn lane from Highway 1 into South San Jose Creek parking area	no	Lack of support	Safe turnoff from Highway 1 remains an issue	Caltrans indicated in recent discussion for California State Parks that a left turn lane or deceleration lane is not required based on current visitor numbers to this location.
Resource Management				
Establish a Monterey pine restoration plan	no	Historic presence of Monterey pine in undeveloped area behind the Bay School was questioned by neighbors	Coastal scrub in undeveloped area provides habitat	Assess suitability of undeveloped area for specific habitat restoration proposals

**1979 General Plan and 1987 and 1996 General Plan Amendment Proposals by Topic and State of Completion
Carmel River SB**

Proposal	completed	why/why not	challenges	current opportunities and constraints
Use indigenous plants for landscaping	No; no major landscaping undertaken	This was proposed to screen the proposed parking areas, which were not developed	None; any revegetation proposed would utilize local native plants	Confirm use of only native plants for restoration and revegetation efforts
Reduce or remove exotic plants from the unit	ongoing	Invasive species management continues to be a priority at Carmel River SB.	Existing and new invasive species continue to be an issue	Confirm goals and policies for invasive species management
Develop a management program for threatened animal species	yes	Carmel River Lagoon Enhancement Plan appears to serve this function	Long term survival of the species remains a major goal	Assess current species management policies and activities; Carmel River Steelhead Association manages to augment flows to the lagoon during dry months; CDFW removes striped bass from the lagoon; NMFS monitors County breaching of the sandbar conducted for steelhead management and to prevent residential flooding.
Survey for Smith's blue butterfly	Unsure, but host plant for species is known to occur in the unit	Proposal to survey was originally driven by plans for parking area	Need to manage for this species	Assess current species management policies and activities
Prepare a wetland management plan	yes	Carmel River Lagoon Enhancement Plan appears to serve this function	Conflict between need for wetland management and need for flood control activities	Assess lagoon management; MOU with County is currently under preparation
Archaeological sites will be protected	yes	Importance of resources is well recognized	Ongoing sandbar management activities	Assess sandbar management; new MOU with County is currently under preparation
Consider coastal terrace between Carmel River and San Jose Creek for designation as a cultural preserve	yes	Importance of resources is well recognized	Ongoing sandbar management activities	Assess sandbar management; new MOU with County is currently under preparation

**1979 General Plan and 1987 and 1996 General Plan Amendment Proposals by Topic and State of Completion
Carmel River SB**

Proposal	completed	why/why not	challenges	current opportunities and constraints
No demolition of Odello barn, blacksmith shed, or cookhouse buildings shall be permitted without prior additional study and evaluations	yes	Importance of resources is well recognized	Structures are old and falling down; some present a safety issue	Assess potential rehabilitation and use or removal of structures; need additional evaluations
Emphasis of landscape management shall be toward maintenance of the natural landscape	yes	Carmel River SB is recognized as important open space	none	Assess long term management goals for Carmel River SB
1996 General Plan Amendment				
Change land use designation on the 155 acre Odello West field from agriculture to riparian and wetland habitat; bring general plan in conformance with Carmel River Lagoon Enhancement Plan	yes	Parcel is needed as a floodway for the Carmel River, reducing the likelihood of flooding residential and commercial parcels north of the river and to help restore altered natural habitats	None with designation; challenges pertaining to flood management remain	Various proposed projects to address flood issues along the river in the long term
Source: DPR 1979; 1988; 1996 compiled by AECOM 2012				

