

CHAPTER 8

BIOLOGICAL RESOURCES

8.1 AFFECTED ENVIRONMENT

8.1.1 Introduction/Region of Influence

This section addresses biological resources issues related to the proposed projects described in Chapter 2. Flora (plants) and fauna (animals) were thoroughly surveyed by a Tetra Tech biologist on July 18 and July 22, 2001, along the proposed project area. The ROI for the biological resources analyses includes the bluff habitat where the construction would be performed, the adjacent intertidal areas, and the subtidal and nearshore waters. A description of species observed or expected to occur in adjacent offshore areas that could be affected by the proposed projects is also provided. Potential impacts on those species observed during the biological survey are addressed in Section 8.2.

The project area is adjacent to the intertidal biotic zone, which is designated as sensitive habitat in the County's General Plan, the Local Coastal Program, and the Sensitive Habitat Protection Ordinance. This habitat includes such features as marine rock shelves and tide pools. The project area is adjacent to Monterey Bay, which is included in the Monterey Bay National Marine Sanctuary (MBNMS). Monterey Bay is designated as Essential Fish Habitat (EFH) for fish species managed under the Pacific Coast Salmon Fishery Management Plan and the Pacific Groundfish Fishery Management Plan.

Biological data were collected from numerous sources, including relevant literature, maps of natural resources, and data on special status species and sensitive habitat information obtained from the California Natural Diversity Data Base (CNDDDB) and the California Native Plant Society (CNPS).

8.1.2 Regulatory Considerations

Clean Water Act (Section 404). The US Army Corps of Engineers has authority over activities in wetlands and other "Waters of the US" through the Clean Water Act. The Clean Water Act prohibits the discharge of pollutants into the navigable waters of the United States without prior approval by the EPA or authorized state agency. Section 404 of the Clean Water Act grants the

Corps the authority to approve the placement of dredged or fill material into the navigable waters of the U.S.

The Federal Bald Eagle Protection Act. This act prohibits persons within the United States (or places subject to US jurisdiction) from “possessing, selling, purchasing, offering to sell, transporting, exporting or importing any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof.”

Federal Endangered Species Act. Under the Federal Endangered Species Act (ESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 USC 1533[c]). Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the project area and determine whether the proposed projects would have a significant impact on such species. In addition, the agency is required to determine whether the projects are likely to jeopardize the continued existence of any species proposed to be listed under the ESA or whether it would result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]).

The USFWS also publishes a list of candidate species. Species on this list receive special attention from federal agencies during environmental review, although they are not otherwise protected under the ESA. Candidate species are those for which USFWS has sufficient biological information to support a proposal to list it as endangered or threatened.

The Federal Migratory Bird Treaty Act (MBTA). The Federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

Marine Mammal Protection Act (MMPA) (16 U.S.C. 1361 et seq.). Section 101(a)(5)(A) directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional, “taking” of marine mammals by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and permits are issued. Permission may be granted for periods of five years or less if the National Oceanic and Atmospheric Administration (NOAA) Fisheries finds that the taking will have a negligible impact on the species or stock(s), that it will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, and that the permissible methods of taking and requirements pertaining to the monitoring and reporting of such taking are set forth.

Marine Life Protection Act (MLPA). Passed in 1999, AB 993 requires the California Department of Fish and Game (CDFG) to design the California system of Marine Protected Areas (MPAs). The ultimate goal of the MLPA process is to produce a plan that will increase the coherence of California’s system of MPAs and its effectiveness in protecting the state’s marine life, habitat, and ecosystems. The closest state-proposed MPA, the Natural Bridges State Marine Conservation Area (SMCA), is over three miles north of the project area.

State Fish and Game Code. Birds of prey are protected in California under the State Fish and Game Code, (Section 3503.5, 1992). Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered “taking” by CDFG. Sections 3511, 4700, 5050 and 5515 describe fully protected mammal, amphibian, reptile, bird and fish species. The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds and mammals. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

California Endangered Species Act. Under the California Endangered Species Act (CESA), CDFG maintains a list of threatened and endangered species (CDFG Code 2070). CDFG also maintains a list of candidate species, which are species under review for addition to either the list of endangered species or the list of threatened species. CDFG also maintains lists of species of special concern, which serve as watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the project area and whether the proposed project would have a significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that could affect a candidate species.

CEQA Guidelines Section 15380. Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines, Section 15380(b), provide that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the ESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that could have a significant effect on, for example, a candidate species that has not yet been listed by either USFWS or CDFG.

Coastal Zone Management Act (CZMA). As discussed in Section 3.1.2, a coastal development permit must be obtained from the California Coastal Commission (CCC) to ensure that the bluff protection structure is consistent with provisions of the CZMA and LCP to the maximum extent practicable. The application of the Corps' Nationwide Permit No. 13 would also require certification from the CCC under the CZMA.

Local Regulatory Requirements. The proposed projects are in the Coastal Zone and must follow CCC regulations and the County of Santa Cruz LCP. Because these projects could affect environmentally sensitive habitat areas (ESHAs), such as tide pools, intertidal habitat, sandy beach, and kelp beds, they must conform to the County of Santa Cruz Sensitive Habitat Protection Ordinance and corresponding policies of the General Plan/Local Coastal Program.

General Plan Policy 5.1.6 requires that ESHAs be protected against any significant disruption of habitat values; any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. County Code 16.32, Sensitive Habitat Protection, further regulates development activities within ESHAs, including requirements for mitigation and restoration, when appropriate.

8.1.3 Biological Setting

Monterey Bay is in the Oregonian province subdivision of the Eastern Pacific Boreal Region. The province is characterized by a rich diversity of cold-temperate flora and fauna (Briggs 1979). The Monterey Bay area, however, is home to a number of warm water invertebrate species characteristic of the California Province to the south. This overlap and co-occurrence of warm and cold water species contributes to the diversity of the living natural resources in the Monterey Bay area (NOAA 1992). The nutrient-rich waters of the bay support extensive kelp habitat that in turn supports fish, invertebrate, seabird, and marine mammal populations. Monterey Canyon divides the bay into two more or less equal northern and southern parts; the proposed project area is adjacent to the northern part (NOAA 1992).

Monterey Bay is included in the MBNMS. It is an open embayment approximately 20 nautical miles (nm) long, north to south, and up to nine nm wide from east to west. It is symmetrical in shape, and curves in the extreme northern and southern ends (NOAA 1992). The bay covers an area of approximately 160 square nm (Breaker and Broenkow 1989). The project area is along a section of southeast-facing coast of the northern half of Monterey Bay. The section is developed, with residences adjacent to the road. Coastal bluff habitat occurs immediately shoreward of the road. The bluff drops steeply to the intertidal area that, depending on location within the project area, consists either of sand, rock, or riprap. The intertidal area is exposed to wave action, as indicated by the area's popularity for surfing. Kelp beds of giant kelp (*Macrocystis pyrifera*), bull kelp (*Nereocystis luetkeana*), and feather boa kelp (*Egregia menziesii*) occur offshore.

The most prominent physiographic feature of the county is the Santa Cruz Mountains. As a component of the California Coastal ranges, they are composed of Tertiary sandstones overlaying Salinian granite basement rock. Along the coast these sandstones form the sea cliffs. Coastal streams, estuarine lagoons, and sandy beaches complete the shoreline. The county shoreline extends from Año Nuevo Bay southward 35 miles to the Pajaro River.

Detailed field surveys for botanical and wildlife resources in the project area were conducted in July 2001. Areas surveyed included the intertidal zone, the nearshore and offshore marine areas, and areas from the top of the bluff to the road (areas inland of the proposed construction are developed with ornamental vegetation). For the biological surveys, dominant plant species and vegetation types were identified, and wildlife was observed by sight, sound, tracks, or other sign (Table 8-1). The potential occurrence of other species was examined by assessing the occurrence of the known habitat preferences of species. Surveys for special status species potentially occurring in the area were also conducted during the biological field surveys.

