

## D.3 Biological Resources

### D.3.1 Environmental Setting for the Proposed Project

The biological resources setting for the Proposed Project is based on the information obtained from past studies and surveys, environmental review documents, and field observations at the SONGS facility and within the boundaries of the U.S. Marine Corps Base Camp Pendleton (MCBCP). Three primary documents were utilized in preparing the biological setting and impact discussions of this EIR. These include the MCBCP Integrated Natural Resources Management Plan (INRMP) (MCBCP, 2001), the Environmental Assessment for the Transport of the SONGS Unit 1 Reactor Pressure Vessel Package Transport System on MCBCP (SONGS 1 EA) (URS, 2002), and the Proponent's Environmental Assessment for the Replacement of the SONGS 2 & 3 Steam Generators (PEA) (URS, 2004). The INRMP was prepared by Camp Pendleton for the purpose of cataloging and managing natural resources on MCBCP while completing their mission of military readiness between the years 2002 and 2007. Biological data used for the preparation of the INRMP was compiled over various years by researchers and consultants and included focused surveys of sensitive flora and fauna between the years of 1992 and 2001 (MCBCP, 2001). The SONGS 1 EA was prepared for the purpose of analyzing the potential effects of transporting the reactor vessel from SONGS for the MCBCP Boat Basin (the opposite route direction as the Proposed Project). As part of preparing both the SONGS 1 EA and the Proposed Project PEA, URS biologists reviewed the existing vegetation mapping and sensitive species data provided by MCBCP by overlaying the data on aerial photographs and field verifying information on October 4 and 7, 2002, and on August 6, 2003 (PEA, 2004). Vegetation communities surrounding the proposed and alternative routes were verified and modified as necessary by URS to reflect current conditions and any new observations of sensitive flora and fauna were recorded.

In preparation of this EIR, Aspen reviewed relevant literature and biological documentation including the INRMP (MCBCP, 2001), SONGS 1 EA (URS, 2002), and the Proposed Project PEA (URS, 2004). The vegetation communities and sensitive species locations mapped by these three sources were used to determine the potential for the Proposed Project and the two alternative transport routes to directly or indirectly impact sensitive flora and fauna listed in the CNDDDB (2004) for the Las Pulgas, San Onofre Bluff, San Clemente, and Oceanside USGS Quadrangles. In addition, Aspen conducted a reconnaissance survey of the Proposed Project and alternative routes on November 5, 2004.

The SONGS facility occupies 84 acres of almost entirely paved and developed areas; therefore, no terrestrial species that are currently listed or proposed for listing by the State of California or the federal government as either threatened or endangered are known to utilize the facility. In contrast, the Proposed Project transport route and the two alternative transport routes would be located adjacent to several sensitive vegetation communities and known occurrences of sensitive flora and fauna. The majority of the setting and impact discussions for terrestrial biological resources are focused on the Proposed Project transport route and the two alternative transport routes.

The study area for marine biological resources also includes those areas extending from mean high tide line seaward. The environmental setting is presented for the ocean area immediately offshore of SONGS, and includes general descriptions of fauna within the southern California bight where applicable.

### D.3.1.1 Vegetation Communities and Habitats

Vegetation communities throughout MCBCP were mapped and described by Zedler et al (1997) later used in the MCBCP INRMP (MCBCP, 2001). The vegetation communities surrounding the proposed and alternative routes were verified and modified as necessary by URS in the PEA (URS, 2004). The plant communities identified in the Proposed Project area are shown on Figure D.3-1. The proposed route either supports or is adjacent to four plant communities described in Table D.3-1.

Table D.3-1. Vegetation Communities on MCBCP

Community	Community Characteristics
Non-Native Grassland/Ruderal	Non-native grassland occurs throughout the proposed and alternative transport routes in the vicinity of disturbed areas, roadsides, cut or filled slopes, and military staging and transport areas. Ruderal and non-native weeds and grasses are fast growing compared to native perennial grasses and sage scrub species, and tend to out-compete native species when habitat areas are disturbed. Common species include short-podded mustard ( <i>Hirschfeldia incana</i> ), mustard, wild radish ( <i>Raphanus sativus</i> ), and several species of non-native grasses including ripgut grass ( <i>B. diandrus</i> ), foxtail chess ( <i>B. madritensis ssp. rubens</i> ), wild oat ( <i>Avena fatua</i> ), and foxtail fescue ( <i>Vulpia myuros var. myuros</i> ).
Coastal Sage Scrub	Coastal sage scrub occurs throughout the proposed route on canyons, steep slopes, and areas that are fenced or marked as "Environmentally Sensitive Habitat." Common species include California sagebrush ( <i>Artemisia californica</i> ), California buckwheat ( <i>Eriogonum fasciculatum</i> ), deer weed ( <i>Lotus scoparium</i> ), laurel sumac ( <i>Malosma laurina</i> ), coast golden bush, and black sage ( <i>Salvia mellifera</i> ).
Riparian Forest	Riparian forest occurs in the various creeks and rivers that transect the Proposed Project and alternative routes from the MCBCP Boat Basin to Red Beach, including the Santa Margarita River, Cockleburr Canyon Creek, Aliso Canyon Creek, and Las Flores Creek. Common species include red willow ( <i>Salix laevigata</i> ), arroyo willow ( <i>Salix lasiolepis</i> ), narrow-leaved willow ( <i>Salix exigua</i> ), black willow ( <i>Salix gooddingii</i> ), western sycamore ( <i>Platanus racemosa</i> ), Fremont's cottonwood ( <i>Populus fremontii</i> ), and mule fat ( <i>Baccharis salicifolia</i> ).
Estuary	Estuarine habitat occurs at the mouth of the Santa Margarita River, Cockleburr Canyon Creek, Aliso Canyon Creek, and Las Flores Creek where riparian forest transitions into a combination of salt marsh, salt pans, and brackish and freshwater marsh areas. Common species include pickleweed ( <i>Salicornia bigelovii</i> , <i>S. europaea</i> , and <i>S. virginica</i> ), alkali heath ( <i>Frankenia grandifolia</i> and <i>F. salina</i> ), salt grass ( <i>Distichlis spicata</i> ), shore grass ( <i>Monanthochloe littoralis</i> ), sea-lavender ( <i>Limonium californicum</i> ), bulrush ( <i>Scirpus microcarpus</i> ), alkali bulrush ( <i>S. robustus</i> ), California bulrush ( <i>S. californicus</i> ), and cattail ( <i>Typha latifolia</i> and <i>T. domingensis</i> ).

Source: URS, 2004.

### Replacement Steam Generator Transport Route

The Proposed Project transportation route generally follows disturbed areas of beach sand that are regularly used by the military as roads, including stream crossings at their confluence with the Pacific Ocean, unvegetated dirt roads, and paved roads. Figure D.3-1 shows the locations of photos of the routes presented in this section. Therefore, areas of direct impact would be limited to two off-road transition points from a dirt road to I-5 and then back again. Adjacent to the transport route are several native and non-native plant communities that would not be directly impacted, but may support sensitive species that could be indirectly impacted by light and noise. For this reason, adjacent vegetation communities have been included in the following description of the proposed transport route from the Camp Pendleton Del Mar Boat Basin to the SONGS facility located approximately 15 miles to the north.

**Segment A.** The initial segment of the Proposed Project occurs at the Camp Pendleton Del Mar Boat Basin, traversing paved and unpaved roads on the east side of the parking lot (see Figure D.3-2). The shore of the Camp Pendleton Del Mar Boat Basin, bulkhead, and surrounding slopes are unvegetated. Marine vegetation adjacent to the boat basin is also absent. This includes emergent or submergent marine

Figure D.3-1. Proposed Project and Alternative Transport Routes Photo Locations

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Figure D.3-2. Photographs – Boat Basin and Bulkhead  
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vegetation such as alga or eelgrass (*Zostera marina*). The unpaved road from the boat basin to the beach is also unvegetated and surrounded by the Camp Del Mar to the west and a MCBCP storage facility to the east. Beyond the storage facility to the north is one small patch of chaparral vegetation consisting almost entirely of coyote brush (*Baccharis pilularis*). This vegetation is protected by chain link fencing that surrounds the adjacent military vehicle storage and training facility.

**Segment B.** At the north end of Camp Del Mar, the route continues to the north on the dirt access road for approximately 0.25 miles at which point the road turns west towards the beach. This turn is adjacent to the mouth of the Santa Margarita River and Estuary. No vegetation occurs along the entire length of this transition from the boat basin through Camp Del Mar and onto the beach (see Figure D.3-3). The transition of the dirt road onto the beach is delineated by black plastic fencing and wood stakes to protect the sand dunes surrounding the Santa Margarita River Estuary. Traveling north along the beach, the route crosses the mouth of the Santa Margarita River and travels adjacent to, but does not include, the estuarine habitat of the Santa Margarita River. This estuarine habitat and beach habitat is protected as nesting areas for the least tern (*Sterna antillarum*) and western snowy plover (*Charadrium alexandrinus nivosus*) two State and federal listed species (Section 3.1.2, Wildlife). The area is delineated by fencing and access is prohibited (see Figure D.3-4). The river mouth is subject to tidal and fresh water flows, which typically cause the mouth of the river to be closed in the summer and open in the winter. The river and estuary mouth is unvegetated; however, the route would likely cross open water.

**Segment C.** The transport route continues north along the unvegetated beach. The beach through MCBCP is used regularly as a military road and training area including the use of heavy equipment such as tanks and amphibious vehicles (see Figure D.3-5). The dunes to the east of the beach support red sand verbena (*Abronia maritima*), a California Native Plant Society (CNPS) List 4 species (URS, 2004); however, this area is outside of the transport route and would not be affected by the Proposed Project. The route continues north on the beach military road for approximately 8 miles to Red Beach, near Las Pulgas Road. Within the 8 miles, the route passes Cocklebur Canyon Creek, Aliso Canyon Creek, and Las Flores Creek. Each of these creeks is vegetated with willow riparian habitat and estuarine habitat east of the beach. However, the mouth of each is unvegetated and is outside of the proposed transport route and would not be directly affected by transport of the RSG units (see Figure D.3-5). Several pairs of least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and California gnatcatcher (*Polioptila californica californica*) are known to occur in the vicinity of the of creek mouths (Section 3.1.2, Wildlife).