APPENDIX B

Sea Level Rise Planning Considerations for General Plans

Sea Level Rise Planning Considerations for General Plans

- ▶ Identify who is responsible from the planning team to do the research, describe conditions and analyze the potential effects from SLR; also include other impacts of climate change on park resources and land uses
- ▶ Develop maps (overall and site specific) showing 100 year storm (FEMA maps), and 100 year storm plus 1.4 meters (55 inches) sea level rise (using Pacific Institute data)
- ▶ Consider mapping other projected levels, if warranted, over project area/park boundary
- ▶ Map projected tsunami levels and probability as a GIS layer (currently part of the CEQA analysis and required to be addressed in the environmental analysis section of GPs)
- ▶ Map all structures/facilities in the unit that may be affected by 100 year flood/SLR. (All facilities in the park unit should be mapped as part of the GP effort)
- ▶ Identify conceptual opportunities + constraints, may require site specific elevation survey data
- ▶ New facilities should be sited outside of areas likely to experience most flooding
- ▶ Housing should be avoided in the 100 year flood zone.
- ▶ Building structures may be considered in the 100 year flood zone if they will not impede or redirect flood flows (CEQA Environmental Checklist).
- ▶ Conduct cost benefit assessment over identified 100 year storm/SLR/Tsunami levels
- ▶ Consider a variety of shoreline treatments/best management practices -
 - Hard structures; seawalls, rip rap, revetments, etc. for high value property protection
 - Berms + levees can prevent flooding of areas requiring protection including areas of heavy visitor use
 - Softer strategies may include creation of a tidal marsh to dampen storm surges and flooding
 - Adaptive management actions if sea levels continue to rise
- ▶ Establish shoreline protection goals and guidelines
- ▶ Consider establishing grading goals and guidelines if general plan warrants this level of detail (i.e., if above SLR of 55 inches - include adaptive management zone, strive for balanced cut + fill, smooth transitions to park, storm water management, use areas)
- ▶ Develop graphic profiles + treatment with photo examples to help convey plan
- ▶ Address CEQA impacts preferred/recommended plan as well as in alternatives
- ▶ Consult with regional California Coastal Commission representative

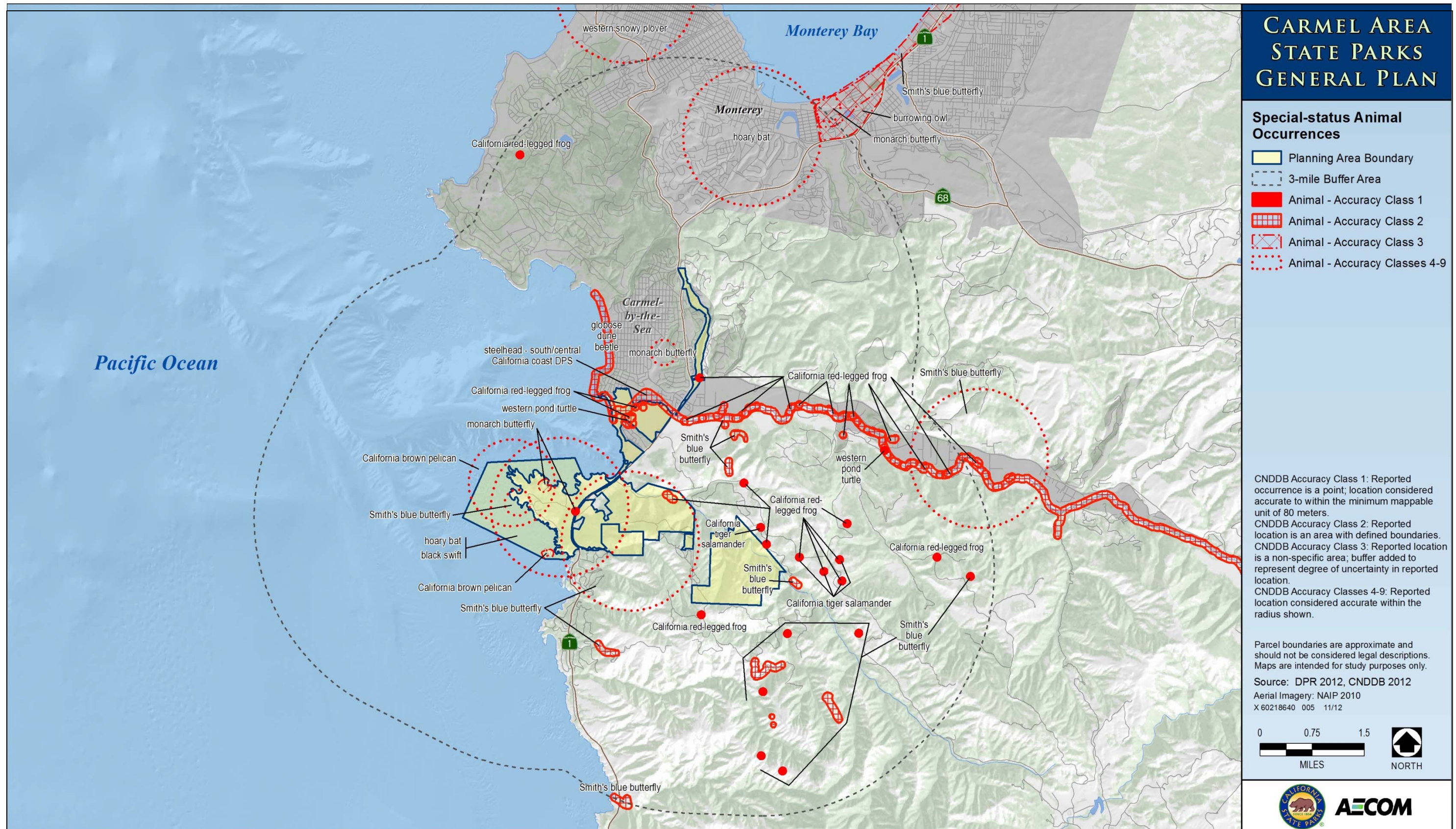
- Present findings, concepts, recommendations at appropriate/designated steps during stakeholder and public meetings