**Table 8-1
East Cliff Drive Project Area Observed Species List**

Common Name	Scientific Name
Cliff Plants	
Saltbush	<i>Atriplex lentiformis</i>
Fig – marigold (iceplant)	<i>Carpobrotus edulis</i>
Seashore bluegrass	<i>Poa douglassi</i>
Saltgrass	<i>Distichlis spicata</i>
Encelia	<i>Encelia</i> sp.
Iceplant	<i>Carpobrotus</i> sp.
Other Plants	
Willow	<i>Salix</i> sp.
Ripgut brome	<i>Bromus diandrus</i>
Seaweeds	
Red coralline algae	<i>Calliarthron</i> sp.
Giant kelp	<i>Macrocystis pyrifera</i>
Bull kelp	<i>Nereocystis luetkeana</i>
Feather boa kelp	<i>Egregia menziesii</i>
Oarweed	<i>Laminaria farlowii</i>
Sea lettuce	<i>Ulva</i> sp.
Rockweed	<i>Fucus gardneri</i>
Surf grass	<i>Phyllospadix</i> sp.
Blue-green algae	<i>Cyanobacteria</i>
Invertebrates	
Barnacle	<i>Balanus</i> sp.
Birds	
Heermann's gull	<i>Larus heermanni</i>
California gull	<i>L. californicus</i>
Western gull	<i>L. occidentalis</i>
Cormorant	<i>Phalacrocorax</i> sp.
California brown pelican	<i>Pelecanus occidentalis californicus</i>
Mammals	
Southern sea otter	<i>Enhydra lutris nereis</i>
Harbor porpoise	<i>Phocoena phocoena</i>
Pacific harbor seal	<i>Phoca vitulina richardsi</i>

The plants comprised mainly nonnative species and were relatively sparse and disturbed along the coastal bluff. The plant species showed little variation along the extent of the cliff face. Ripgut brome (*Bromus diandrus*) and willow (*Salix* sp.) grew in a grassy area behind the bluff at 37th Avenue. Various seaweeds were observed as remnants that had washed ashore and were lining the beach at the high tide line in various locations.

Along the beach, the riprap and rocky shelves held small barnacles and some algae. However, this would not be considered a highly productive intertidal area because these plant species were relatively sparse. Approximately 15 sea otters (*Enhydra lutris nereis*) were observed directly offshore from the project area, including a mother-pup pair. A single harbor porpoise was observed

downcoast of 41st Avenue. A harbor seal (*Phoca vitulina richardsi*) was observed in the kelp beds directly offshore from Pleasure Point Park. Various flocks of California brown pelicans (*Pelecanus occidentalis*) were observed flying by the project area or feeding offshore. No other special status species were observed.

8.1.4 Vegetation/Habitat Types

The vegetation along this area of the Santa Cruz County shoreline is a mixture of native and non-native plants. Vegetation present consists of those plants that can thrive in exposed, barren, or disturbed soils. The beaches are devoid of vegetation except where they are large enough to permit pioneer dune species to grow. There are no trees on the beaches. Trees on the cliffs include Monterey pine (*Pinus radiata*), cypress (*Cupressus* spp.), eucalyptus (*Eucalyptus* spp.), and various ornamentals (Corps 1998).

Intertidal Zone

Intertidal habitat, by definition, is found between the lowest and highest tidal level. The intertidal zone includes a variety of coastal habitats that are periodically covered and uncovered by waves and tides. This area (transition zone) between sea and land is the strip of shore, ranging from the uppermost surfaces exposed to wave action during high tides, to the lowermost areas exposed to air during low tides. The overall tidal change within the project area is close to eight feet during full or new moon periods. On surf-swept rocky cliffs, the wave splash can extend the marine influence upwards another 15 feet or more. Shores with softer slopes have broader intertidal surface areas, although these areas receive less splash influence. Low-sloping shores have intertidal regions that vary greatly.

Intertidal habitats vary in the type of material and the degree of exposure to surf they receive. Bottom habitat types include those of fine muds, sand, gravel, cobble, boulders, and bedrock. Rock type habitats range from soft to hard geologic forms. Rocks also vary in the extent of roughness, depressions, cracks, crevices, and height. Protected bays and estuaries contain mostly fine particulate substrates, while outer coast shores range in composition from sand to various rock types.

Both rocky and sandy beach intertidal habitat are present in the project area. Rocky intertidal habitats are probably the most studied of all habitats in and adjacent to Monterey Bay. These habitats are not uniform within the bay but vary in composition within short distances. Sandy beaches are the dominant intertidal habitat in Monterey Bay.

On unconsolidated muddy or sandy shores, algae are rare, and benthic diatoms are the only marine algae that may be present. Rocky shores, however, can support numerous green, brown, and red algae (Chlorophyta, Phaeophyta and Rhodophyta), as well as beds of surfgrass (*Phyllospadix* spp.) (Appendix A, Photos 29 and 30).

Coastal Bluff Vegetation

Coastal bluff vegetation includes vegetation growing from the higher high tide line to the blufftops. These are harsh environments where plants must withstand strong winds with high salt content. Species from three communities described by Holland (1986) are included here: northern foredune, central dune scrub, and northern coastal bluff scrub. However, in the project

area, almost all vegetation on the cliff top consists non-native plants, such as iceplant (*Carpobrotus chilensis*) (Appendix A, Photos 27 and 28).

Subtidal and Nearshore Waters

Subtidal and nearshore waters refer to the area beginning from the lowest low tide line extending outwards a short distance till the sea floor drops and the deeper offshore waters begin. This area is nutrient rich due to the presence of the deepwater canyon located only a few miles from the coast of Monterey Bay and the resulting cold water upwelling that occurs. Vegetation in this area is made up of kelp and phytoplankton.

8.1.5 Wildlife Resources

Intertidal Zone

The animals inhabiting intertidal shores are subject to periodic immersion in water, followed by exposure to air (Appendix A, Photo 31). They must withstand varying degrees of wave shock, dramatic temperature changes, changes in moisture, and attacks from terrestrial predators. On sandy beaches, much of the invertebrate life, such as worms, crustaceans, snails, and clams, dwells under unconsolidated substrate. Rocky shores support a much richer assortment of plants and animals. A wide variety of invertebrates, including barnacles, limpets, and mussels, compete for space with the plants in the intertidal zone. Mobile invertebrates, such as snails and crabs, often hide in crevices or under rocks, emerging to graze on plants or prey on other animals.

Common intertidal invertebrate species of Central California include the following: lined shore crab (*Pachygrapsus crassipes*), purple shore crab (*Hemigrapsus nudus*), isopods (*Idotea* spp.), California mussels (*Mytilus californianus*), periwinkles (*Littorina* spp.), lemon nudibranch (*Anisodoris nobilis*), rough chiton (*Nuttallina californica*), bat star (*Asterina miniata*), and the giant green anemone (*Anthopleura xanthogrammica*) (UC-Santa Cruz 1996). Intertidal fish, such as the crevice kelpfish (*Gibbonsia montereyensis*) and the tidepool sculpin (*Oligocottus maculosus*), are limited to tidepools (Appendix A, Photo 32) or to passing through the intertidal zone at high tide.

Seabirds forage in the intertidal zone at low tide or roost in the cliffs just above the shore. There are a great many species of shorebirds along the beaches of the project area, including sanderlings (*Calidris alba*), short-billed dowitchers (*Limnodromus griseus*), and Western, glaucous-winged, and California gulls (*Larus occidentalis*, *Larus glaucescens*, and *Larus californicus*). Shorebirds, such as sanderlings and dowitchers, routinely forage in the receding surf, an indication that there are sand-dwelling crustaceans. Caspian and Forster terns (*Sterna caspia* and *Sterna forsteri*) and whimbrels (*Numenius phaeopus*) are some of the summer migrants that forage along the coastal beaches. Winter migrants include willets (*Catoptrophorus semipalmatus*), black-bellied plovers (*Pluvialis squatarola*), marbled godwits (*Limosa fedoa*), and turnstones (*Arenaria* spp.). Harbor seals and California sea lions (*Zalophus californianus*) haul out on intertidal shores for warming and breeding. None of these marine mammals depend on the project area for breeding, birthing, or as a regular haulout area.