**Segment D.** North of Las Flores Creek, a distance of approximately 0.40 miles, the transport route turns east heading uphill on a wide (approximately 150-foot) unvegetated dirt road toward I-5 near the Las Pulgas Road exit (see Figure D.3-6).

**Segment E.** Up the hill from Red Beach the dirt road turns north and runs adjacent to I-5 for approximately 0.20 miles toward Skull Canyon (see Figure D.3-7). Ruderal habitat occurs on both sides of the dirt road consisting of annual grasses (*Bromus* spp.), mustard (*Brassica* spp.), and red-stem filaree (*Eriodinium cicutarium*). Coyote brush is also present but to a limited extent. The road is unvegetated and heavily used by the MCBCP; however, there are ephemeral pond features located along the road. Fairy shrimp of the genus *Branchinecta* were observed in the ponds. Because of the known populations of fairy shrimp on MCBCP, this species of fairy shrimp is assumed to be the federally endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) (Section 3.1.2, Wildlife). No vegetation was observed in these ponding features.

**Segment F.** In order to avoid rugged and steep terrain in Skull Canyon, the route transitions from the dirt road to I-5 for approximately 0.20 mile. The transition from the dirt road to I-5 would occur by removing chain link fencing protecting the southbound lane of the interstate and temporarily disturbing ruderal habitat in two locations (see Figure D.3-8). The habitat consists of a mixture of non-native annuals as described above with scattered populations of coast golden bush (*Isocoma menziesii*) and coyote brush located adjacent to I-5.

**Segment G.** After transitioning back to the dirt road from I-5, the route continues for approximately 1 mile between Skull Canyon and the I-5 viewpoint. The dirt road in this location is heavily used for military purposes and is unvegetated. Surrounding the road is a mixture of coastal sage scrub, annual grassland, and ruderal habitat. The dirt road continues to support scattered unvegetated ephemeral ponds with populations of fairy shrimp of the genus *Branchinecta*. At the end of Segment G, at the transition point with Segment H, there was one ponding feature with marginal wetland vegetation north of the road (see Figure D.3-8) and fairy shrimp of the genus *Branchinecta* were observed. Vegetation within this pond included mule fat (*Baccharis salicifolia*, FACW), coyote brush (FACU), and curly doc (*Rumex crispus*, FACW). Ruderal habitat, including annual grasses, mustard and sweet fennel (*Foeniculum vulgare*) surrounds the pond and extends to the north and partially up the hillside. The only native species observed in the ruderal habitat was coyote brush. The width of the dirt road is wide enough that the pond and ruderal habitat is located outside of the potentially affected area (see Figure D.3-9).

**Segments H through J.** Surrounding the intersection of the dirt road with the paved Old Highway 101, near the I-5 viewpoint, is coastal sage scrub habitat including coyote brush, California bush sunflower (*Encelia californica*), and coast golden bush (see Figure D.3-10). The habitat at this location is marked by orange-colored plastic posts that identify the area as an “Environmentally Sensitive Area.” These posts delineate sensitive habitat warning military vehicles to remain on the dirt road. The dirt road transitions to pavement approximately half way up the hill where a “Y” turn would need to be made onto Old Highway 101. Classic vernal pools are mapped approximately 100-feet from the “Y” turn and possibly support Camp Pendleton button celery (*Eryngium pendletonensis*) and Blockman’s dudleya (*Dudleya blockmaniae*), CNPS list 1B species, and San Diego button celery (*E. aristulatum* var. *parishii*), listed as federally Endangered. However, the dirt and paved roads are wide enough to accommodate the transport vehicle; therefore, the vernal pool areas are outside of the area of potential effect.

The route continues on paved roads through Segment H, Segment I, and Segment J for 5.5 miles into the SONGS facility. Non-native grassland and ruderal habitat are present on both sides of Old Highway 101. Beyond the non-native grassland and ruderal habitats is coastal sage scrub to the west and railroad tracks to the east. This community is expected to be outside of the area of potential effect since the width of the road is sufficient for the transport vehicle.

### Staging and Preparation

The SONGS facility occupies 84-acres of almost entirely paved and developed areas. The facility is surrounded by riparian and sage scrub communities along the beach to the west and ornamental landscaping, consisting primarily of non-native eucalyptus trees, along Basilone Road. On the east side of I-5 are patches of native grassland and coastal sage scrub habitat. All activities within the SONGS facility, including staging, would occur on paved and developed ground. No impacts to vegetation would occur. The Proposed Project would use existing SONGS 2 & 3 facilities to the greatest extent practicable; however, additional temporary facilities would be required to support the Proposed Project. These facilities include staging, warehouse, training, fabrication, and office space. The temporary facilities would



Figure D.3-3. Photographs – Segment A (Camp Del Mar/Beach Transition)

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Figure D.3-4. Photographs – Segment B (Santa Margarita River Estuary and Nesting Habitat)  
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Figure D.3-5. Photographs – Segment C (Beach Military Road)

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Figure D.3-6. Photographs – Segment D (Red Beach/Dirt Road Transition)

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Figure D.3-7. Photographs – Segment E (Dirt Road Parallel to I-5)

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Figure D.3-8. Photographs – Segment F (Dirt Road and I-5 Transition)

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Figure D.3-9. Photographs – Segment G (Dirt Road/Old Highway 101 Transition)

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Figure D.3-10. Photographs – Segment H (Dirt Road/Old Highway 101 Transition “Y” Turn)  
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likely be placed on the Mesa property, located on the east side of I-5 and the SONGS 2 & 3 facility. The Mesa is currently developed with office buildings, a campground, and other support facilities. Therefore, any temporary facilities constructed for the replacement steam generators would be located on paved, developed, or previously disturbed areas.

### D.3.1.2 Wildlife Resources

As described in Section D.3.1.1, the SONGS facility is almost entirely paved and developed with ruderal and sage scrub communities along the beach to the west and ornamental landscaping, primarily eucalyptus trees, along Basilone Road. Most native wildlife would not be expected to rely exclusively upon these paved and developed areas. Furthermore, noise and light from operations at SONGS would likely deter native species from utilizing the isolated patches of sage scrub located to the north adjacent to the parking lot, as well as to the east adjacent to Basilone Road and I-5. Although native wildlife may occasionally occur on parking lots, roads, or other disturbed surfaces, these areas are not important habitats for their survival. The diversity of wildlife species utilizing developed portions of the SONGS facility is likely low and limited to common non-native species and a few native species that can utilize developed areas. Species that could utilize the SONGS facility include common reptiles such as western red-tailed skink (*Eumeces gilberti rubricaudatus*), side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis catenifer*), and the western rattlesnake (*Crotalus viridis*). Avian species including mourning dove (*Zenaida macroura*), say's phoebe (*Sayornis saya*), California horned lark (*Eremophila alpestris*), western scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), Bewick's wren (*Thryomanes bewickii*), and northern mockingbird (*Mimus polyglottos*), may be able to utilize open surfaces or structures. Several species of raptors are also likely to occur nearby, and may occasionally forage within developed areas of the site due to the presence of prey species and abundance of man-made perches. Species such as sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*) are expected to occasionally forage adjacent to the proposed disturbance areas. Small mammals are likely common and abundant in the adjacent disturbed communities and may include western harvest mouse (*Reithrodontomys megalotis*), California mouse (*Peromyscus californicus*), deer mouse (*Peromyscus maniculatus*), and the dusky-footed woodrat (*Neotoma fuscipes*). Other larger mammals expected to occasionally utilize the project areas include Virginia opossum (*Didelphis virginiana*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Sylvilagus audubonii*), coyote (*Canis latrans*), and the striped skunk (*Mephitis mephitis*).

In contrast to the SONGS facility, the surrounding MCBCP is the largest remaining tract of land in coastal southern California that has little development and vast pristine habitat. Because of this, MCBCP supports a wide range of terrestrial and aquatic vegetation communities and a diverse assemblage of common and sensitive mammals, birds, reptiles, amphibians, fish, and invertebrates. The MCBCP INRMP sets the agenda for managing these natural resources between the years 2002 and 2007. According to the INRMP, the Base supports hundreds of species of invertebrates, more than 50 mammals, 30 reptiles, 10 amphibians, 300 birds, and 60 fish species. Many of these species are year round residents of MCBCP while others are migratory, inhabiting the Base for a season or using it as a corridor to other habitat areas such as the Cleveland National Forest. Although most of the wildlife on MCBCP are native to the region, several are non-native including beaver (*Castor Canadensis*), brown-headed cowbird (*Molothrus ater*), bullfrog (*Rana catesbeiana*), red swamp crayfish (*Procambarus clarkia*), Argentine ants (*Iridomyrmex humilis*), and mosquito fish (*Gambusia affinis*).

As described in Section D.3.1.1, the Proposed Project transport route includes regularly used sandy beach areas (military road), dirt roads, and paved roads with the exception of two disturbed areas supporting primarily ruderal vegetation. In addition, the SONGS facility is located on primarily developed lands.

Therefore, common and sensitive wildlife along the route are limited to those that are regularly disturbed by military activities including invertebrates and shorebirds. One of these species, the San Diego fairy shrimp (*B. sandiegonensis*), may occur directly within the route, utilizing ephemerally ponding road ruts. In addition, several sensitive wildlife species have been mapped adjacent to the transport route and outside the direct impact areas including the Western snowy plover, tidewater goby (*Eucyclogobius newberryi*), and the California gnatcatcher. Because these species could migrate into the transport route, sensitive wildlife occurring adjacent to the transport route, as well as those directly within the route, are discussed in further detail under Section D.3.1.4.

### D.3.1.3 Marine Biological Resources

This section summarizes the marine biological resources near the SONGS facility and along the adjacent coast. Refer to Appendix 2 of this EIR for a detailed description of the marine resources along the coast of southern California.

#### *Plankton*

The term “plankton” refers to organisms that have limited or no swimming ability, and drift or float along with ocean currents. The two broad categories of plankton are phytoplankton and zooplankton. Phytoplankton, or plant plankton, form the base of the food web by photosynthesizing organic matter from water, carbon dioxide, and light. They are usually unicellular or colonial algae, and support zooplankton, fish, and through their decay, large quantities of marine bacteria.