Note:

GPs are broad-based planning documents with a balance between site investigations, planning issues, and long-range goals and guidelines for the unit. For GPs, the level of detail is commensurate with the level of detailed proposals, environmental impact assessment, and decisions to be made at this level of planning.

APPENDIX C

Regional CNDDDB Occurrences



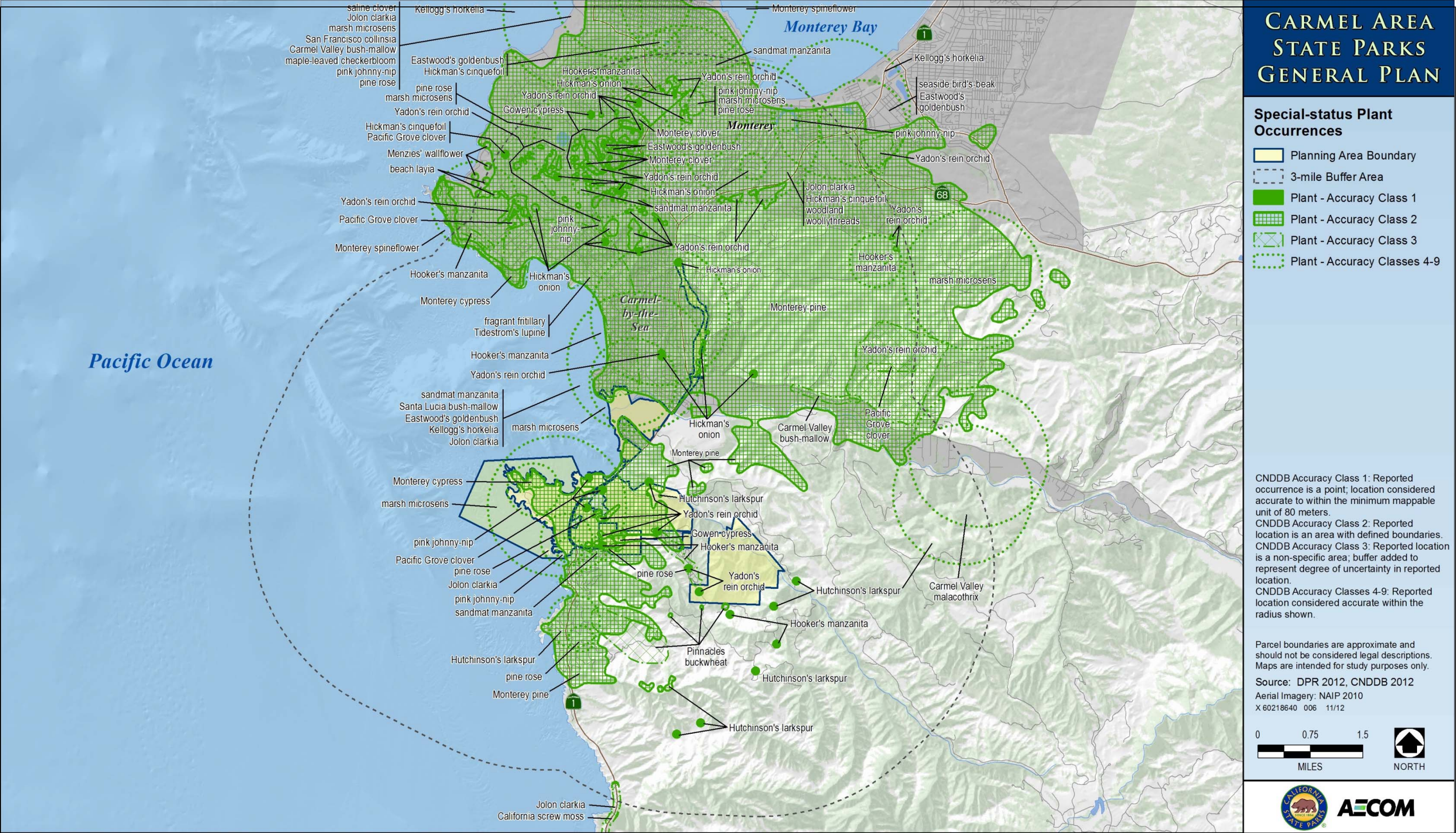


Exhibit C-2

Regional CNDDDB Occurrences

APPENDIX D

PRBO Conservation Science Songbird List

Carmel River mouth AREA LIST

This list is compiled from all published literature, *North America Birds* files going back in the 1950s, the Monterey Peninsula Rare Bird Alert files back to the early 1980s, and the field notes of Bill Hill, Craig Hohenberger, and myself. I have also checked a portion of Laidlaw William's field notes on file at Hasting NHR. Additions to this list are welcome, but I do need a specific date and a specific observer to enter those data into the county database, and details may be necessary for rarities.

- Don Roberson

Symbols on list:

(B) = breeds in Area

(E) = extirpated in Area (formerly resident)

(I) = non-native Introduced resident species

* = rare or vagrant to Area, report locally to the Monterey BirdBox (831) **626-6605**

** = exceptional vagrant, please document with photos or description (send to Box 985, Pacific Grove CA 93950) and report immediately to Bird Box and try to get others to confirm.

Carmel River mouth LIST

350 total as of 30 Oct 2006

- 1 Fulvous Whistling-Duck **
- 2 Greater White-fronted Goose *
- 3 Emperor Goose **
- 4 Snow Goose *
- 5 Ross' Goose *
- 6 Brant *
- 7 Cackling Goose * (both *minima* & Aleutian *leucopareia*)