Coastal Bluff Wildlife

Very few wildlife species are associated with coastal bluff habitats; those that are include bird species that are primarily associated with other habitats in the area and that have stopped to feed

or perch opportunistically, or that nest in or along the cliff face. Sparrows, warblers, and hawks can be found along tree- and shrub-lined portions of the coastal bluff. Small rodents also may be associated with the non-native plants that predominate the area. Table 8-1 lists wildlife species observed during the two biological surveys.

Subtidal and Nearshore Waters

A variety of fish species occur within this habitat, including rockfish (*Sebastes* spp.), surfperch (*Brachyistius frenatus*), and senorita (*Oxyjulis californica*). Also found in this area are sea urchins (*Strongylocentrotus* spp.), marine mammals, and foraging birds. Many diving and resting seabirds, listed in Table 8-3, can be seen in this area due to the numerous invertebrates and fish that are supported in these nutrient-rich waters.

Brown pelicans, surf scooters (*Melanitta perspicillata*), grebes (Podicipedidae), cormorants (*Phalacrocorax* spp.), and many seabird species can be found in water beyond the breaking waves or flying through the area (Corps 1998). Five species of whales are commonly seen along the central coast (Corps 1998). Harbor seals and California sea lions are frequently seen seaward of the surf zone; sea otters and Steller sea lions (*Eumetopias jubatus*) are occasional visitors.

Sensitive Species

This section identifies special status, or sensitive, species that may occur in the project area. Sensitive species include those species that USFWS or CDFG lists or has proposed for listing as endangered, threatened, or candidate species. Plants that the California Native Plant Society (CNPS) list as rare or threatened are also considered sensitive. Potential sensitive species at East Cliff were identified from USFWS (USFWS 2001), NOAA Fisheries (NOAA 2001), CNDDDB (CDFG 2003), and the CNPS. Vascular plants listed as rare or endangered by the CNPS (Skinner and Pavlik 1994), but which have no designated status or protection under federal or state endangered species legislation, are defined with the CNPS criteria as follows:

- List 1A, plants believed to be extinct;
- List 1B, plants that are rare, threatened, or endangered in California and elsewhere;
- List 2, plants that are rare, threatened, or endangered in California but that are more numerous elsewhere;
- List 3, plants about which we need more information, a review list; and
- List 4, plants of limited distribution, a watch list.

A list of all sensitive species and any critical habitat found in the region, according to USFWS and NOAA Fisheries records, is provided in Appendix E. An assessment of the likelihood of a species occurring within the ROI was made based on the habitat requirements and geographic distribution of the species, existing on-site habitat quality, and the results of biological surveys by Tetra Tech, Inc. staff.

The following discussion includes a profile of only those sensitive or special status species that are considered likely to be found in the project area.

Special Status Plant Species

Federally listed proposed and candidate plant species known or likely to occur in Santa Cruz County were evaluated for their likelihood of occurrence within the ROI (Table 8-2). No sensitive plant species are expected to occur within the ROI due to a lack of suitable habitat and the level of human activity within the area.

Table 8-2
Likelihood of Occurrence of Santa Cruz County's Special Status Plants in the Project ROI

Common Name <i>Scientific Name</i>	Federal /State Status/CNPS ¹	Habitat	Likelihood of Occurrence ²	Notes
Ben Lomond (Santa Cruz) wallflower <i>Erysimum teretifolium</i>	E/E/1B	Sandy soils in the Santa Cruz Mountains, open areas associated with northern maritime chaparral and scattered ponderosa pines	U	Lack of suitable habitat
Ben Lomond spineflower <i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	E/-/1B	Sandy soil in coastal habitat, specifically sandy Zayante soils, associated with yellow pine forest	U	Lack of suitable habitat
Monterey spineflower <i>C. pungens</i> var. <i>pungens</i>	T/-/1B	Sandy soils in coastal and dune habitats; associated with Coastal Strand, Northern Coastal Scrub, Coastal Sage Scrub, Closed-cone Pine Forest, Yellow Pine Forest, Foothill Woodland, Chaparral	U	Extremely rare; unlikely to occur in disturbed habitat
Robust spineflower <i>Chorizanthe. robusta</i> var. <i>robusta</i>	E/-/1B	Sandy gravelly soil in dune, open and coastal habitats. Associated with Coastal Strand, Foothill Woodland, Northern Coastal Scrub	U	Extremely rare; unlikely to occur in disturbed habitat
Santa Cruz cypress <i>Cupressus abramsiana</i>	E/E/1B	Granitic sedimentary sandstone, associated with closed pine forest	U	Lack of suitable habitat
Santa Cruz tarplant <i>Holocarpha macradenia</i>	T/E/1B	Coastal prairie and valley grassland with clay soils	U	Lack of suitable habitat
Scott's Valley spineflower <i>C. robusta</i> var. <i>hartwegii</i>	E/-/1B	Sandy soil in meadow habitats	U	Lack of suitable habitat
Tidestrom's lupine <i>Lupinus tidestromii</i>	E/E/1B	Coastal and dune habitats	U	Extremely rare; unlikely to occur in disturbed habitat
White-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	E/E/1B	Serpentine substrate in valley grassland	U	Lack of suitable habitat

Source: CDFG 2003; USFWS 2003

¹Status

E = listed as endangered

T = listed as threatened

SC = species of concern

1B = plants rare, threatened, or endangered in California and elsewhere

²Likelihood of occurrence on the project site

U = Unlikely to occur

Special Status Wildlife Species

Migratory Species

Bird species listed in Table 8-3 are those that may stop over as part of their yearly migration or that are seasonal residents of the project ROI. Several MBTA species are known to have nested in the vicinity of the ROI and use the bluff within the ROI. This includes the following species—cliff swallow (*Petrochelidon pyrrhonota*), belted kingfisher (*Ceryle alcyon*), and Northern rough-winged swallow (*Stelgidopteryx serripennis*) (Suddjian 2003). These species are protected under the MBTA.

Table 8-3
MBTA and MMPA Species Potentially occurring within the ROI

Common Name	Scientific Name
MBTA species	
American avocet	<i>Recurvirostra americana</i>
American coot	<i>Fulica americana</i>
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
American pipit	<i>Anthus rubescens</i>
American robin	<i>Turdus migratorius</i>
American widgeon	<i>Anas americana</i>
Black phoebe	<i>Sayornis nigricans</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
Belted kingfisher	<i>Ceryle alcyon</i>
Bufflehead	<i>Bucephala albeola</i>
California towhee	<i>Pipilo crissalis</i>
Canvasback	<i>Aythya valisineria</i>
Common goldeneye	<i>Bucephala clangula</i>
Common poorwill	<i>Phalaenoptilus nuttallii</i>
Cormorant, double-crested	<i>Phalacrocorax auritus</i>
Cormorant, pelagic	<i>P. pelagicus</i>
Dowitcher, long-billed	<i>Limnodromus scolopaceus</i>
Dowitcher, short-billed	<i>L. griseus</i>
Egret, great	<i>Ardea alba</i>
Egret, snowy	<i>Egretta thula</i>
Finch, house	<i>Carpodacus mexicanus</i>
Finch, purple	<i>C. purpureus</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
Great blue heron	<i>Ardea herodias</i>
Great horned owl	<i>Bubo virginianus</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Green-winged teal	<i>Anas crecca</i>
Guillemot, pigeon	<i>Cepphus columba</i>
Gull, California	<i>Larus californicus</i>
Gull, glaucous-winged	<i>L. glaucescens</i>
Gull, herring	<i>L. argentatus</i>
Gull, Heermann's	<i>L. heermanni</i>
Gull, laughing	<i>L. atricilla</i>
Gull, ring billed	<i>L. delawarensis</i>
Gull, western	<i>L. occidentalis</i>
Hummingbird, Allen's	<i>Selasphorus sasin</i>
Hummingbird, Anna's	<i>Calypte anna</i>
Killdeer	<i>Charadrius vociferus</i>
Long-billed curlew	<i>Numenius americanus</i>

Table 8-3
MBTA and MMPA Species Potentially occurring within the
ROI (continued)