Zooplankton are those animals that spend part (meroplankton) or all (holoplankton) of their life cycle as plankton. They are a primary link between phytoplankton and larger marine organisms in marine food webs. Ichthyoplankton, or fish eggs and larvae, are a third important component of the zooplankton community. With the exception of a few fish species (e.g., the embiotocidae or surfperches that bear live young), most fish that occur in southern California release sperm and eggs into the water, where the eggs are then fertilized. The resulting young are initially sustained by a small supply of yolk as they drift in the water column with other plankton. Soon, however, the larvae begin to feed actively on other planktonic organisms. After one to three months, they develop to a stage at which they can actively swim and resemble smaller versions of their adult forms. At this point, they are no longer considered “planktonic.”

Plankton distribution, abundance, and productivity are dependent on several environmental factors including light, nutrients, water quality, terrestrial runoff, and upwelling. Plankton distribution tends to be very patchy, with high seasonal and inter-annual variability along the California coastline. Because phytoplankton are photosynthetic, they are generally limited to the photic zone, while zooplankton can occur throughout the water column. Fish production is highly dependent on the growth and productivity of both phytoplankton and zooplankton (Ryther, 1969), and fishery yields increase exponentially with increasing primary production in marine environments (Hanson and Leggett, 1982; Nixon, 1988). A detailed description of plankton communities along the southern California coast is provided in Appendix 2.

#### *Kelp*

Giant kelp, *Macrocystis pyrifera*, is a valuable commercial resource as well as providing food and shelter for many other marine species. Adult giant kelp plants are anchored by holdfasts to hard substrate on the ocean floor, and have fronds that may extend to the ocean’s surface. They occur in water up to 100 feet (approximately 30 meters) deep, and form dense stands known as kelp forests or “beds.” Although smaller species of algae also grow in these kelp beds, giant kelp provide most of the three-dimensional structure characteristic of this unique habitat.

Kelp resources in the project area off the coast of southern California are comprised of two primary kelp bed areas, the San Onofre Kelp Forest to the north, and the San Mateo Kelp Forest to the south (SEC, 2003). The highly transitory nature of these kelp beds has been well documented since 1978. The seafloor beneath the San Onofre Kelp Forest is composed primarily of cobble and sand. Thus, the main substrate available for kelp attachment is cobble, which proves unstable as the attached giant kelp grows.

Additionally, these beds periodically disappear in response to increased grazing by urchins and fishes, climatic events such as El Niño, increases in turbidity, and changes in substrate composition.

Kelp beds provide food and shelter for a diverse assemblage of fish species. In general, kelp beds are thought to provide refuge and enhance production of fishes. The MRC performed a study to estimate effects of operations at SONGS on fish associated with kelp beds in the vicinity of the plant (MRC, 1989a). Among the 40 species of fish sampled in the MRC study, a few (kelp perch and giant kelp fish) are particularly associated with kelp, while others (e.g., kelp bass, senorita, halfmoon, rock wrasse, and California sheephead) are associated with reefs (hard substrate) in general. Other fish common in the area are observed in and near kelp beds (e.g., northern anchovy and jack mackerel). Some species (e.g., kelp bass) occur as adults on reefs without kelp, but appear to favor kelp beds as nurseries during their first year of life. While many of the species from the MRC study occur throughout the water column, most of the species are found more often either close to the bottom (demersal), or further up in the midwater (pelagic). For example, California sheephead, rock wrasse, barred sand bass, and black seaperch are found almost exclusively just above the hard substrate, whereas species such as halfmoon and kelp perch occur higher up in the water column. Fish species associated with kelp beds, such as kelp bass and California sheephead, are also important sportfish species.

### ***Hard Substrate***

High-relief hard-substrate seafloor features (reefs) have long been recognized as sensitive marine habitats. However, based on the available information about the sub-bottom stratigraphy in the project area, wide areas of high-relief seafloor structures are not present. Rather, patches of low-relief, rocky terrain support sparse communities comprised of hardy epiphytes that are able to withstand the increased turbidity and scour near the seafloor. These patches often coincide with the locations of historical kelp beds, such as the San Onofre Kelp Forest and San Mateo Kelp Forest.

Otherwise, the seafloor out to the 50-foot depth contour, which lies approximately 1.6 nm from shore, is dominated by a thick layer of fine-gray sands and mud. Beyond the 50-foot contour and out to the 100-foot contour, which lies 2.4 nm from shore, the continental shelf slopes gently at approximately 1/3 degree to the southwest. Within this depth range, the seafloor consists of a thin layer of fine sand overlying Monterey Formation bedrock. Beyond the 100-foot contour, the bottom slope increases to approximately 3/4 degree. Bottom soils along the continental slope at this location consist of a 15- to 25-foot section of loose sands and silts overlying an older sediment layer that is approximately 20 feet thick. The Miocene Monterey Formation underlies these two soil layers.

The Pendleton Artificial Reef (PAR), located approximately 3.5 km south of the project site, represents a significant high-relief hard-substrate habitat that may support sensitive marine species. However, most of the information about this reef is dated and site-specific surveys would be required to determine its current status. PAR was the subject of detailed biological surveys in the decade after it was built in 1980. Quantitative studies of fishes, macroinvertebrates, and macroalgae at PAR began in 1984 and a detailed inventory of the reef community in these early years has been well documented. For example,

24 species of fishes were observed at PAR from 1984 to 1986. The ten most abundant and consistently observed fishes during this period were the blacksmith, seniorita, sheephead, rock wrasse, black perch, kelp bass, garibaldi, halfmoon, opaleye, and barred sand bass. The succession of epibiota has also been the subject of intense scientific inquiry although the current status of its marine community is unknown.

### ***Fish***

The fish resources in the project area off the coast of southern California are comprised of both year-round residents and seasonal migrants. Within the larger Southern California Bight area over 500 species of fish are known to occur (USDOJ, 1996a). This high level of diversity is reflective of the complex hydrographic, physical, and geologic conditions of the region that provide a wide variety of habitats for fish resources. The distribution of fishes in the area fluctuates on a daily, seasonal, and annual basis for many reasons including food availability, environmental conditions, and migration (USDOJ, 1996a).

The offshore environment can generally be divided into several zones. For fishes in the project area, two primary zones are the benthic or shelf, and pelagic zone. Demersal fish species are those that live on or near the seafloor (benthic environment), while pelagic or midwater fish species occur within the water column.

At least 60 species of pelagic fish occur in the vicinity of SONGS (MRC, 1989a). Among the ten most common species, only the northern anchovy is a major commercial resource, although Pacific mackerel, Pacific barracuda, and white croaker are popular as sport fish. The remaining common pelagic fish are typically small schooling species that are important as food for the larger sport and commercial species. The most abundant species by number, of midwater fish, are northern anchovy (63%), queenfish (16%), white croaker (3%), and three species of silversides (5%). The queenfish and white croaker found in the midwater are generally younger individuals, while older and larger members of these species are usually found closer to the bottom. However, occurrences of these two species are common at all depths in the nearshore water column. In contrast, larger predatory fish, such as Pacific mackerel and jack mackerel, become relatively common only in deeper waters. The range of the northern anchovy is more widespread, encompassing both near and offshore waters.

Demersal species of fish in the vicinity on SONGS include the larger bottom-oriented individuals of white croaker (28%) and queenfish (12%) mentioned previously, as well as several additional species having sport or commercial value, such as longfin sanddab (7%), hornyhead turbot (2%) and California halibut. At least 68 demersal fish species have been identified in the vicinity of SONGS (MRC, 1989a). The majority of these demersal species are part of the group of fish referred to commonly as flatfish, or flounders. These fish are unique in that both eyes are on the same side of the body. They lie camouflaged on the sea bottom, often burying themselves in the top layer of sediments, with only their eyes exposed. Large flatfish species, such as California halibut and English sole, have important commercial value as food fish. They, in turn, eat a varied diet, including small fishes, squid, and octopi. The diet of the California Halibut is almost exclusively made up of anchovies and other small fish, while that of the smaller sanddabs is known to include eggs, sea squirts, shrimp, crabs, and even marine worms. Information on species composition, abundance, and the distribution of demersal and pelagic fish communities in the project area is outlined in Appendix 2.

### ***Marine Mammals***

Over 30 marine mammal species are found in the waters of the Southern California Bight, including cetaceans (i.e., whales, dolphins, and porpoises), pinnipeds (i.e., seals and sea lions), and one fissiped (the southern sea otter). This high level of diversity is largely due to the Southern California Bight

representing a region of overlap where populations of marine mammals having different biogeographic affinities intermingle (Dohl et al., 1983a). Several marine mammal species reach the southern limit of their ranges in the Southern California Bight, while other species are at their northern range limits (Hubbs, 1960; Bonnell and Daily, 1993). As such, marine mammal species found in the project area can be placed into one of three categories: (1) migrants that pass through the area on their way to calving or feeding grounds, (2) seasonal visitors that remain for a few weeks to feed on a particular food source, and (3) residents of the area.

In late summer and autumn, marine mammals found in warmer waters to the south are found in central California. Examples include the California sea lions and northern elephant seals, bottlenose dolphins and pilot whales. Boreal species, which are marine mammals found in the cooler waters of the North Pacific, occur in central California during winter through early summer. They are found in areas of coastal upwelling and in the coolest waters of the California current. Example boreal species include Dall's porpoises, harbor porpoises, and the northern fur seals.

The gray whale is the largest marine mammal most likely to be encountered near the project site. Gray whales can be present in the area from December to May, as they migrate to and from their birthing grounds in Mexico. The greatest numbers of gray whales along the California coast occur in January during the southward migration, and in March during the northward migration. Although Pacific Gray Whales were removed from the endangered species list in 1994, they remain under the protection of the Marine Mammal Protection Act (MMPA).

The gray whale migration route varies with direction of travel. Between December and February, whales travel south to Mexico in small groups consisting of two to sixteen individuals. They return north between February and April. North of Point Conception, most migrating whales remain close to the coast, in water depth less than 600 feet. During their southerly migration, only 35 percent of the pods turn to follow the mainland coast south of Point Conception. The rest continue directly south, swimming across open waters toward the northern Channel Islands. From there, they proceed to the southern Channel Islands of Santa Catalina and San Clemente, where most whales return to the coast to continue their journey. On the return trip, as they make their way back north, the whales predominately stay closer to the coastline, often within a few hundred yards of the shoreline.

Although the gray whale is no longer listed as endangered, six other whales found within the Southern California Bight, though not as commonly, are listed as endangered. These include five baleen whales and the sperm whale. The five baleen whales, the blue, fin, sei, humpback, and right whales, are distributed worldwide in polar and temperate waters and migrate between warmer waters used for breeding and calving in winter and high-latitude feeding grounds where food is plentiful in the summer. The sixth listed species, the sperm whale, is an open-water species found in temperate to tropical waters in both hemispheres.