- 8 Canada Goose (1 pop.; wild birds scarce)
- 9 Tundra Swan *
- 10 Wood Duck
- 11 Gadwall
- 12 Eurasian Wigeon *
- 13 American Wigeon
- 14 Mallard (B)
- 15 Blue-winged Teal *
- 16 Cinnamon Teal
- 17 Northern Shoveler
- 18 Northern Pintail
- 19 Green-winged Teal
- 20 Canvasback *
- 21 Redhead *
- 22 Ring-necked Duck *
- 23 Greater Scaup
- 24 Lesser Scaup
- 25 Harlequin Duck *
- 26 Surf Scoter
- 27 White-winged Scoter
- 28 Long-tailed Duck *
- 29 Bufflehead

- 30 Common Goldeneye
- 31 Hooded Merganser *
- 32 Common Merganser *
- 33 Red-breasted Merganser
- 34 Ruddy Duck
- 35 Wild Turkey (I, but likely native in Pleistocene)
- 36 California Quail (B)
- 37 Red-throated Loon
- 38 Pacific Loon
- 39 Common Loon
- 40 Pied-billed Grebe (B)
- 41 Horned Grebe
- 42 Red-necked Grebe
- 43 Eared Grebe
- 44 Western Grebe
- 45 Clark's Grebe
- 46 Northern Fulmar
- 47 Sooty Shearwater
- 48 Short-tailed Shearwater
- 49 Black-vented Shearwater
- 50 American White Pelican *
- 51 Brown Pelican
- 52 Brandt's Cormorant
- 53 Double-crested Cormorant
- 54 Pelagic Cormorant
- 55 American Bittern
- 56 Great Blue Heron
- 57 Great Egret
- 58 Snowy Egret
- 59 Little Blue Heron *
- 60 Cattle Egret *
- 61 Green Heron
- 62 Black-crowned Night-Heron
- 63 White-faced Ibis *
- 64 Turkey Vulture
- 65 Osprey
- 66 White-tailed Kite
- 67 Bald Eagle *
- 68 Northern Harrier
- 69 Sharp-shinned Hawk (B; once in 1901)
- 70 Cooper's Hawk (B)
- 71 Red-shouldered Hawk (B)
- 72 Broad-winged Hawk *
- 73 Swainson's Hawk *
- 74 Zone-tailed Hawk **
- 75 Red-tailed Hawk
- 76 Ferruginous Hawk
- 77 Rough-legged Hawk *
- 78 Golden Eagle *
- 79 Crested Caracara **
- 80 American Kestrel