Common Name	Scientific Name
Mallard	<i>Anas platyrhynchos</i>
Marbled godwit	<i>Limosa fedoa</i>
Mourning dove	<i>Zenaida macroura</i>
Northern shoveler	<i>Anas clypeata</i>
Osprey	<i>Pandion haliaetus</i>
Pacific-slope flycatcher	<i>Empidonax difficilis</i>
Pelican, brown	<i>Pelecanus occidentalis californicus</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Ruddy duck	<i>Oxyura jamaicensis</i>
Ruddy turnstone	<i>Arenaria interpres</i>
Sandpiper, least	<i>Calidris minutilla</i>
Sandpiper, spotted	<i>Actitis macularia</i>
Sandpiper, western	<i>Calidris mauri</i>
Semipalmated plover	<i>Charadrius semipalmatus</i>
Swainson's thrush	<i>Catharus ustulatus</i>
Swallow, barn	<i>Riparia riparia</i>
Swallow, cliff	<i>Petrochelidon pyrrhonota</i>
Swallow, northern rough-winged	<i>Stelgidopteryx serripennis</i>
Swallow, tree	<i>Tachycineta bicolor</i>
Swallow, violet-green	<i>T. thalassina</i>
Tern, Caspian	<i>Sterna caspia</i>
Tern, Forester's	<i>S. forsteri</i>
Western tanager	<i>Piranga ludoviciana</i>
Whimbrel	<i>Numenius phaeopus</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Willet	<i>Catoptrophorus semipalmatus</i>
MMPA Species	
California sea lion	<i>Zalophus californianus</i>
Harbor porpoise	<i>Phocoena phocoena</i>
Pacific harbor seal	<i>Phoca vitulina richardsi</i>
Southern sea otter	<i>Enhydra lutris nereis</i>
Steller sea lion	<i>Eumetopias jubatus</i>

Source: Gough et. al 1998; USFWS 2001.

Federally and state-listed endangered or threatened species and species of concern that are known or likely to occur in the Soquel quadrangle were evaluated for the likelihood that they would occur in the project ROI. These species are listed in Table 8-4. A discussion of those species that have been observed or that have the potential to occur in the ROI based on presence of suitable habitat follows.

Central California Coast Steelhead (*Oncorhynchus mykiss*).. The Central California Coast Evolutionary Significant Unit (ESU) of this species is federally listed as threatened (NOAA Fisheries 1997) and is a state species of concern. The anadromous form of rainbow trout migrates into the ocean, matures, and returns to its native stream to spawn. Steelhead are present

Table 8-4
Likelihood of Occurrence of Special Status Wildlife Species in the Project ROI

Common Name <i>Scientific Name</i>	Federal/ State Status¹	Habitat	Likelihood of Occurrence²	Notes
Birds				
Marbled murrelet <i>Brachyramphus marmoratus marmoratus</i>	T, CH/E	Subtidal and open water, nests inland in Douglas Fir and Redwood	P	Suitable habitat offshore for foraging. No sensitive habitat (breeding or foraging in the ROI), but this species could fly through the area
Brown pelican <i>Pelecanus occidentalis californicus</i>	E/E	Forages in nearshore waters of ocean and estuaries. Roosts on sand spits and bars. Nests on offshore islands	C	Observed in the ROI and its vicinity during project surveys. No sensitive breeding or foraging habitat in the ROI
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	T, CH/SC	Beaches, dry mud or salt flats, sandy banks of rivers, lakes, and ponds. Nests on ground in open beaches and salt or dry mudflats on isolated beaches	U	There are no breeding grounds in or around the ROI due to lack of suitable habitat.
Bald eagle <i>Haliaeetus leucocephalus</i>	T/E	Breeds near coastal areas and large water bodies. Roosts in conifers or other sheltered sites in winter in some areas. Nests in tall trees and cliffs	U	High human activity level of the area and lack of roosting habitat make it unlikely that the ROI could support this species
Double crested cormorant <i>Phalacrocorax auritus</i>	-/SC	Nests on rocky islands, cliffs facing water, and stands of trees near water	P	Suitable foraging habitat in the vicinity of the ROI. No suitably protected nesting areas occur within the ROI sufficient to support breeding
American peregrine falcon <i>Falco peregrinus anatum</i>	DL,SC/E	Cliff, desert, shrubland, tundra, urban/edificarian, conifer, woodland, hardwood, woodland, mixed. Nests on ledges or holes of rocky cliffs, crags, tree hollows, and man-made structures	P	Suitable foraging habitat in the vicinity of the ROI. No suitably protected areas occur within the ROI sufficient to support breeding.

Table 8-4
Likelihood of Occurrence of Special Status Wildlife Species in the Project ROI *(continued)*

Common Name <i>Scientific Name</i>	Federal/ State Status ¹	Habitat	Likelihood of Occurrence ²	Notes
Marine Mammals				
Steller sea lion <i>Eumetopias jubatus</i>	*T/-	Marine, estuarine habitats and bare rocks for haulout locations and rookeries; sometimes rivers	U	Not likely to occur in nearshore waters of the ROI due to the high human activity in the area.
Southern sea otter <i>Enhydra lutris nereis</i>	*T/-	Coastal waters with kelp beds, normally found within 1.5 miles of the shore	C	Observed near shore during project survey
Fish				
Tidewater goby <i>Encyclogobius newberryi</i>	E/SC	Benthic communities along shallow waters of Pacific coastal streams and lagoons	U	No suitable habitat in the ROI
Central California coast steelhead <i>Oncorhynchus mykiss</i>	T/-	Fresh water, bays, and nearshore marine waters	P	Individuals that spawn in San Lorenzo River may be found within the ROI
Central California coast coho salmon <i>O. kisutch</i>	E/T	Bay, nearshore marine habitats, and freshwater rivers and creeks that primarily occur in redwood forests	U	Individuals that spawn in San Lorenzo River may be found within the ROI

Source: CDFG 2003; USFWS 2003; NatureServe 2003.

¹Status

F = Federal
S = State
E = listed as endangered
T = listed as threatened
CH = Federally designated critical habitat
SC = species of concern
C = candidate
DL = delisted
* = MMPA species

²Likelihood of occurrence on the project site

C = Confirmed
P = Potential
U = Unlikely to occur

in Soquel Creek, located approximately 1.5 miles south of the project area and in the San Lorenzo River, located north of the project area (NOAA 2001). This species also uses Monterey Bay for portions of its life cycle. Due to the distance from the project area, this species is not expected to be affected by the proposed projects.

Central California coast coho salmon (*Oncorhynchus kisutch*). An anadromous species, coho salmon is federally listed as threatened and is a state-listed species of concern. This species' federal listing refers to populations between Punta Gorda and the San Lorenzo River (north of the project area), and the state listing refers to populations south of San Francisco Bay only. This species is also present in Soquel Creek (NOAA 2001). CDFG has designated the San Lorenzo River as a recovery stream for this species (NOAA 2001).

Coho require beds of loose, silt-free coarse gravel for spawning and also require cover, cool water, and sufficient dissolved oxygen. This species also uses Monterey Bay for portions of its life cycle. This species is not expected to be affected by the proposed projects.

Tidewater goby (*Eucyclogobius newberryi*). First described in 1856 from specimens taken in the San Francisco Bay area, this small fish inhabits coastal lagoons and bays, from Del Norte County in northern California to San Diego County in southern California. Tidewater gobies are unique because they apparently lack a true marine phase in their life history. This absence of a marine phase, or their affinity for very low salinity water, may account for their discontinuous distribution along the California coast. Tidewater gobies occur in Soquel Creek, approximately 1.5 miles downcoast of the project area. Due to the distance from the project area, this species is not expected to be affected by the proposed projects.

California brown pelican (*Pelecanus occidentalis californicus*). This species is listed as endangered under the federal (35 FR 8495, June 2, 1970, and 35FR 16047, October 13, 1970) and state ESAs. It is also a CDFG fully protected species. The California brown pelican is a large breeding seabird recognized by the long pouted bill that it uses to catch surface schooling fishes, such as anchovies. They feed in shallow waters and rarely travel farther than 20 miles out to sea. Brown pelicans nest on the ground, in colonies on small coastal islands that are free of nonmammalian predators and human disturbance. Nesting colonies range from the Channel Islands to the islands off Nayarit, Mexico. The last known nesting site north of the Channel Islands was noted in 1963 on Bird Island, just south of Monterey. California brown pelicans were observed feeding offshore from the project area during the July 18, 2001 site survey.