In addition to cetaceans, several species of seals and sea lions (pinnipeds) inhabit California coastal waters, four of which are commonly seen in southern California waters. Seals and sea lions have streamlined bodies, hairy coats, large eyes, and whiskers located on either side of their snouts.

Native "true" seals (phocids) include harbor seals and northern elephant seals. These seals lack external ear flaps, have small front flippers, and swim primarily with their rear flippers. In contrast, sea lions or "eared seals" (otariids) include California sea lions and northern fur seals. These animals have small external ear flaps and very large front flippers, which they use for swimming. They can move quickly on land by tucking their rear flippers under their bodies to run on all fours.

### *Sea Turtles*

Although infrequent, sea turtles have occasionally been reported in coastal California. Over the years, four species have been reported in the project area. The four species are the Pacific green turtle (*Chelonia mydas*), the Olive ridley turtle (*Lepidochelys olivacea*), the Pacific leatherback turtle (*Dermochelys coriacea*), and the loggerhead turtle (*Caretta caretta*) (Hubbs, 1977). All of these species are of concern because they are protected under the Endangered Species Act: the Pacific green turtle, Olive Ridley turtle, and Pacific leatherback turtle, are listed as threatened species, while the loggerhead turtle is listed as endangered.

Populations of marine turtles have been greatly reduced due to over harvesting and loss of nesting sites in coastal areas (Ross, 1982). In the eastern Pacific, most of the turtles nest along the coast of Mexico and Central America. The nesting season varies with species, but is generally from May to September (Mager, 1984). Sea turtles breed at sea; and the females return to their natal beaches to lay their eggs (Mager, 1984). Female turtles can nest several times in a season but at two to three-year intervals. The eggs, after being laid in the sand, hatch in about two months; and the young instinctively head for the sea.

Although not common to the project area, sightings of marine turtles are occasionally reported. Additionally, a small year-round population of approximately 30 to 60 Pacific green sea turtles resides at the southern end of San Diego Bay. The waters of this portion of the bay are warmed by thermal effluent from the Duke Energy power plant discharge. This is the only area on the west coast of the United States where green turtles are known to aggregate (Stinson, 1984). Further general distribution information for marine turtles is provided in Appendix 2.

### *Benthos*

The benthos consists of organisms that live in or on the ocean floor. Benthic habitats are often classified according to substrate type, either unconsolidated sediments (e.g., gravel, sand, or mud) or rock. The former category is often referred to as soft bottom and the latter is often referred to as hard bottom or rocky substrate. Each supports its own characteristic biological community. In addition to substrate type, water depth and water temperature play important roles in the distribution of benthic organisms. Distance from shore, food availability, and water quality are also important factors that influence the distribution of benthic organisms. Benthic organisms can be epifaunal (attached or motile species that inhabit rock or sediment surfaces) or infaunal (live in soft sediments) (Thompson et al., 1993).

Infauna living within the surficial sediments act as sensitive sentinels for potential anthropogenic impacts. They serve as early indicators of marine pollution because they have limited mobility and cannot easily escape exposure to contaminants in their environment. Also, some species are more sensitive to pollutant stresses than others, and changes in relative abundance can imply degraded environmental conditions. Particulate contaminants discharged into marine waters ultimately settle and accumulate on the seafloor. Because infauna reside within seafloor sediments, they are closer to these potential sources of pollution. Infauna are also an important marine resource because of their low trophic level within the marine food chain. They are a major food source for the more mobile epifaunal and pelagic marine organisms such as crabs, fin fish, and marine mammals. Finally, many infauna are filter feeders that may bioaccumulate contaminants even when standard chemical assays of water samples are unable to detect low-level contamination.

### *Caulerpa Taxifolia*

An invasive form of the algae *Caulerpa taxifolia* was discovered in San Diego County's Agua Hedionda Lagoon on June 12, 2000. Subsequently, a second incursion was discovered in July, 2000, in Huntington Harbor, 75 miles to the north. A bright green alga native to tropical waters in the Caribbean and Indo-Pacific, and Red Sea, *C. taxifolia* typically grows to small size and in limited patches in its natural habitat. In the late 1970s, however, a clonal strain of this species became extremely popular in the saltwater aquarium trade due to its aesthetic appeal, hardy nature, and ease of propagation. Around 1984, this "aquarium" strain became introduced into Mediterranean waters. Having no natural predators, and with few substrate limitations (it grows on rock, mud and sand), it spread rapidly. By the end of 2000, approximately 131 km<sup>2</sup> of seashore were affected along the coastline in six countries (Spain, France, Monaco, Italy, Croatia and Tunisia). Additional populations of the aquarium strain of *C. taxifolia* have also been found in the waters off Japan and southern Australia (New South Wales).

The permanent establishment of *C. taxifolia* could have devastating ecological and economic consequences for California. This fast-growing algae essentially displaces the natural vegetation (such as native eelgrass beds) by forming a dense blanket of growth over the ocean bottom, thereby crowding out other aquatic plants and bottom-dwelling organisms. Fish, marine mammals, and invertebrates that are dependent on native marine vegetation are displaced or die off from the affected areas. Additionally, as *C. taxifolia* contains toxins aimed at reducing herbivory, it is avoided by typical grazers such as mollusks, herbivorous fish, and sea urchins.

Reproduction of the aquarium strain of *C. taxifolia* is asexual, with dispersal occurring through fragmentation. Laboratory experiments have demonstrated a detachment fragment as small as 1 mm has the potential for viable growth, making eradication by mechanical means nearly impossible, and increasing the risk of spread via transport on boat anchors or fishing gear.

Although *C. taxifolia* has not been documented in the project area, the potential for its occurrence and introduction into offshore southern California waters remains.

#### D.3.1.4 Sensitive Resources

An inventory of sensitive resources can be found in the MCBCP INRMP (MCBCP, 2001) and summarized in the SONGS 1 EA (URS, 2002) and the Proposed Project PEA (URS, 2004). Sensitive or special status species include flora, fauna, vegetation communities, and marine biological resources that are listed as threatened or endangered or candidate species under the California or federal Endangered Species Acts (CESA or ESA, respectively), California species of special concern, federal species of concern, species that are listed as fully protected by the CDFG, and List 1B and List 2 plants considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California and beyond. Based on a review of the California Natural Diversity Database (CDFG, 2004) for four USGS Quadrangles (Las Pulgas, San Onofre Bluff, San Clemente, and Oceanside) that cover the Proposed Project area and the habitat conditions reported during previous surveys and reports, the special status plant communities or wildlife species listed in Table D.3-2 and Table D.3-3 have potential to occur within or near to the Proposed Project area.

Threatened and endangered plants, wildlife, and marine resources are described in the following sections.

B.3.1.4.1 Endangered, Threatened, or Otherwise Sensitive Plants

No federal- or State-listed endangered or threatened plants or CNPS List 1B (rare, threatened or endangered throughout their range) or List 2 (rare, threatened, or endangered in California only) species are expected to occur in areas impacted by the Proposed Project. One federal- and State-listed vernal pool species, San Diego button-celery, is known to occur approximately 100-feet from the Proposed Project transport route. However, no suitable habitat for the species occurs within the project area and this species is not expected to be present. Table D.3-2 lists the sensitive plant species and their habitat requirements that are known or could potentially occur within or adjacent to the Proposed Project area including the beach transportation route from the Del Mar Boat Basin to SONGS.

Table D.3-2. Special Status Plant Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/CNPS)	Description and Habitat	Distribution in Project Area
<i>Abronia maritime</i> Red sand verbena	— / — / 4	Perennial herb that occurs on coastal sand dunes. Blooms between February and November.	The species is not listed on CNDDDB, but mapped by MCBCP adjacent to the Beach Route-Segment C. All beach area within the transport route is regularly used as a military road. Therefore, there is an extremely low likelihood that this species would occur within the project area due to disturbances.
<i>Aphanisma blitoides</i> aphanisma	— / — / 1B	Annual herb that occurs on Coastal bluff scrub and beach dunes.	CNDDDB mapping unit is located on the steep coastal bluff west of the Beach Route-Segment I. All beach area within the transport route is regularly used as a military road and no coastal bluff scrub occurs within the transport route. In addition, the transport route within Segment I is a paved road (Old Highway 101). Therefore this species would not be present within the project area.
<i>Astragalus tener</i> var. <i>titi</i> Coastal dunes milk vetch	— / — / 1B	Annual herb that occurs on in Coastal bluff scrub, coastal dunes, and coastal prairie. Blooms between March and May.	CNDDDB mapping unit is located adjacent to the Beach Route-Segment B in the Santa Margarita Estuary. The estuary is protected from all access by fencing and outside of the Proposed Project area. All beach area within the transport route is regularly used as a military road and no coastal bluff scrub occurs within the project area. Therefore, there is a very low likelihood that this species would occur within the project area due to beach disturbances.
<i>Brodiaea filifolia</i> Thread-leaved brodiaea	— / — / 1B	Perennial herb (bulbiferous), which blooms from March to June in chaparral openings, cismontane woodlands, coastal scrub, playas, valley and foothill grassland, and vernal pools.	The MCBCP provided data to URS (2004) that this species occurs in the vicinity of the project area, the exact location is unknown. Because the species is mesic and associated with vernal pools and playa, it is assumed that the species has the potential to occur in the vernal pool complexes adjacent to the transport route-Segment C thru F. No vernal pools are within the project area; however, ephemeral ponding features occur between Segments D and F. These features are within an active dirt road as road ruts and support little or no vegetation due to the maintenance and active use of the road. Therefore, this species is not expected to occur within the project area.
<i>Coreopsis maritima</i> Sea dahlia	— / — / 2	Perennial herb that occurs in Coastal bluff scrub and coastal scrub. Blooms between March and May.	CNDDDB mapping unit is located adjacent to the Beach Route-Segment C near Los Flores Creek. No coastal bluff scrub occurs within the project area; therefore this species would not be present.
<i>Corethrogyne filaginifolia</i> San Diego sand aster	— / — / 1B	Perennial herb, which blooms from June to September in chaparral, coastal bluff scrub, and coastal scrub.	The MCBCP provided data to URS (2004) that this species occurs at one location north of Cocklebur Canyon in coastal sage scrub, several hundred feet from the project area. No chaparral or coastal scrub occurs within the project area and this species is not expected to be present.