- 81 Merlin
- 82 Peregrine Falcon
- 83 Prairie Falcon *
- 84 Clapper Rail *
- 85 Virginia Rail (B)
- 86 Sora
- 87 Common Moorhen *
- 88 American Coot (B)
- 89 Sandhill Crane **
- 90 Black-bellied Plover
- 91 American Golden-Plover *
- 92 Pacific Golden-Plover *
- 93 Snowy Plover
- 94 Semipalmated Plover
- 95 Killdeer (B)
- 96 Black Oystercatcher
- 97 Black-necked Stilt *
- 98 American Avocet *
- 99 Terek Sandpiper **
- 100 Spotted Sandpiper
- 101 Solitary Sandpiper *
- 102 Wandering Tattler *
- 103 Greater Yellowlegs
- 104 Willet
- 105 Lesser Yellowlegs
- 106 Little Curlew **
- 107 Whimbrel
- 108 Long-billed Curlew *
- 109 Hudsonian Godwit **
- 110 Marbled Godwit
- 111 Ruddy Turnstone *
- 112 Black Turnstone
- 113 Surfbird
- 114 Red Knot *
- 115 Sanderling
- 116 Semipalmated Sandpiper *
- 117 Western Sandpiper
- 118 Least Sandpiper
- 119 White-rumped Sandpiper **
- 120 Baird's Sandpiper
- 121 Pectoral Sandpiper
- 122 Sharp-tailed Sandpiper *
- 123 Dunlin
- 124 Stilt Sandpiper *
- 125 Buff-breasted Sandpiper *
- 126 Ruff *
- 127 Short-billed Dowitcher
- 128 Long-billed Dowitcher
- 129 Wilson's Snipe
- 130 Wilson's Phalarope
- 131 Red-necked Phalarope

- 132 Red Phalarope *
- 133 Parasitic Jaeger *
- 134 Franklin's Gull *
- 135 Bonaparte's Gull
- 136 Heermann's Gull
- 137 Mew Gull
- 138 Ring-billed Gull *
- 139 California Gull
- 140 Herring Gull
- 141 Thayer's Gull
- 142 Western Gull
- 143 Glaucous-winged Gull
- 144 Glaucous Gull *
- 145 Sabine's Gull *
- 146 Black-legged Kittiwake *
- 147 Caspian Tern
- 148 Common Tern
- 149 Arctic Tern *
- 150 Forster's Tern *
- 151 Elegant Tern
- 152 Black Skimmer *
- 153 Common Murre
- 154 Pigeon Guillemot
- 155 Marbled Murrelet *
- 156 Ancient Murrelet *
- 157 Cassin's Auklet
- 158 Rhinoceros Auklet
- 159 Rock Pigeon (I, B)
- 160 Eurasian Collared-Dove (I)
- 161 Band-tailed Pigeon
- 162 White-winged Dove *
- 163 Mourning Dove (B)
- 164 Black-billed Cuckoo **
- 165 Greater Roadrunner *
- 166 Barn Owl
- 167 Great Horned Owl (B)
- 168 Burrowing Owl *
- 169 Short-eared Owl *
- 170 Common Nighthawk **
- 171 Common Poorwill *
- 172 Black Swift *
- 173 Vaux's Swift
- 174 White-throated Swift
- 175 Broad-billed Hummingbird **
- 176 Anna's Hummingbird (B)
- 177 Calliope Hummingbird *
- 178 Rufous Hummingbird
- 179 Allen's Hummingbird (B)
- 180 Belted Kingfisher
- 181 Acorn Woodpecker
- 182 Red-naped Sapsucker *