American peregrine falcon (*Falco peregrinus anatum*). This is a state-listed endangered species and a former federally listed species with designated critical habitat that is now considered a federal species of concern. There is one recorded sighting (CNDDB 2001) of this species in the vicinity of Soquel Avenue. This raptor nests on rocky outcrops or ledges, and suitable nesting sites may exist inland of project area in more remote places in the San Lorenzo drainage. Peregrine falcons subsist largely on small birds, and their occurrence in the project area may be due to the abundance of forage around the nearby estuary (Corps 1998). However, nesting and feeding sites are unlikely to occur in heavily frequented recreation areas. This species was not observed during the site survey, and no suitable breeding habitat is available in the project ROI.

Western snowy plover (*Charadrius alexandrinus*). This species is a federally listed threatened species with federally designated critical habitat (USFWS 1993, USFWS 1999) and a state species of concern. It breeds primarily on coastal beaches, from southern Washington to southern Baja, California. Other nesting habitats exist in the form of salt pans, dredge disposal sites, dry salt ponds, and salt pond levees. Historically there were at least 80 nesting sites on the West Coast; 28 remain today. The plover's numbers have declined due to human activity on the beaches during nesting season (Corps 1998). No appropriate breeding habitat exists for snowy plovers within the ROI, due to the disturbed nature of the area and high level of human activity.

Marbled murrelet (*Brachyramphus marmoratus marmoratus*). This species is federally listed as threatened (57 FR 45328, October 1, 1992). The eastern Pacific subspecies of this bird is found from the Aleutian Islands to central California. Loss and modification of nesting habitat from commercial timber harvesting was cited as the primary cause of the bird's decline. Murrelets are usually observed offshore of an area that has trees of an adequate size and concentration for nesting, usually at least a 60-acre stand of old growth trees or a stand of mature trees with an old-growth component. Essentially a coastal species, murrelets spend most of their time resting on the water close to shore. They feed on fish and invertebrates near shore. One of only a few nest records for the marbled murrelet in Santa Cruz County is recorded in Big Basin Redwoods State Park (approximately 30 miles northwest of the project area) in an old-growth Douglas fir tree (Corps 1998). This species was not observed during the site survey and is not expected to be affected by the proposed projects due to the distance between the project activities and the murrelet's offshore foraging area.

Double-crested cormorant (*Phalacrocorax auritus*). This is a state species of special concern and a migratory bird species, according to the MBTA. Cormorants are large water birds, with long necks adapted for diving to pursue fish. Double-crested cormorants nest on rocky islands, on cliffs facing water, and in stands of trees near water. Their distribution along the Pacific coast is from the Aleutian Islands to Baja California, Mexico. They are generally considered to be a common and widespread species. Threats to the double-crested cormorant include eggshell thinning due to pesticide ingestion and habitat loss and degradation (Stanford 1999c). No nesting areas are known in or around the ROI, though this species may fish opportunistically in the nearshore waters of the ROI.

Southern sea otter (*Enhydra lutris nereis*). This otter has been a federally threatened species since 1977 (42 FR 2968, January 14, 1977) and is considered depleted and strategic under the MMPA. It is a member of the weasel family but is unusual in that it is a marine mammal and rarely visits dry land. The sea otter's historic range extended from northern Japan across the north Pacific to Baja California, along the coasts and the islands. Intensive exploitation of otter populations for the fur trade began in the early 1800s and rapidly depleted all stocks to the brink of extinction. In 1911, the first formal protection for the sea otter came in the form of a treaty between Russia and the United States. Since then, various other protective measures have been taken, and the Alaskan stocks have recovered. The California stocks, rediscovered in 1938, have not recovered. The species' range in California currently extends from about Año Nuevo Island in Santa Cruz County, to Point Conception. The California population was steadily increasing until El Niño of 1997 to 1998, after which the population has been in a state of flux, increasing

and declining. Numbers have ranged from 2,317 in 2000 to 2,161 in 2001. Overall, the population remains roughly stable.

Sea otters frequent three kelp beds offshore of Pleasure Point to the southern reaches of the project area. Popping season occurs year-round but peaks in spring (Corps 1998). Sea otters, including a mother-pup pair, were observed offshore from the project area during the July 18, 2001 site survey.

Steller sea lion (*Umetopias jubatus*). The Steller or northern sea lion is federally listed as threatened and has federally designated critical habitat. Critical habitat is limited to the Aleutian Islands. The range of this sea lion is trans-Pacific, with major populations in the subarctic seas. Formerly, some breeding occurred on San Miguel Island in the Channel Islands off southern California, in the Farallon Islands, and at Seal Rock near San Francisco. Presently, the southernmost breeding colony is at Año Nuevo Island off San Mateo County, about 25 miles north of the project area (Corps 1998). No Steller sea lions were observed during the site survey.

8.2 ENVIRONMENTAL CONSEQUENCES

Impact Methodology

Potential impacts from the proposed projects described in Chapter 2 were assessed using field surveys, consultations with technical experts, literature reviews, particularly for sensitive species and sensitive habitat documentation. Wildlife agency comment letters were also reviewed.

Thresholds of Significance

Impacts on biological resources found in the project area were evaluated by determining the sensitivity, significance, or rarity of each resource that could be adversely affected by any of the proposed projects associated with the various alternatives and by using thresholds of significance to determine if the impact constitutes a significant impact. The significance threshold may be different for each habitat or species.

In this analysis, an alternative is considered to have a significant impact on biological resources if it were to result in any of the following:

- Adversely affect a population of a threatened, endangered, regulated, or otherwise designated sensitive species, for example, by reduction in numbers, by alteration of either behavior, reproduction, or survival, or by loss or disturbance of habitat. Any “take” of a listed or sensitive species is considered significant;
- Have a substantial adverse affect on a species, natural community, or habitat that is specifically recognized as biologically significant in local, state, or federal policies, statutes, or regulations;
- Have a substantial adverse affect on a species, natural community, or habitat that is recognized for scientific, recreational, ecological, or commercial importance;
- Cause an impedance of fish or wildlife migration routes for a period that would significantly disrupt that migration;

- Cause an alteration or destruction of habitat that would prevent reestablishment of biological communities that inhabited the area prior to the proposed projects;
- Cause an extensive alteration or loss of biological communities in high-quality habitat for longer than one year;
- Cause impacts on unique communities or communities of limited distribution within the project area.
- In general, plants appearing on CNPS List 1B are considered to meet CEQA's Section 15380 criteria, and effects to these species would be considered significant in this EIS/EIR.

8.2.1 Full Bluff Armoring (Alternative 1)

Significant Impacts

Constructing the bluff protection structures and demolishing the abandoned restroom could temporarily affect the coastal marine environment. The project area is adjacent to the intertidal biotic zone, which is designated as sensitive habitat in the County's General Plan, LCP, and Sensitive Habitat Protection Ordinance. This habitat includes such features as marine rock shelves and tide pools, which could be affected if the projects do not include specific mitigation measures. Impacts could include unintentionally releasing toxic substances, such as diesel fuel, and disturbing natural intertidal life processes by excessive construction activities or improper timing, so that construction activities conflict with such activities as reproduction or migration. Estimations on the timing of construction can be found in Chapter 2.

Impact 8.1 Disturbance of Intertidal Habitat (Construction Related)

The proposed action and its associated construction would negatively affect the intertidal habitat, especially the high tide zone, and the species that utilize this habitat. Intertidal life (discussed in 8.1.5) and shorebirds (8.1.6) are the main species that would be affected by the proposed construction activity. Most of the construction would be staged from East Cliff Drive, near the top of the coastal bluff, and would be done with the use of bucket trucks and cranes. The soil nail structure design allows for much of the drilling and construction operations to take place from above. This would reduce construction impacts on the beach and nearshore marine environment. Additionally, as much work as possible would be conducted during the low tide period in order to reduce impacts on the intertidal zone.

Some activities would occur on the beach, such as constructing the foundations of the protection structures, which would be built at the back of the beach and may require the use of a backhoe. A portion of the beach is expected to be temporarily disturbed during construction of the seawall's foundation. Cranes stationed at the top of the bluff would remove the concrete rubble and rock riprap. Construction activities could include the creation of a temporary berm adjacent to the construction area, which would amount to a short-term alteration of habitat and would disturb and trap invertebrates occurring either in the earth moved to create the berm, if that is taken from the beach itself, or the area covered by the berm.