Table D.3-2. Special Status Plant Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/CNPS)	Description and Habitat	Distribution in Project Area
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	— / — / 1B	Perennial herb that occurs in Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland on rocky and often clay soils. Blooms between April and June.	Mapping units for this species were provided by MCBCP to URS (2004). The plant is known to occur in fairly high numbers adjacent to Segment C of the Beach Transport Route. No coastal bluff scrub, chaparral, or coastal scrub occurs within the project area. Clay soils and annual grassland/ruderal habitat does occur at two transition points in Segment F; however, these areas are regularly disturbed by military vehicles and mowing by California Transportation Authority along I-5. In addition, no occurrences were noted during the field reconnaissance survey in November 2004. Therefore, there is a low likelihood that this species would be present within the project area.
<i>Dudleya multicaulis</i> Many-stemmed dudleya	— / — / 1B	Perennial herb, which blooms April to July in chaparral, coastal scrub, valley and foothill grassland and often in clay soils.	Several locations for this species were recorded on the CNDDDB near the base of the slopes east of I-5. The dirt and paved roads are sufficient to accommodate transport and no adjacent habitat will be disturbed. This species would not be present within the project area.
<i>Dudleya viscida</i> Sticky dudleya	— / — / 1B	Perennial herb, which blooms May to June in coastal bluff scrub, chaparral, and coastal scrub on rocky soils.	The mapping units for this species were provided by MCBCP to URS (2004); however, the maps provided did not provide the exact locations for this species. Nonetheless, habitat that supports this species does not occur within the project area and transport route and therefore the species would not be present.
<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button-celery	FE/SE/1B	A mesic annual/perennial herb that occurs in Coastal scrub, valley and foothill grassland, and in vernal pools. Blooms between April and June.	CNDDDB mapping units are located on coastal bluffs in vernal pool complexes, some within 100 feet of the Beach Route-Segments C thru F. No vernal pools are within the project area; however, ephemeral ponding features occur between Segments D and F. These features are within an active dirt road as road ruts, and possibly were historic vernal pools prior to military use in the 1950s. These features support little or no vegetation due to the maintenance and active use of the road. Therefore, this species is not expected to occur within the project area.
<i>Eryngium pendletonensis</i> Pendleton button-celery	— / — / 1B	A mesic annual/perennial herb that occurs in clay soils that supports Coastal scrub, valley and foothill grassland, and in vernal pools. Blooms between April and June.	One CNDDDB mapping unit of this species occurs in a coastal bluff vernal pool complex south of Las Flores Canyon, within 200 feet of the Beach Route Segment C. No vernal pools are within the project area; however, ephemeral ponding features occur between Segments D and F. These features are within an active dirt road as road ruts, possibly historic vernal pools prior to military use in the 1950s. These features support little or no vegetation due to the maintenance and active use of the road. Therefore, this species is not expected to occur within the project area.
<i>Erysimum ammophilum</i> Coast wallflower	— / — / 1B	Perennial herb, which blooms from February to June in chaparral, coastal dunes, and sandy openings of coastal scrub.	The CNDDDB and MCBCP provided mapped locations of this species on the mesas to the east of the project area. Although sandy habitat occurs within the project area, it is regularly used as a military road. Therefore this species is not expected to occur due to existing disturbances.

Table D.3-2. Special Status Plant Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/CNPS)	Description and Habitat	Distribution in Project Area
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	— / — /1B	A mesic annual herb that occurs on the borders of marshes and swamps, playas, vernal pools and blooms between February and June.	One CNDDDB mapping unit of this species occurs on the northern border of Santa Margarita River Estuary, within 200 feet of the Beach Route-Segment C. The estuary is fenced and protected from access and is not within the project area. This species also occurs on the borders of vernal pools. No vernal pools are within the project area and the ephemerally ponding features on the dirt road through Segments D and F are regularly maintained and used as a military road. These features support little or no vegetation due to the maintenance and active use of the road. Therefore, this species is not expected to occur within the project area.
<i>Lotus nuttallianus</i> Nuttall's lotus	— / — /1B	An annual herb that blooms between March and June in coastal dunes and coastal scrub.	One CNDDDB mapping unit of this species occurs on the northern border of Santa Margarita River Estuary, within 200 feet of the Beach Route-Segment C. The estuary is fenced and protected from access and is not within the project area and no coastal scrub occurs within the project area. Therefore, this species is not expected to occur within the project area.
<i>Navarretia prostrate</i> Prostrate navarretia	— / — /1B	A mesic annual herb tolerant of high alkaline soils that blooms between April and July. Occurs in coastal scrub and valley and foothill grassland, and in alkaline playas/vernal pools.	One CNDDDB mapping unit of this species occurs on a coastal bluff, within 100 feet of the proposed route in Segment I. The transport route within Segment I is a paved road (Old Highway 101) wide enough to accommodate the transport and no sage scrub or valley or foothill grassland is within the project area. In addition, the ephemerally ponding features which occur between Segments D and F support little or no vegetation due to the maintenance and active use of the road. Therefore, this species is not expected to occur within the project area.
<i>Nemocaulis denudate</i> var. <i>denudate</i> Coast woolly-heads	— / — /1B	Annual herb that occurs on coastal dunes and blooms between April and September.	One mapping unit for this species was provided by MCBP to URS (2004) and is also recorded on the CNDDDB within Segment C, north of the Santa Margarita Estuary. The beach transport route would avoid all adjacent coastal dunes and the beach habitat within the route is regularly used as a military road. Therefore, there is a low likelihood that this species would be present within the project area due to disturbances.
<i>Nemocaulis denudate</i> var. <i>gracilis</i> Slender woolly-heads	— / — /2	An annual herb that blooms between March and May and occurs in coastal dunes, desert dunes, and Sonoran desert scrub.	One CNDDDB mapping unit for this species is recorded near the Boat Basin in Segment A. No Sonoran desert scrub or desert scrub occurs in the project area. In addition, the transport route through Segment A is on a regularly used dirt road through the Camp Del Mar Parking lot and would avoid all adjacent coastal dunes. Therefore, there is a low likelihood that this species would be present within the project area due to existing and regular disturbances.
<i>Phacelia stellaris</i> Brand's phacelia	— / — /1B	An annual herb that occurs in closed cone coniferous forest and chaparral. Blooms between May and June.	One CNDDDB mapping unit for this species is recorded north of the Santa Margarita River Estuary, likely in the narrow strip of coastal sage scrub that borders the estuary and agriculture fields. The Estuary and adjacent upland habitat is fenced and access is prohibited. The habitat is not within the project area and no other coastal scrub occurs within the project area. Therefore, this species is not expected to occur within the project area.

**Table D.3-2. Special Status Plant Species Potentially Occurring Within the Proposed Project Area**

Scientific Name Common Name	Status (Fed/State/CNPS)	Description and Habitat	Distribution in Project Area
<i>Suaeda esteroa</i> Estuary seablite	— / — / 1B	Perennial sub-shrub occurring in low coastal salt marshes.	Suitable habitat is outside of the project area and transport route within the Santa Margarita River Estuary, which is fenced and protected. No likelihood to occur within the project area due to lack of habitat.
<i>Quercus dumosa</i> Nuttall's scrub oak	— / — / 1B	Evergreen shrub that blooms between February and April. Occurs in closed-cone coniferous forest, chaparral, coastal scrub on sandy and clay loam soils.	The MCBCP provided data to URS (2004) that this species occurs in the vicinity of the Proposed Project area. The exact location is unknown; however, coniferous forest, chaparral, or coastal scrub habitats do not occur within the project area and this species is not expected to be present.

Sources: CNDDDB (2004); CNPS (2001); Hickman (1993); MCBCP INRMP (2001); SONGS 1 EA (URS, 2002); PEA (URS, 2004).

Notes: Federal: E=Endangered. In danger of extinction throughout all or a significant portion of its range; T=Threatened. Likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range; FSC=Federal Species of Concern. Formerly List 2 Candidate Species (designation is not used by CNPS or CDFG). Species of concern is an informal term used by some but not all U.S. Fish & Wildlife Service offices. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

State: E=Endangered; T=Threatened

California Native Plant Society: 1B=Plants considered rare or endangered in California and elsewhere; 4=Plants of limited distribution – a watch list.

#### D.3.1.4.2 Endangered, Threatened, or Otherwise Sensitive Wildlife

Several federal- and State-listed threatened or endangered terrestrial wildlife species occur in close proximity to the project area. Federal- or State-listed threatened or endangered species are afforded legal protection under ESA or CESA; the classifications of “federal species of concern” or “California species of special concern” do not afford any legal protection outside of consideration under CEQA. From the federal standpoint, “species of concern” is an informal term that refers to those species believed to be declining or to be in need of concentrated conservation actions to prevent decline. Species of special concern receive no legal protection under ESA or CESA and the use of the term does not mean that they eventually will be proposed for listing. At one extreme, it may only be necessary to monitor the health of a species and its habitat. At the other extreme, the species may eventually require listing as threatened or endangered.

From the State standpoint, the designation “species of special concern” is intended to result in special consideration for these animals by CDFG, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under federal and State endangered species laws and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. CDFG staff is instructed to consider species of special concern during (1) the environmental review process, (2) conservation planning process, (3) the preparation of management plans for CDFG lands, and (4) inventories, surveys, and monitoring conducted either by CDFG or others with whom CDFG is cooperating.