- 183 Red-breasted Sapsucker
- 184 Nuttall's Woodpecker (B)
- 185 Downy Woodpecker (B)
- 186 Hairy Woodpecker (B)
- 187 Northern Flicker
- 188 Olive-sided Flycatcher
- 189 Western Wood-Pewee
- 190 Eastern Wood-Pewee **
- 191 Willow Flycatcher (B until 1974, that pop. now E; rare migrant)
- 192 Least Flycatcher *
- 193 Hammond's Flycatcher *
- 194 Gray Flycatcher *
- 195 Dusky Flycatcher *
- 196 Pacific-slope Flycatcher (B)
- 197 Black Phoebe (B)
- 198 Eastern Phoebe *
- 199 Say's Phoebe
- 200 Vermilion Flycatcher *
- 201 Dusky-capped Flycatcher **
- 202 Ash-throated Flycatcher
- 203 Great Crested Flycatcher **
- 204 Tropical Kingbird *
- 205 Cassin's Kingbird *
- 206 Western Kingbird
- 207 Eastern Kingbird *
- 208 Loggerhead Shrike
- 209 Bell's Vireo *
- 210 Yellow-throated Vireo **
- 211 Plumbeous Vireo *
- 212 Cassin's Vireo
- 213 Blue-headed Vireo **
- 214 Hutton's Vireo (B)
- 215 Warbling Vireo (B)
- 216 Philadelphia Vireo *
- 217 Red-eyed Vireo *
- 218 Yellow-green Vireo **
- 219 Steller's Jay *
- 220 Western Scrub-Jay (B)
- 221 Yellow-billed Magpie *
- 222 American Crow (B)
- 223 Common Raven *
- 224 Horned Lark *
- 225 Purple Martin *
- 226 Tree Swallow
- 227 Violet-green Swallow
- 228 Northern Rough-winged Swallow (B)
- 229 Bank Swallow *
- 230 Cliff Swallow (B)
- 231 Barn Swallow (B)
- 232 Chestnut-backed Chickadee (B)
- 233 Oak Titmouse

- 234 Bushtit (B)
- 235 Red-breasted Nuthatch
- 236 Pygmy Nuthatch (B)
- 237 Brown Creeper (B)
- 238 Bewick's Wren (B)
- 239 House Wren (B)
- 240 Winter Wren
- 241 Marsh Wren
- 242 Golden-crowned Kinglet
- 243 Ruby-crowned Kinglet
- 244 Blue-gray Gnatcatcher
- 245 Western Bluebird *
- 246 Veery **
- 247 Swainson's Thrush (B)
- 248 Hermit Thrush
- 249 American Robin (B)
- 250 Varied Thrush
- 251 Wrentit (B)
- 252 Gray Catbird **
- 253 Northern Mockingbird (B)
- 254 Sage Thrasher *
- 255 Brown Thrasher *
- 256 California Thrasher
- 257 European Starling (I, B)
- 258 Red-throated Pipit **
- 259 American Pipit
- 260 Cedar Waxwing
- 261 Blue-winged Warbler **
- 262 Tennessee Warbler *
- 263 Orange-crowned Warbler
- 264 Nashville Warbler
- 265 Virginia's Warbler *
- 266 Lucy's Warbler *
- 267 Northern Parula *
- 268 Yellow Warbler (B)
- 269 Chestnut-sided Warbler *
- 270 Magnolia Warbler *
- 271 Cape May Warbler *
- 272 Black-throated Blue Warbler *
- 273 Yellow-rumped Warbler
- 274 Black-throated Gray Warbler
- 275 Black-throated Green Warbler *
- 276 Townsend's Warbler
- 277 Hermit Warbler
- 278 Blackburnian Warbler *
- 279 Yellow-throated Warbler *
- 280 Prairie Warbler *
- 281 Palm Warbler *
- 282 Bay-breasted Warbler *
- 283 Blackpoll Warbler *
- 284 Cerulean Warbler **

- 285 Black-and-white Warbler *
- 286 American Redstart *
- 287 Prothonotary Warbler **
- 288 Worm-eating Warbler **
- 289 Ovenbird *
- 290 Northern Waterthrush *
- 291 Connecticut Warbler **
- 292 Mourning Warbler **
- 293 MacGillivray's Warbler
- 294 Common Yellowthroat (B)
- 295 Hooded Warbler *
- 296 Wilson's Warbler (B)
- 297 Canada Warbler *
- 298 Yellow-breasted Chat *
- 299 Summer Tanager *
- 300 Scarlet Tanager *
- 301 Western Tanager
- 302 Spotted Towhee (B)
- 303 California Towhee (B)
- 304 American Tree Sparrow *
- 305 Chipping Sparrow
- 306 Clay-colored Sparrow *
- 307 Brewer's Sparrow *
- 308 Vesper Sparrow *
- 309 Lark Sparrow *
- 310 Lark Bunting *
- 311 Savannah Sparrow
- 312 Nelson's Sharp-tailed Sparrow *
- 313 Fox Sparrow
- 314 Song Sparrow (B)
- 315 Lincoln's Sparrow
- 316 Swamp Sparrow *
- 317 White-throated Sparrow *
- 318 Harris's Sparrow *
- 319 White-crowned Sparrow (B)
- 320 Golden-crowned Sparrow
- 321 Dark-eyed Junco (B)
- 322 Rose-breasted Grosbeak *
- 323 Black-headed Grosbeak (B)
- 324 Blue Grosbeak *
- 325 Lazuli Bunting
- 326 Indigo Bunting *
- 327 Painted Bunting **
- 328 Dickcissel *
- 329 Bobolink *
- 330 Red-winged Blackbird (B)
- 331 Tricolored Blackbird
- 332 Western Meadowlark
- 333 Yellow-headed Blackbird *
- 334 Rusty Blackbird *
- 335 Brewer's Blackbird (B)