Before or during construction of the bluff protection structures, the abandoned restroom and stairway would be demolished. The demolition would occur from the top of the bluff and would

most likely involve the use of a backhoe with a hoe ram. Falling debris could crush intertidal invertebrates and cause the upturn of rocks leading to the desiccation or endangerment of immobile invertebrates. The debris would be removed by a crane and transported to an approved disposal site. A significant increase in siltation during construction or fuel spills could affect intertidal areas. This impact would be significant without appropriate mitigation. These construction impacts would be temporary and are not likely to affect intertidal species and habitat in the long term. However, ongoing maintenance on the bluff armor would be needed and would mean future disturbance along the beach and bluff within the project area.

The project area, including intertidal habitat, is already subjected to high levels of human activity in association with recreation use and is considered a highly disturbed habitat. Due to the relatively small footprint of the projects and the current condition of the area, only a minor loss of intertidal habitat use by wildlife and plants is expected.

Mitigation 8.1

To minimize impacts on intertidal habitat during construction, the County Department of Public Works, with assistance from the County Redevelopment Agency, shall ensure that the following measures are included in project plans for the bluff protection structures prior to issuance of a Grading Permit:

- A qualified biologist shall review final construction plans immediately prior to the commencement of construction and monitor the site periodically during construction to ensure that the loss of habitat due to armoring is minimal.
- The project biologist shall be present when beach rubble and riprap are removed to determine whether the work is creating a problem by displacing rats. If the biologist determines that a problem exists, a rat removal program shall be implemented by the Project Contractor before any rubble or riprap is removed further.
- The concrete rubble and rock riprap shall be pulled away from the base of the cliff to construct a temporary rock riprap water barrier to the extent feasible. The purpose of this barrier is to keep the trench and equipment out of tidal waters during construction and shall ultimately be removed, along with the concrete rubble and a portion of the riprap.
- A silt fence or other barrier shall be installed to the extent feasible to prevent smaller grained material from affecting intertidal and offshore areas.
- BMPs shall be implemented as part of a program to reduce and prevent pollutant and sediment discharges. Spill cleanup procedures, prevention measures, and protocols for storing construction materials and wastes shall be developed by the Construction Contractor before work begins in the intertidal area.
- A construction stormwater pollution prevention program shall also be developed for the projects. This program shall address the BMPs used to prevent, respond, and monitor potential sources of pollution to intertidal and offshore habitats.

- Any construction equipment used on the beach for the footing shall be scheduled for the dry season (April 15 to October 15) to reduce the risk of fuel or siltation reaching the water column.
- If a fuel or oil spill were to occur during construction the spill shall be addressed in accordance to the spill response plan developed by the Construction Contractor for the project area and the following actions shall be taken:
 - The source and the cause of the spill shall be identified and the spill source stopped;
 - Prevent spill migration using equipment in the on-site spill response kits (such as absorbent socks, pumps, or floating booms);
 - Clean up the spill (call in emergency response personnel for large spills);
 - Monitor impacts of the spill; and
 - Document the nature of the spill and the corrective actions taken and report to appropriate agencies.

These measures shall be incorporated into the construction contract for the firm selected to construct the projects. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.2 Disturbance of Subtidal and Nearshore Habitat (Construction Related)

Significantly increased siltation during construction or spilled fuel entering the waters of MBNMS could affect the kelp habitat near the project area. A substantial increase in suspended solids could reduce or eliminate kelp photosynthetic based growth. Kelp forests are considered one of the most vital habitats in coastal California in that they support juvenile stages of numerous fish species and provide habitat for numerous other species. This habitat also is critical for the survival of the southern sea otter, a federally threatened species. An impact on this habitat would be considered significant, without the appropriate mitigation measures.

Noise from the proposed project would also negatively impact subtidal and nearshore waters as a result of construction activities. High levels of sound can adversely affect species occurring within the immediate vicinity, including fish and marine mammals. This impact would be minimal due to the absence of in-water activities and the relatively low-level noise production (Table 13-1). Sedimentation during construction activities would be greatly limited by the measures outlined in mitigation 8.1.

Mitigation 8.2

To minimize disturbances to subtidal and nearshore habitat during construction, mitigations for the intertidal habitat shall be implemented. Implementing these mitigation measures, particularly the silt fence barrier and spill pollution plan, would reduce this potential significant impact to a less than significant level.

Impact 8.3 Disturbance of Special Status Species (Construction Related)

Construction noise may affect special status species in the area, including the southern sea otter, a federally threatened species, and the California brown pelican, a federally endangered species. Some MBTA species, particularly shorebirds, would be deterred from their use of the area due to

the elevated noise levels and visual presence. Several MBTA species are known to have nested in the vicinity of the ROI and may have used the ROI itself. Cliff nesting bird species with the potential of breeding in the ROI include the cliff swallow, belted kingfisher, and Northern rough-winged swallow. These species would lose potential nesting areas.

Other special status species that could be affected by noise and beach activity include the harbor seal, California sea lion, Steller sea lion, harbor porpoise, and other species protected under the MMPA. Harbor seal and sea lions would be deterred from hauling out in the project vicinity because of the noise and visual presence of humans during construction and maintenance of the bluff protection. However, this area is already a poorly suited location for haul outs due to the existing human activity level, and the difference in the value of this habitat to MMPA species, such as the Pacific harbor seal, would be small. Construction activities would be temporary and are not likely to affect these species or alter their behavior over the long term. However, ongoing maintenance on the bluff armor would be needed and would mean future periods of noise and disturbance along the beach and bluff within the project area.

Mitigation 8.3

To minimize the effects of noise caused by construction on special status species, the County Department of Public Works and Project Biologist shall ensure that the following measures are implemented prior to and during construction of the bluff protection structures:

- To avoid impacts on migratory birds, their young, and nests, a qualified biologist shall survey immediately before and during project activities that occur within the California bird breeding season, which extends from February through August (Tate-Hall 2002). Surveys shall be conducted along the cliff and intertidal project areas. Nests identified on the premises during the pre-breeding season surveys shall be removed, with the exception of eagles' nests, in order to prevent their use during the breeding season. Additional surveys of buildings and natural areas directly affected by project activities shall be conducted throughout the California breeding season. Nests found during these surveys, with the exception of eagles' nest, shall be removed, as long as no eggs are present. If a nest with eggs is found, activities in the immediate vicinity will be halted until the eggs hatch and the young had fledge or until USFWS gives its approval;
- Surveys to detect the presence of other sensitive species shall be initiated prior to the start of construction and continue periodically during the construction period;
- BMPs for noise reduction shall be used to minimize and monitor potential sources of noise pollution;
- Site personnel shall be instructed how to recognize sensitive species (harbor seals for example) and how to manage encounters if they do occur; and
- Reduce construction-related noise (limiting the number of heavy equipment in any one construction area, for example) and maintain maximum distances from sensitive species.

These measures shall be incorporated into the construction contract for the firm selected to construct the projects. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Nonsignificant Impacts

Disturbance of Intertidal Habitat (Loss or Alteration)

Long-term alteration of intertidal habitat would occur as a result of this project alternative. Habitat modification would include: excavating the Purisima Formation on the base of the cliffs, excavating the cliff faces, covering of the cliff faces, and altering the shoreline width due to sea level rise and lack of bluff retreat.