Several sensitive wildlife species are known or potentially present in the vicinity of the Proposed Project area and transport route (Table D.3-3). Species that are federally- or State-listed as threatened or endangered that are known, potentially present, or immediately adjacent to the project area and transport route include the tidewater goby, western snowy plover, San Diego fairy shrimp, and the California gnatcatcher. Although direct impacts are not expected, these species have the potential to be within

Table D.3-3. Special Status Wildlife Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/Other)	Description and Habitat	Distribution in Proposed Project Area
<b>Invertebrates</b>			
<i>Branchinecta sandiegonensis</i> San Diego fairy shrimp	FE/SE	Short and long-lived vernal pools and seasonally ponding features. Maturity can be reached in 10-20 days.	Branchinecta species were observed within the transport route in road ruts during the reconnaissance survey. Although the versatile fairy shrimp ( <i>B. lindahl</i> ) also occurs in San Diego County it is rare in comparison to this species throughout its range and on the MCBCP (MCBCP, 2001; Eriksen and Belk 1999). However, MCBCP references that the versatile fairy shrimp most often found in regularly used features is not the San Diego fairy shrimp. Therefore, it is likely, but not certain that the species occurs within the project area.
<i>Streptocephalus woottoni</i> Riverside fairy shrimp	FE/—	Relatively long-lived vernal pools or seasonally ponding features. Approximately 48 to 56 days of ponding is required for maturity (Eriksen and Belk 1999)	Unlikely to occur in the seasonally ponding road ruts along the transport route due to the duration necessary for this species to reach maturity.
<i>Danaus plexippus</i> Monarch butterfly	—/—	Groves of Monterey Pine or Eucalyptus along coastal strand.	Unlikely to occur due to lack of suitable habitat within or adjacent to the transport route.
<b>Fish</b>			
<i>Eucyclogobius newberryi</i> Tidewater goby	FE/CSC	Endemic to the lower reaches of California streams, coastal lagoons, and brackish water habitats. Occasionally observed in small lakes and ponds. Feeds on small benthic invertebrates, crustaceans, and insect larvae, snails, and shrimp. Avoids fast moving water unless storm events wash the species from the lagoons into the ocean during high rain or flood events.	All 8 known populations are on MCBCP including Santa Margarita River, Cockle-burr Creek, and Los Flores Creek. The species will likely be present during transport activities adjacent to the project area. However, the species will not likely be migrating or feeding in the mouth of Santa Margarita River where transport vehicles would cross.
<i>Leuresthes tenuis</i> California grunion	—/—	Sandy beaches from Pt. Conception in northern California to San Diego in southern California. Spawns between March and September during the highest tides of the month.	The species is known to occur within the project area. Species will not likely be present during project activities, which are between October and February and would not be impacted by transport.
<i>Oncorhynchus mykiss irideus</i> Southern steelhead trout	FE/CSC	A California endemic species requiring fresh water streams and unrestricted access to the headwaters.	In 2000, Steelhead trout was rediscovered in San Mateo Creek, located north of SONGS. The population was historically recorded in San Mateo, San Onofre, and the San Luis Rey Rivers, all located outside of the project area. Therefore, it is unlikely that Steelhead trout occurs in Santa Margarita Creek or any of the other small creeks that transect the project area.

Table D.3-3. Special Status Wildlife Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/Other)	Description and Habitat	Distribution in Proposed Project Area
<b>Amphibians</b>			
<i>Bufo californicus</i> Arroyo toad	FE/CSC	Coastal rivers and streams. Forages on insects, mostly ants, and digs burrows in sandy terraces.	Known to occur on MCBCP in Santa Margarita River upstream (east) of the estuary. This species does not occur in lagoons or estuaries. Therefore, it is unlikely to occur within or adjacent to the project area or transport route due to lack of suitable habitat.
<i>Phrynosoma coronatum</i> ( <i>blainvillei</i> ) Coast San Diego horned lizard	—/CSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats, open country, sandy areas, washes, flood plains, and windblown deposits.	Likely to occur within and adjacent to the transport route.
<i>Spea</i> (= <i>Scaphiopus</i> ) <i>Hammondi</i> Western spadefoot	—/CSC	Open areas in lowland grasslands, chaparral, and pine-oak woodlands, areas of sandy or gravelly soil in alluvial fans, washes, and floodplains	Moderate potential to occur on roads and ephemerally ponding features through the transport route.
<b>Reptiles</b>			
<i>Aspidoscelis hyperythra</i> Orange-throated whiptail	—/CSC	Occurs in low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats.	Likely to occur within and adjacent to the transport route.
<i>Crotalus ruber ruber</i> Northern red-diamond rattlesnake	—/CSC	Chaparral, woodland, and arid desert habitats in rocky areas with dense vegetation.	Likely to occur within and adjacent to the transport route.
<i>Emys</i> (= <i>Clemmys</i> ) <i>marmorata pallida</i> western pond turtle	—/CSC	Open water habitats with basking sites such as partially submerged logs, rocks, mats of floating vegetation and open mud banks. Feed on fishes and frogs.	Unlikely to occur within or adjacent to the project area or transport route due to lack of suitable habitat.
<i>Eumeces skiltonianus interparietalis</i> Coronado skink	—/CSC	Coastal sage, chaparral, oak woodlands, pinon-juniper, and riparian woodlands, but often restricted to more mesic pockets within each habitat type.	Low likelihood for occurrence adjacent to the transport route where ephemerally ponding features border sage scrub communities.
<b>Birds</b>			
<i>Agelaius tricolor</i> Tricolored blackbird	—/CSC	Fresh water, preferable emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs.	Low potential to occur in estuaries and riparian habitats adjacent to the transport route.
<i>Aimophila ruficeps canescens</i> Southern California rufous-crowned sparrow	—/CSC	Steep, rocky areas within coastal sage scrub and chaparral, often with scattered bunches of grass. Prefers recently burned areas.	Known to occur in the San Luis Rey River, south of the boat basin approximately ½ mile. Low potential for occurrence adjacent to the transport route.
<i>Athene cucularia</i> (burrow sites) Burrowing owl	FSC/CSC	Open grasslands, deserts, scrublands; low growing vegetation; small mammal burrows; prefers berms, ditches, and grasslands adjacent to rivers, agricultural, and scrub areas.	Low potential to occur adjacent to the transport route.

**SONGS Steam Generator Replacement Project**  
**D.3 BIOLOGICAL RESOURCES**

**Table D.3-3. Special Status Wildlife Species Potentially Occurring Within the Proposed Project Area**

<i>Scientific Name</i> Common Name	Status (Fed/State/Other)	Description and Habitat	Distribution in Proposed Project Area
<i>Aquila chrysaetos</i> (nesting and wintering) Golden eagle	-/SC and FP	Mountains, deserts, and open country. Suitable nest habitat is primarily cliffs and rocky ledges, sometimes trees, and occasionally ground and manmade structures.	CNDDDB listing for the species in the Oceanside Quadrangle, exact location unknown. Nesting in the project area is unlikely due to limited amount of suitable nesting sites; however, there is high potential for this species to fly over the project area and eagles may occasionally forage in adjacent riparian areas.
<i>Charadrius alexandrinus</i> <i>nivosus</i> Western snowy plover	FT/CSC	Sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	The species is present in high numbers adjacent to the project area in the Santa Margarita Estuary, Aliso Creek Estuary, and Los Flores Estuary (URS, 2004). The estuaries are fenced and protected from access and direct disturbances and are at least 50-feet from the transport route. However, scattered nest sites are mapped throughout Segment B and C of the project area and this species forages in the intertidal zone.
<i>Campylorhynchus</i> <i>brunneicapillus sandiegensis</i> Coastal cactus wren	—/CSC	Forages on ground and in low vegetation for insects, spiders, and other small invertebrates. Nests in cholla or other large, branching cactus, in yucca or in stiff twigged and thorny shrubs.	Known to occur in the vicinity of the transport route. Not expected to occur within the project area or adjacent to transport route due to absence of habitat.
<i>Circus cyaneus</i> (nesting) Northern harrier	—/CSC	Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands.	Known to occur east of the project area on the MCBCP. Moderate potential to occur in estuaries adjacent to transport route.
<i>Elanus leucurus</i> (nesting) White-tailed kite	FSC/FP	Grasslands with scattered trees, near marshes, agricultural areas and along highways.	Moderate potential to occur adjacent to transport route.
<i>Empidonax traillii extimus</i> (nesting) Southwest willow flycatcher	FE/SE	Riparian woodlands that contain water and low growing willow thickets in low elevation areas.	Species present during the breeding season in habitat areas adjacent to transport route. Typically occurs on MCBCP between mid-May and mid-August. There is a very low likelihood that the species would be present during transport between October and February.
<i>Passerculus sandwichensis</i> <i>beldingi</i> Belding's savannah sparrow	—/SE	Grasslands, saline emergent wetlands, and wet meadow habitats.	Known to occur in the coastal lagoons of Cocklebur, French, and Los Flores Creeks adjacent to the transport route.
<i>Pelecanus occidentalis</i> <i>californicus</i> California Brown Pelican	FE/SE	Estuarine, marine subtidal, and marine pelagic waters along the California coast. Common from June to October. Forages when tide rises on fish and crustaceans. Breeds between March and early August, preferably on offshore islands.	Observed at the far end of the Boat Basin in Segment A. High potential for flyover and foraging within and adjacent to the project area and transport route; however, activities would be occurring outside of its breeding season.
<i>Poliioptila californica</i> <i>californica</i> California gnatcatcher	FT/—	Coastal sage scrub vegetation below 1,000 feet elevation along the coastal slope, generally avoids steep slopes and dense vegetation for nesting.	Species present in sage scrub communities adjacent to the transport route

Table D.3-3. Special Status Wildlife Species Potentially Occurring Within the Proposed Project Area

Scientific Name Common Name	Status (Fed/State/Other)	Description and Habitat	Distribution in Proposed Project Area
<i>Rallus longirostris levipes</i> Light-footed clapper rail	FE/SE	Coastal salt marshes and mudflats along tidal creeks, preferably pickleweed and cordgrass dominated. Forages on crabs, mussels, clams, snails, and insects.	Known to occur in Santa Margarita Estuary and in the coastal lagoons of Cockle-burr, French, and Los Flores Creeks. Species is not expected to be present in the project area due to absence of vegetation.
<i>Riparia riparia</i> Bank swallow	—/ST	Digs holes in cliffs and river banks for cover and will roost on logs, shoreline vegetation, and telephone wires. Forages on insects.	Known to occur in the vicinity of the project area and there is a high possibility of flyovers and foraging within and adjacent to the transport route.
<i>Sterna antillarum browni</i> California least tern	FE/SE	Migratory in California, arriving in late April and wintering at an unknown location. Breeding colonies occur along marine and estuarine shores. Feeds on small fish in shallow estuaries and lagoons and open ocean within the intertidal zone.	Species typically present adjacent to the transport route between mid-April and September of each year (INRMP, 2001). Low likelihood that the species would be present during vehicle transport between October and February.
<i>Vireo bellii pusillus</i> (nesting) Least Bell's vireo	FE/SE	Migratory in California. Perennial and intermittent streams with low, dense riparian scrub and riparian woodland habitats below 2,000 feet elevation. Nests in willows and forages in riparian and upland habitats.	Species present in adjacent riparian habitats during breeding season, typically between mid-March and August (INRMP, 2001). There is a low likelihood that the species would be present during transport between October and February.
<b>Mammals</b>			
<i>Chaetodipus californicus femoralis</i> Dulzura pocket mouse	—/CSC	Coastal scrub, chamise-redshank and montane chaparral, sagebrush, and annual grassland.	Moderate potential to occur within and adjacent to the transport route in annual grassland and coastal sage scrub.
<i>Dipodomys stephensi</i> Stephens' kangaroo rat	FE/ST	Annual and perennial grassland, but may occur in coastal sage scrub or sagebrush with sparse canopy cover or in disturbed areas with at least half the soil bare.	Several populations are present on the eastern half of MCBCP. There is a low potential for this species to occur adjacent to the transport route in irregularly disturbed areas. It is unlikely that the species occurs directly on the transport route as it is a regularly used military road.
<i>Perognathus longimembris pacificus</i> Pacific pocket mouse	FE/CSC	Desert riparian, desert scrub, desert wash, coastal scrub, and sagebrush from sea level to 1700m in elevation.	Populations occur on MCBCP east of I-5 and Stewart Mesa Road. There is a low likelihood that the species would occur within the project area or transport route.