- 336 Great-tailed Grackle *
- 337 Brown-headed Cowbird (B)
- 338 Orchard Oriole *
- 339 Hooded Oriole (B)
- 340 Baltimore Oriole *
- 341 Bullock's Oriole
- 342 Purple Finch (B)
- 343 House Finch (B)
- 344 Red Crossbill *
- 345 Pine Siskin (B)
- 346 Lesser Goldfinch
- 347 Lawrence's Goldfinch (B)
- 348 American Goldfinch (B)
- 349 Evening Grosbeak *
- 350 House Sparrow (L, B)

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Page created 17-22 Oct 1999; last updated 30 Nov 2006

APPENDIX E

Cultural Resources – Confidential

APPENDIX F

Carmel River Watershed Projects

Type	Project/Action	Agency /Group	Status
Cross-Cutting	Create a Carmel River Watershed Task Force, open to all stakeholders, to promote and contribute to the successful outcome of watershed projects.	RCDMC Watershed Coordinator	Ongoing
	Acquire or accept, in fee title or easement, lands that provide benefits to the watershed.	California State Parks	Ongoing
		BSLT	Funded, Contracts under- way
	Establish a watershed work program for habitat restoration projects.	RCDMC	Soon to start
Flows	Support the implementation of a water supply project that minimizes the export of water from the Carmel River.	Cal Am, MCWRA, MPWMD, Mayors' Joint Powers Authority	On-hold
	Maintain or increase surface water storage at Los Padres Dam Reservoir (LPD).	CRAC	In planning
	Study the feasibility of installing a rubber dam at the LPD to temporarily increase water storage.		
	Support improvements to the MPWMD's Aquifer Storage and Recovery (ASR) Project.	MPWMD, Cal Am	In progress
	Expand water conservation programs to all areas of the watershed. Use MPWMD water conservation program as a model.	Cal Am, MPWMD	Ongoing
Groundwater	Educate the public on the direct impact of groundwater pumping to the Carmel River surface water flows.	RCDMC Watershed Coordinator	Ongoing
	Develop a detailed water budget, along with recommendations based on findings, for the entire watershed.		
	Quantify the impact of groundwater extraction (multiple wells) in upland areas on summer surface flow in creeks.		
Habitat	Extend the MPWMD mitigation program of periodic injections of gravels and cobbles downstream of LPD and San Clemente Dam to restore the channel bottom.	MPWMD	Awaiting CPUC Decision
	Conduct annual surveys and clean-up events to remove urban debris and trash throughout the watershed.	MCRMA	Annual
		Carmel Unified School District, partners	Ongoing
		RCDMC	Soon to start
	Continue and expand MPWMD and CRWC Large Woody Debris program.	MPWMD	Ongoing
	Expand on MPWMD program to create a watershed-wide coordinated riparian vegetation restoration program. Include monitoring and maintenance.	MPWMD	Ongoing
		RCDMC	Soon to start
		California State Parks	Ongoing
	Identify and implement priority projects to enhance California red-legged frog habitat along the main stem and throughout the watershed.	Cal Am, NMFS, CSCC	Awaiting CPUC decision
	Develop a program to promote and support habitat improvement through the strategic placement of large broken tree limbs in the river.		
	Initiate a program to remove/control aquatic and terrestrial invasive species.		