Because the platforms and bases of the cliffs are in the lower to upper intertidal zone, the marine habitat impact would be loss of encrusting algae and invertebrates that occupy the surfaces and cavities of the cliffs and platforms. Modification of the platforms and cliff faces would result in loss or alteration of approximately 0.07 acre (3,049 square feet) of intertidal habitat. (This is a rough maximum figure because all substrate subject to marine influence may not be intertidal habitat.) There would be no significant change to intertidal habitat as a result of project-induced beach or offshore scour. The armored bluff would mimic the natural cliff and would have the same effect on the intertidal zone. A loss in shoreline width would occur as a result of sea level rise coupled with the lack of natural beach retreat. An estimated 10 to 20 feet loss in shoreline width is expected to occur over the next 50 years. This change in the intertidal zone width would still fall within current natural seasonal and yearly variance. This would mean an increase in the amount of time the high tide habitat would be submerged in water over the next fifty years. This change could decrease the success of high tide species, such as shoreline crabs, that utilize this area. While the affected area includes types of habitats that are considered sensitive in the Santa Cruz County General Plan, LCP, and Sensitive Habitat Protection Ordinance (e.g., sandy beaches), disturbance of the intertidal area would be considered a nonsignificant impact because the area is already disturbed. Due to the high recreational use, the composition of the bluffs, the low amounts of vegetation on the bluff face, and the mobility of the concrete rubble, this particular intertidal area is considered to have a relatively low ecological value. However, alteration and loss of this habitat by construction and removal of the rubble on the beach is still considered negative because it would reduce the colonization potential and habitat suitability of the area for some native plants and animals. One potential example of this is the loss of burrowing habitat and cover for wildlife such as the belted kingfisher. The project would also remove the option of restoring the ecological value of this area to native plants and wildlife.

Disturbance of Cliff Habitat

Cliff faces that are not intertidal habitat are generally devoid of vegetation and do not represent good habitat. Most of the cliff faces in the construction area contain ice plant and other non-native species, and removing them is a nonsignificant impact. Cliffs sometimes provide habitat for birds that burrow into or nest on the cliff face. Construction would reduce available nest areas; however, no evidence of any burrows or cavity nesting species was observed during the biological survey. The armor has been designed to prevent wave reflection, which can cause increased erosion in areas adjacent to a bluff protection structure. By ensuring that wave reflection does not occur and there is no increase in erosion in adjacent areas, it is possible to

greatly decrease the amount of overall damage to cliff habitat within the project vicinity. The loss or alteration of cliff habitat is considered to have a negative but small effect on common plants and wildlife in the area, due to its disturbed condition.

Disturbance of Offshore Habitat

Decreased water quality due to project related sedimentation or pollution would negatively impact offshore habitat. The sedimentation and potential water contamination during construction activities would be greatly avoided and limited by the measures outlined in Mitigation 8.1.

Beneficial Impacts

Disturbance to Intertidal, Subtidal and Nearshore Habitats

Reducing siltation entering MBNMS under this alternative could have a small positive impact on intertidal, subtidal and nearshore habitats as well as the kelp forests within this area. The removal of rubble would create a small amount of open beach habitat, which would support a different suite of invertebrate and shorebird species than currently use the project area.

No Impacts

The special status species steelhead, tidewater goby, American peregrine falcon, western snowy plover, and marbled murrelet are known to inhabit Santa Cruz County. These species are not expected to be affected by the proposed projects for reasons explained below.

Central California coast steelhead. This species has been observed in and is thought to reside in Soquel Creek, 1.5 miles from the project area. Steelhead salmon may also occur within the project ROI but would not likely be affected by the proposed project because no in-water activity is proposed. The noise produced by land-based construction, which is evaluated in Section 13, would remain far below levels that could be harmful to steelhead occurring within the ROI. These noise levels are not expected to deter this species' use of waters in the vicinity of the project.

Central California coast coho salmon. This species, also an anadromous fish, migrates through brackish waters to spawn and rear in freshwater river basins. There is no habitat in the project area suitable to spawning and rearing. Coho salmon have been observed in the San Lorenzo River north of the project area and in parts of Monterey Bay. Coho salmon may also occur within the project ROI but would not likely be affected by the proposed project because no in-water activity is proposed. Noise levels would increase temporarily in the ROI as a result of construction. Even with this increase (Table 13-1, Section 13) noise levels would remain well below levels that could be harmful to coho salmon occurring within the ROI. These noise levels are not expected to deter coho salmon from using waters in the vicinity of the project.

Tidewater goby. This species is limited to brackish waters, such as coastal lagoons and bays (USFWS 2000). There is no habitat for the tidewater goby in the project area, and the closest known population occurs in Soquel Creek, approximately 1.5 miles downcoast of the project area. Therefore, the tidewater goby is expected to be unaffected by construction and other project-related activities occurring in the project area.

American peregrine falcon. Known to live along coastlines and to nest along cliff ledges, peregrine falcons could live in the project area (USFWS 1995). No peregrine falcon nests were found in the project area during on-site surveys and none were observed flying in the area. It is probable that this species forages occasionally in or near the project area. It is unlikely that the proposed projects would affect peregrines' foraging, which involves attacking and killing its prey, primarily birds, in the air (USFWS 1995). In addition, peregrine falcons are known to coexist with urban development to the point of nesting in human-made structures in urban areas, making it unlikely that project activities would affect this species. A biologist would survey the project area prior to the onset of construction to ensure that no nests were located in or near the project area.

Western snowy plover. This species is not expected to be affected by the proposed projects because its breeding grounds are not in the project area and its feeding habitat is not restricted to the project area. The snowy plover nests along coastal beaches near rivers, sandspits, and salt ponds and forages in shallow water (USFWS 1999). Isolation from interaction with humans and dogs is an important component to the plover's habitat requirements, with nesting occurring mainly in areas of low human, cat, and dog disturbances (USFWS 1999; Stallcup 2001). No existing nests or suitable habitat were observed during the site surveys.

Marbled murrelet. This species is not expected to be affected by the proposed projects because there is no breeding habitat in the project area. Murrelets nest in old growth stands and require moderate to high canopy closure (Thelander et al. 1994). Foraging activities of marbled murrelets in offshore waters are unlikely to be affected by project activities because there would be no in-water activity and limited noise produced as a result of the short-term construction activities. The closest known nest is within Big Basin State Park, which is approximately 30 miles from the project area.

8.2.2 Partial Bluff Armoring with Full Improvements (Alternative 2)

Potential impacts on biological resources under Alternative 2 would be similar to those under Alternative 1. Because there would still be some bluff armoring work, there would still be risks of construction-related siltation without the appropriate mitigation measures. Bluff construction would still occur along portions of the cliff face, resulting in an impact on vegetation.

Significant Impacts

Impact 8.4 Disturbance of Intertidal Habitat (Construction Related)

Construction related impacts on intertidal habitat during construction under Alternative 2 would be the same as those described under Alternative 1, with the exception that the construction period would be shorter because less armoring would be performed, resulting in slightly less impact.

Mitigation 8.4

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.5 Disturbance of Subtidal and Nearshore Habitat (Construction Related)

Impacts on subtidal and nearshore habitat during construction under Alternative 2 would be the same as those described under Alternative 1, with the exception that the construction period would be shorter because less armoring would be performed, resulting in slightly less impact.

Mitigation 8.5

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.6 Disturbance of Special Status Species (Construction Related)

Impacts on special status species during construction under Alternative 2 would be the same as those described under Alternative 1.

Mitigation 8.6

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Nonsignificant Impacts

Disturbance of Intertidal Habitat (Loss or Alteration)

Loss or alteration impacts on intertidal habitat during construction under Alternative 2 would be the same as those described under Alternative 1, with the exception that the construction period would be shorter because less armoring would be performed, resulting in slightly less impact.

Disturbance of Cliff Habitat

Most of the cliff faces in the construction area contain ice plant and other non-native species, and removing these species is a nonsignificant impact. This impact is similar to that associated with Alternative 1, except that the construction period would be shorter because less armoring would be performed, resulting in less impact.

Disturbance of Offshore Habitat

Noise and sedimentation impacts on offshore habitat would be the same as those described under Alternative 1 except that the construction period would be shorter because less armoring would be performed, resulting in less impact.

Beneficial Impacts

Disturbance to Intertidal, Subtidal and Nearshore Habitats

These impacts would be the same as those associated with Alternative 1.

8.2.3 Partial Bluff Armoring with Limited Improvements (Alternative 3)

Potential impacts on biological resources under Alternative 3 would be similar to those under alternatives 1 and 2. Because bluff armoring work would still be performed, the risks of siltation associated with construction operations, and of fuel spills associated with equipment usage, still

would be present without appropriate mitigation measures. As with the other alternatives, most of the construction would be performed from the top of the cliff where possible. Therefore, even though only the Purisima bedrock would be armored, vegetation on the cliff face would be affected by construction along the cliff face. Construction of the foundation for the bluff protection structures, armoring of the Purisima bedrock, and removal of riprap and rubble, would take place on the beach and would require use of bulldozers and backhoes.