Source: MCBCP IRMP (2001); SONGS 1 EA (URS, 2002); URS PEA (2004); and CNDDDB (2004).

Status: Federal: E=Endangered; T=Threatened; FC=Candidate species (former Category 1 candidates); FSC=Species of Concern; PD – Proposed for de-listing; D – De-listed, monitored for 5 years  
State: E=Endangered; T=Threatened; CSC=California Species of Special Concern  
Other: FP=California "Fully Protected Species"

the project area. Therefore, the habitat requirements and status of each of these species are described below. Several additional federally- and State-listed species that are spring migrants of the project area and adjacent habitats include the California least tern, least Bell's vireo, and southwestern willow flycatcher. Because the Proposed Project would occur outside of the breeding season, these species are not expected to be within or adjacent to the project area; therefore, their habitat requirements and status are not discussed in detail.

### ***Western Snowy Plover***

The western snowy plover is a small shorebird distinguished from other plovers by its small size, pale brown upper parts, dark patches on either side of the upper breast, and dark gray to blackish legs. The plover was listed by USFWS as threatened in March 1993. The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The population on MCBCP includes resident and migratory birds. The nesting season extends from early March through late September with fledging (reaching flying age) into the third week of September at the latest. Nests typically occur in flat, open areas with sandy or saline substrates. Vegetation and driftwood are usually sparse or absent. The typical clutch size is three eggs but it can range from two to six.

Snowy plover chicks leave the nest within hours after hatching to search for food. They are not able to fly for approximately 4 weeks after hatching. Snowy plovers are primarily visual foragers, using the run-stop-peck method of feeding typical of *Charadrius* species. They forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone, in dry, sandy areas above the high tide, on salt pans, on spoil sites, and along the edges of salt marshes, salt ponds, and lagoons. They sometimes probe for prey in the sand and pick insects from low-growing plants.

### ***Tidewater Goby***

The tidewater goby was federally listed as an endangered species in February 1994. The tidewater gobies are a California endemic species that historically occurred throughout coastal lagoons ranging from Agua Hedionda Lagoon (northern San Diego County) to Tillas Slough (mouth of the Smith River, Del Norte California (MCBCP, 2001). Tidewater gobies are unique in that they are restricted to shallow (<1.0 meter) coastal brackish water habitats. Of the 13 historic sites in Orange and San Diego Counties, only 8 populations of gobies remain. All of these populations are on MCBCP.

Tidewater gobies are a small fish that can grow up to be 50 mm, are dark green color with a red tail and fin, and have a very large mouth. They occur in coastal, brackish-water habitats in lower reaches of coastal rivers, stream, lagoons, and occasionally small lakes or ponds. They prefer quiet to slow moving water and avoid fast moving waters. Gobies for the most part are associated with mud, sand, gravel, and cobble bottom substrates. Tidewater gobies have been found in salinities ranging from 0 to 28 parts per thousand (ppt) and are most commonly found in salinities <10 ppt. Tidewater gobies feed primarily on small benthic invertebrates, crustaceans, including aquatic insect larvae, snails, and shrimp. Gobies reproduce year-round although distinct peaks in spawning do occur in April and May.

### ***San Diego Fairy Shrimp***

Fairy shrimps are crustaceans and differ from all other arthropods by having two pairs of antennae and several different kinds of appendages used for locomotion and filter feeding. Fairy shrimp occur in vernal pools, ephemeral ponding features that fill naturally via winter rains and dry in the spring or summer depending on their size. Fairy shrimp are among the most characteristic of the vernal pool invertebrates. Shrimp swim upside down in the pools, filter feeding on algae and zooplankton. As they reach maturity, the female develops prominent ovisacs while the males' second antennae become modified for clasping the female during mating. Females lay 100-300 eggs or more. When laid, the eggs fall to the soil surface where they develop to the gastrula (early embryo) stage, then become dormant until the next wet season.



The San Diego fairy shrimp was listed as federally endangered in February 1997. The species is restricted to short-lived vernal pools in coastal southern California and northwestern Baja California, with San Diego County supporting the largest number of remaining occupied vernal pools. The USFWS estimated at the time of listing that 70 percent of occupied vernal pool habitat remaining in San Diego County occurs on military lands (MCBCP, 2001). This species is the most frequently found fairy shrimp in the coastal strip of San Diego County where pool elevations most commonly range from 15-125m, but do reach 500m (Eriksen and Belk, 1999). On Camp Pendleton, the San Diego fairy shrimp occurs more often than either the most common versatile fairy shrimp (*B. lindahli*) or Riverside fairy shrimp (*Streptocephalus woottoni*) (MCBCP, 2001). The San Diego fairy shrimp appears to be locally abundant in natural vernal pools and in man-made pools that have not been disturbed in several seasons (MCBCP, 2001).

### ***California Gnatcatcher***

The USFWS designated the coastal California gnatcatcher as threatened in March 1993. The coastal California gnatcatcher is a non-migratory bird with a range restricted to California and Baja California, Mexico. The California gnatcatcher is a small, long-tailed member of the thrush family Muscicapidae. Its plumage color is dark blue-gray above and grayish-white below. The tail is mostly black above and below. The male has a distinctive black cap that is absent during the winter. Both sexes have a distinctive white eye-ring. The gnatcatcher occurs almost exclusively in the coastal sage community, but can also be found in chaparral and riparian habitats. The breeding season of the gnatcatcher extends from late February through July, with peak nesting activities occurring from mid-March through May.

The gnatcatcher is protected by a habitat-oriented conservation planning law enacted by the State of California, the Natural Community Conservation Planning (NCCP) process. The NCCP program allows for the protection of habitat in sufficient amounts and distribution that will enable long-term conservation of the coastal sage scrub community as well as other sensitive habitat types (MCBCP, 2001). The USFWS recently designated critical habitat for the coastal California gnatcatcher in the southern California ecoregion, excluding MCBCP. The USFWS concluded that because of the management strategies implemented by the Base and the need to ensure military training activities can continue without interruption, the benefits are greater to exclude the Base from the critical habitat designation (MCBCP, 2001).

#### **D.3.1.4.3 Endangered, Threatened, or Otherwise Sensitive Fish Species**

### ***Bocaccio***

One rockfish species, *Sebastes paucispinis* or bocaccio, has been listed as a Species of Concern by NOAA since 1999. In January 2001, it was petitioned for listing under the Endangered Species Act. A formal status review required by the ESA was initiated in June of 2001 by the National Marine Fisheries Service (NMFS). This review indicated that the southern population of bocaccio was at 3.6 percent of its pre-exploitation biomass, or approximately 1.6 million fish. The decline to this low level is due to a combination of overfishing and poor recruitment of young bocaccio into the population. However, based on the review, NMFS determined that listing was not warranted (67 FR 69704, November 19, 2002) provided certain management measures were implemented to protect the remaining population.<sup>1</sup> A more recent stock assessment conducted in 2003, indicates that the current long-term risk of further decline is very low. During 2003, bocaccio were the tenth most common species entrained at SONGS, with 2,423 returned to the sea alive (see also Appendix 2).

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<sup>1</sup> <http://www.nmfs.noaa.gov/pr/species/concern/profiles/bocaccio.pdf>

### ***Cabezon***

Cabezon, *Scorpaenichthys marmoratus*, is the largest member of the cottid family. Ranging from Alaska to Baja California, cabezon are prized by sport divers for their edibility, size, and ease of capture. They are found on hard bottoms in shallow water to depths of 250 feet. Increased commercial fishing pressures, particularly from the live fish market, have created concern for the viability of this species in nearshore coastal waters. After bocaccio, they were the most frequently entrained species of special interest encountered at SONGS during 2003 (see also Appendix 2).

#### **D.3.1.4.4 Endangered and Threatened Sea Turtles**

Although infrequent, sea turtles have occasionally been reported in coastal southern California. Over the years, four species have been reported in the project area. The four species are the green turtle (*Chelonia mydas*), the Pacific ridley turtle (*Lepidochelys olivacea*), the leatherback turtle (*Dermochelys coriacea*), and the loggerhead turtle (*Caretta caretta*) (Hubbs, 1977). Three of the four species (Pacific ridley, leatherback, and green) are listed as endangered species under the U.S. Endangered Species Act. The remaining species, the loggerhead turtle is listed as a threatened species under the same Act.

As described above, most turtle nests are along the coasts of Mexico and Central America. The nesting season varies with species, but is generally from May to September (Mager, 1984). Sea turtles breed at sea; and the females return to their natal beaches to lay their eggs (Mager, 1984). Female turtles can nest several times in a season but at two to three-year intervals.

Although marine turtles are not common to the project area, they have occasionally been reported. According to the California Marine Mammal Stranding Network Database, 12 marine turtles were reported between Morro Bay and Pismo Beach during the 1982-1995 period. No marine turtles were reported at SONGS during either 2002 or 2003. General distribution information for marine turtles is provided in Appendix 2.

#### **D.3.1.4.5 Endangered or Threatened Seabirds**

### ***California Brown Pelican***

The California brown pelican (*Pelecanus occidentalis californicus*) is a federally and State-listed endangered species and ranges from British Columbia to southwest Mexico. In the U.S., the California brown pelican nests only on West Anacapa and Santa Barbara Islands off the southern California coast.