Public Safety	Reduce the risk of flood damage through a combination of multi-objective flood control projects.	CSA 50	N/A
		MCWRA	N/A
		MCRMA , USACE, MCWRA	Ongoing
		MCWRA	RFP
		BSLT	N/A
Public Outreach	Establish a resource conservation and stewardship program. Actively disseminate the information to residents and landowners.	BSLT	Funded, Contracts under- way
		RCDMC Watershed Coordinator	Ongoing
		Regional Park District	N/A
		Carmel Unified School District, NMFS, partners	N/A
	Implement the Carmel River Parkway Plan and other similar efforts for managed public access in the watershed.	BSLT	Starting the Planning
		CRWC	Feasibility being determined
		BSLT	More funding needed
		BSLT	Finished
	Expand volunteer network and activities to provide planning, labor, outreach, and mapping services throughout the watershed.	Coastal Watershed Council	Just Started
Sediment	Restore and revegetate unstable banks and incised reaches of tributaries and main stem areas based on watershed assessments.		
	Implement restoration projects in Hitchcock Creek and its sub-basin to stabilize stream banks. Educate residents and property owners on the issues of stream bank modification.		
	Identify and map existing sediment basins to evaluate their effectiveness and to aid in restoration efforts.		
	Implement best management practices for erosion prevention throughout the watershed. Potential projects include, but are not limited to, excluding cattle from riparian areas and streambeds.	RCDMC Watershed Coordinator	Ongoing
	In cooperation with the County Public Works Department, replace culverts on Carmel Valley Road as appropriate to minimize erosion and restore natural stream function.		
	Conduct assessment of rural and unpaved roads throughout the watershed to identify and prioritize road treatments and roads for decommissioning; implement priority recommendations.	RCDMC Watershed Coordinator	Ongoing
Steelhead Actions	Expand the current fisheries assessment and monitoring program to other areas of the Watershed. This expansion should include funding to evaluate methods to count fish at selected monitoring stations.	Hopkins Marine Station	Awaiting funding
	Establish a Rescue Fund for the implementation of annual watershed restoration and steelhead rescue projects.	CRSA	Funding annual rescues
	Conduct a watershed-wide assessment to map culverts and fish barriers. Estimate the replacement cost of non-functioning units. Incorporate the problems identified in the CRWC proper functioning condition findings for the main tributaries.	CRWC MPWMD CRSA	Just started
	Remove or modify priority fish passage barriers throughout the watershed.	Cal Am, NMFS, CSCC	Awaiting CPUC decision

	Redesign and install the fish screen at the entry to the outlet at LPD.		
	Establish a partnership with other agencies to sort, store, and discharge coarse- grained sediment (spawning gravels) stored in the San Clemente Dam and the LPD to the lower Carmel River.	Cal Am, NMFS, CSCC	Awaiting CPUC decision
	Concentrate the flow at the LPD spillway for out-migration of steelhead.		
	Monitor the Carmel River and tributaries for fish barriers twice annually (during the in-migration and out-migration) to ensure that no barriers to fish passage go unnoticed. Mitigate as appropriate.	MPWMD	Ongoing
	Construct a removable Steeppass fish ladder to allow smolts and kelts to pass downstream into the spillway notch at Los Padres Dam and then to the river pool below. The design may include a rubber dam.		
Monitoring	Develop an adaptive management program for water quality monitoring in the lagoon. Coordinate with the Carmel Area Wastewater District (CAWD) the discharge of tertiary water into the lagoon, and investigate the use of the lagoon for emergency discharges by the California State Parks.	CSUMB Watershed Institute	In progress
		CAWD	In progress
	Expand habitat and species monitoring programs including: 1) aquatic and terrestrial non-native invasive species; 2) BMI index; 3) riparian habitat; 4) instream habitat; and, 5) restoration projects.	Audubon Society	Ongoing
		BSLT	N/A
		Federal Government	N/A
		California State Parks	N/A
		BSLT, Ventana Wildlife Society	Ongoing
		Carmel Unified School District, NMFS, partners	Ongoing
		Rancho Cañada Golf Course	Ongoing
		Carmel Unified School District, partners	Ongoing
	Establish a Volunteer Water Quality Monitoring Program incorporating local schools, Snapshot & First Flush program participants, and other interested stakeholders to tie into the MPWMD program and to include all the main tributaries.	CWC	Just Started
	Establish a sediment transport monitoring program in concert with the surface flow monitoring program of MPWMD for the main stem and tributaries.	Cal Am, Coastal Conservancy, Planning and Conservation League Foundation	Awaiting CPUC decision

Source: Monterey County RMA 2012