Significant Impacts

Impact 8.7 Disturbance of Intertidal Habitat (Construction Related)

Construction-related impacts on intertidal habitat under Alternative 3 would be the same as those described under Alternative 2.

Mitigation 8.7

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.8 Disturbance of Subtidal and Nearshore Habitat (Construction Related)

Impacts on subtidal and nearshore habitat during construction under Alternative 3 would be the same as those described under Alternative 1.

Mitigation 8.8

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.9 Disturbance of Special-Status Species (Construction Related)

Impacts on special status species during construction under Alternative 3 would be the same as those described under Alternative 1.

Mitigation 8.9

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Nonsignificant Impacts

Disturbance of Intertidal Habitat (Loss or Alteration)

Loss or alteration impacts on intertidal habitat during construction under Alternative 3 would be the same as those described under Alternative 1.

Disturbance of Cliff Habitat

As with Alternative 1, most of the cliff faces in the construction area contain ice plant and other non-native species. Removal of these is a nonsignificant impact.

Disturbance of Offshore Habitat

Noise and sedimentation impacts on offshore habitat would be the same as those described under Alternative 1.

Beneficial ImpactsDisturbance to Intertidal, Subtidal and Nearshore Habitats

These impacts would be the same as those associated with Alternative 1.

8.2.4 Groins and Notch Infilling(Alternative 4)

This alternative differs from alternatives 1, 2, and 3 in that the activity could change the character of portions of the intertidal area by constructing groins and increasing the deposition of sand in the area, thereby possibly covering tide pools and intertidal habitat.

Significant ImpactsImpact 8.10 Disturbance of Intertidal Habitat (Construction Related)

Alternative 4 would have substantial construction related impacts on intertidal habitat. Groins would be placed directly in the intertidal area, affecting the areas covered and the areas disturbed during construction. This alternative would also result in the annual development of a broader beach in front of the project area. Groins would extend approximately 100 feet from the existing shore and as a result, would create wide enough beaches to protect the bluffs under some conditions.

Under this alternative, all construction would take place directly on the beach and in the water. As a result, the potential for short-term siltation and spilled fuel to affect intertidal habitat, including tide pools, during construction would be higher than that under alternatives 1, 2, and 3. Construction under alternatives 1, 2, and 3 would be focused on an area of beach closer to the bluff face; therefore, it would be possible to separate the activity from sensitive intertidal areas by placing riprap and barriers between the construction area and the intertidal area. In the case of Alternative 4, however, all construction would occur in the intertidal area. As a result, potential fuel spills and short-term siltation would be more likely to enter the intertidal and offshore habitats under Alternative 4. As a result of these activities, significant, short-term adverse impacts on the intertidal habitat would be more likely to occur.

Mitigation 8.10

To minimize disturbances to intertidal habitat during construction, mitigations proposed for the intertidal habitat under Mitigation 8.1 shall be implemented under this alternative when applicable. However, while implementing these mitigation measures may help reduce some significant impacts to a less than significant level, overall, the short-term impacts related to intertidal habitats would be an unavoidable adverse impact.

Impact 8.11 Disturbance of Subtidal and Nearshore Habitat (Construction Related)

A significant increase in siltation during construction or fuel spills that enter the waters of MBNMS could adversely affect kelp habitat occurring in the subtidal and nearshore area surrounding the project area. This impact is more likely under Alternative 4 because most of the

construction activity would occur directly on the beach (intertidal area) and in the water. The addition of three subtidal groins to trap sand and form protective beaches would alter the subtidal and nearshore habitat and may negatively affect use of this area by fish, invertebrates, and marine mammals.

Mitigation 8.11

To minimize disturbances to subtidal and nearshore habitat during construction, mitigations proposed for the subtidal and nearshore habitat under Mitigation 8.2 shall be implemented under this alternative when applicable. Additionally, if shotcrete is used to cover the surface of the groin, it shall be applied only at periods of low tide, so as not to affect water quality in the area.

However, while implementing these mitigation measures may help reduce some significant impacts to a less than significant level, overall, the short-term impacts related to the surrounding aquatic habitats would be an unavoidable adverse impact.

Impact 8.12 Disturbance of Special Status Species

Impacts on special status species during construction under Alternative 4 would be the same as those described under Alternative 1.

Mitigation 8.12

Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.

Impact 8.13 Disturbance of Intertidal Habitat (Loss or Alteration)

The most significant impact on the intertidal area from Alternative 4 is the destruction of portions of the intertidal habitat. Groins would be placed directly in intertidal habitat, and would extend approximately 100 feet from the existing shore. The trapped sand would extend the beach out to an estimated maximum of 75 feet in the summer immediately upcoast of each groin, replacing intertidal habitats with upland beach habitat. During the winter, the beach is expected to narrow under average winter conditions. During normal summer/winter beach changes, summer beaches widen, covering part of the intertidal zone with sand. Flora and fauna have adapted to this natural process, either by withstanding some burial by sand, by migrating, or by recolonizing. Any materials generated from groin construction would be from existing bluff materials, such as Purisima Formation or terrace deposits. These materials would be similar to the natural materials added to the beach and intertidal zone during normal bluff erosional processes (Griggs 2002).

Mitigation 8.13

To minimize disturbances to intertidal habitat during construction, mitigations proposed for the intertidal habitat under Mitigation 8.1 shall be implemented under this alternative when applicable. The loss of intertidal habitat that is part of the Alternative 4 design would naturally result in the development of intertidal habitat further from the existing intertidal habitat. This would reduce the extent of long-term habitat loss and alteration, however, there would be unavoidable adverse impacts on intertidal habitat.

Nonsignificant Impacts***Disturbance of Cliff Habitat***

As with Alternative 1, most of the cliff faces in the construction area contain ice plant and other non-native species. Removal of these is a nonsignificant impact.

Disturbance of Offshore Habitat

Noise and sedimentation impacts on offshore habitat would be the same as those described under Alternative 1.

Beneficial Impacts***Disturbance to Intertidal, Subtidal and Nearshore Habitats***

These impacts would be the same as those associated with Alternative 1, but incrementally greater through the creation of more sandy beach area.

8.2.5 No Action Alternative***Disturbance of Intertidal Habitat***

Under the No Action Alternative, sections of the beach and cliff would continue to erode and would continue to contribute to sedimentation of intertidal habitat. This impact would result in a decrease in water quality which diminishes the quality of the habitat to intertidal species. Increased sediment load could occur as portions of the cliff fail and after severe storms, which would result in lowered visibility and primary production. These effects would be short-term and are part of normal erosion patterns.

Disturbance of Subtidal and Nearshore Habitat

Under the No Action Alternative, subtidal and nearshore habitat are expected to have lowered water quality at times, and would be impacted in a similar manner as intertidal habitat.

Disturbance of Special Status Species

Special status species foraging in intertidal, subtidal and nearshore habitats within the ROI are expected to face reduced visibility at times which may impair their foraging success. This impact would be limited in duration, would occur after severe storms and cliff failure, and would not likely have a demonstrable affect on their reproductive fitness and in their local population levels.

Disturbance of Cliff Habitat

Under the No Action Alternative, sections of the bluffs in the project area are expected to continue to erode if no measures are taken to prevent future erosion. The cliff face in the project area is of limited ecological value due to the abundance of non-native species, including invasives such as ice plant, and regular exposure to high impact human activities. Therefore, loss of this habitat coupled by the creation of new cliff surfaces that would occur as the water line advances would result in a neutral impact on cliff habitat and the species that utilize this area.

Disturbance of Offshore Habitat

Under the No Action Alternative, siltation entering waters of the MBNMS would increase, due to the expected increased rate of bluff retreat. Erosion could affect habitat offshore of the project area by increasing turbidity and decreasing water quality. This effect is likely to continue indefinitely if erosion in the area is left unchecked. However, the difference between overall sedimentation between the No Action Alternative and the proposed action would be small. This is due to the limited size of the project area and because the largest sediment load comes from streams, such as the San Lorenzo River and Soquel Creek.

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