The listing of the California brown pelican was based primarily on serious declines in the southern California population due to bioaccumulation of chlorinated hydrocarbon pesticides (DDT, DDE, dieldrin, and endrin) in the pelican's food chain (USDOJ, 1996a). Bioaccumulation of these pesticides resulted in serious eggshell thinning and poor reproductive success (Schreiber and Risebrough, 1972). Food scarcity, primarily anchovies, also contributed to the species' decline (Keith et al., 1971).

The breeding season for California brown pelicans extends from March through early August. Preferred nesting habitat is on offshore islands. In 1991, about 12,000 breeding birds were reported at two colonies on Anacapa and Santa Barbara Islands (Carter et al., 1992). The California brown pelicans occur in coastal areas as far north as British Columbia and as far south as southwestern Mexico. Peak populations within the SCB have been recorded from September to October. Offshore rocks and coastal habitats as rocky shores, sandy beaches, piers, provide important roost sites in the project area. They feed by plunge diving from heights of up to 15 to 20 m above the ocean surface and feed primarily on small schooling fish

(e.g., anchovies) (USDOJ, FWS, 1982). Pelicans return to specific roosts each day and do not normally remain at sea overnight. These roosts are usually in regions of high oceanic productivity and isolated from predation pressure and human disturbances. Project activities are not expected to result in any adverse impacts to this species.

### D.3.1.5 Existing Marine Resource Issues

As described in Section A.1.1, SONGS uses a once-through cooling system to convert steam into water during power generation. This cooling water causes degradation of existing marine resources from the thermal plume (heated water released to the ocean) and the impingement (trapped on the intake screen) and entrainment (drawn into the cooling water intake) of marine resources. The existing thermal plume, impingement, and entrainment issues would not change under this Proposed Project, and therefore, would be considered part of the baseline conditions of the project. This section describes the current studies that have been conducted on these issues at SONGS 2 & 3.

#### D.3.1.5.1 Cooling Water Thermal Discharge Plume

The existing cooling water thermal discharge plume adversely affects marine biological resources near SONGS. Organisms are affected by the cooling water system discharge, mainly through increased water temperatures or turbidity in the plume, increased deposition of organic material, discharge of radionuclides and metals, or offshore transport in the plume (translocation). These effects are part of the baseline conditions.

The effects of the SONGS cooling water system have been well documented and thoroughly evaluated. The Marine Review Committee (MRC) has published numerous studies that document thermal plume impacts associated with SONGS. Science Applications International Corporation (SAIC, 1994) has also prepared a summary of most relevant studies related to SONGS cooling water system environmental impacts. Marine biological impacts identified in these studies are summarized below.

- **Kelp Beds.** The MRC has estimated that SONGS operations has resulted in an approximate 60 percent reduction in the area covered by moderate to high density kelp in the San Onofre kelp bed (SAIC, 1994).
- **Kelp Bed Fish.** The MRC performed a study to estimate potential effects of operations at SONGS on the fish associated with local kelp beds. Decreases were observed primarily in “cold-water” species (i.e., those near the southern end of their geographical range). The increases were primarily in “warm-water” species. In general, the MRC estimated that the overall effect of SONGS was generally detrimental for both abundance and biomass of bottom as well as water-column fish associated with the kelp bed (SAIC, 1994).
- **Kelp Bed Invertebrates.** Hard-bottom habitats such as reef outcrops and rocks, including those supporting kelp beds, are inhabited by numerous species of animals and plants. Studies by the MRC indicate that the San Onofre Kelp Forest is inhabited by over 100 species of large invertebrates, including clams, abalones, snails, sea urchins, sea stars, and sea cucumbers. This fauna of large invertebrates is typical of that found in other Southern California kelp beds. The MRC estimated that changes in abundances of large invertebrates were detectable in most cases in which tests could be run (MRC, 1989a). Larger declines were estimated nearer the cooling water discharge. The MRC estimated that the increased flux of particles through the San Onofre kelp bed due to operations at SONGS was the likely cause for the changes in observed abundances of large invertebrates. In fact, the increase in abundance of the sea cucumber *P. parvimensis*, which is a deposit feeder, may have been caused by an increased flow of organic particles to the benthic environment in the San Onofre kelp bed (SAIC, 1994).

- **Soft Benthos.** The ocean floor in the vicinity of SONGS is an extensive shelf of soft sediments (coarse to fine sands) that is interrupted only occasionally by areas of hard substrate. The invertebrates, known collectively as the soft benthos, living in and on these soft sediments are a major food source for benthic fish. The MRC performed studies to evaluate effects of operations at SONGS on soft benthos (MRC, 1989a). The MRC sampled soft benthos at six stations located along two lines stretching downcoast from the plant. Results of the study implied that widespread increases appeared to occur in soft benthos near SONGS after Units 2 and 3 became operational (MRC, 1989a).
- **Bottom Fish Populations.** Bottom fish are defined as those living on or close to the sandy bottom. The MRC performed studies on local densities of bottom fish over a two-year period before operations began at Units 2 and 3 and a three-year period afterwards (MRC, 1989a). Results indicated that there was a general tendency for relative abundances of bottom fish to increase near SONGS (SAIC, 1994).

#### D.3.1.5.2 Impingement/Entrainment

Operation of the existing cooling water system at SONGS causes adverse effects to marine biological resources from impingement and entrainment. Organisms are affected either through entrainment, which refers to the organisms being drawn into the cooling water system, or through impingement, which refers to organisms being trapped (impinged) on screens that are employed to prevent large objects from entering the condenser. Entrained organisms typically include small fish, fish larvae and plankton, while impinged organisms are typically characterized by large fish. As stated above, Science Applications International Corporation (SAIC, 1994) prepared a summary of most relevant studies related to SONGS cooling water system environmental impacts. These effects are part of the baseline conditions. The marine biological impacts resulting from impingement and entrainment at SONGS are summarized below.

- **Plankton.** Marine plankton are small organisms that drift in coastal and oceanic water columns where they serve as major components at the base of marine food webs. The MRC estimated that approximately 1,350 tons dry weight of zooplankton were taken into SONGS each year (MRC, 1989a). Although this is a large loss, it is not sufficient to cause a local depression in zooplankton. In fact, the local abundance of meroplankton, which comprise 6 percent of the zooplankton, appears to have increased due to operations at SONGS. No effect was observed on the overall abundance of holoplankton, which constitute the remaining 94 percent of the zooplankton. The MRC performed a similar study for effects of SONGS on abundances of phytoplankton (MRC, 1989a). Concentrations of chlorophyll in seawater were used to estimate phytoplankton abundance. The MRC observed that the concentrations of chlorophyll actually increased near SONGS, although the extent of the increase was not statistically significant (SAIC, 1994).
- **Fish Larvae.** Most species of marine fish release sperm and eggs into the water where the eggs are fertilized. The resulting young stages (ichthyoplankton) drift in the water column with other plankton. Ichthyoplankton drift through the SONGS area and are taken into the plant with other planktonic organisms. The MRC also studied the effects of operations at SONGS on ichthyoplankton (MRC, 1989a). The MRC study estimated that there was no general deep depression in abundances of fish larvae near SONGS. Anchovy larvae, which accounted for 56 percent of all fish larvae sampled, experienced a 30 percent decline in relative abundance. In contrast, the combined group of all species other than anchovy experienced no change in relative abundance after Units 2 and 3 began operation. Larvae of the white croaker, which comprised 10 percent of the total fish larvae, exhibited a 67 percent increase in relative abundance (SAIC, 1994).
- **Midwater Fish Populations.** Midwater fish are defined as those living in the water column as opposed to on or close to the sandy bottom or associated with kelp beds. Midwater fish are mobile, and immigration to the area might dilute or spread effects of local losses due to operations at SONGS. The

MRC performed studies over a two-year period before operations began at Units 2 and 3 and a three-year period afterwards to evaluate effects of operations at SONGS on midwater fish populations (MRC, 1989a). For all species, the MRC estimated that 40.6 to 110 tons of fish per year were entrapped in intake water for Units 2 and 3, of which 16.5 to 45 tons (i.e., 41 percent) were killed during passage through the plant (MRC, 1989a). The MRC also estimated effects of SONGS operations on local densities of midwater fish in the area. Results estimated that relative densities of two common near-shore species, queenfish and white croaker, were reduced by 34 to 63 percent in the shallow samples within 3 km of SONGS. Relative densities of queenfish were estimated to be reduced 50 to 70 percent in the deep samples within 3 km of the plant (SAIC, 1994).

**Mysids.** A group of small “semi-planktonic” Crustacea in the vicinity of SONGS typically spend daylight hours swarming just above the ocean floor, with occasional forays into the substrate. At night, these organisms move up into the water column to become part of the plankton. The group is an important part of the diet of both local midwater fish and bottom fish. Mysids are the most abundant members of these semi-planktonic organisms. The MRC performed studies on mysids to estimate effects of SONGS on local populations of the “semi-planktonic” fauna that migrated between the sea bottom and the water column with a day-night pattern (MRC, 1989a). Results of the MRC study estimated that 14 tons of mysids per year were killed in the intake system of SONGS. Despite these losses, the natural abundances of mysids generally increased near SONGS (relative to a “control” site) after Units 2 and 3 became operational (SAIC, 1994).

### D.3.2 Applicable Regulations, Plans, and Standards

Several federal and State laws and regulations apply to projects on the California coastline. Regulations, plans, and statutes applicable to the Proposed Project, and the associated compliance requirements as they relate to biological resources are described below.

#### Federal and State Standards for Terrestrial and Marine Biological Resources

**Federal Endangered Species Act (ESA) of 1973.** Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq., designate and provide for the protection of threatened and endangered plant and animal species, and their critical habitat. The administering agency is the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Two sections of this Act are relevant to the Proposed Project:

- Under Section 9, the USFWS has defined the “taking” of federally listed species as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or to attempt to engage in such conduct.” Harm includes impacts to the habitat of federally listed species where it results in an actual death or injures the species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Designated critical habitat of federally listed species also is protected from destruction or adverse modification by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.
- Under Section 10, in order to “take” a federally listed species, an incidental take permit pursuant to Section 10(a) of the Act must be obtained. The USFWS may issue a permit upon completion of a satisfactory habitat conservation plan (HCP) for the listed species that considers, among other things, measures that would be taken to monitor and mitigate Proposed Project impacts.

**Migratory Bird Treaty Act.** The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, hunt, capture, kill, or possess or attempt such an action towards any bird listed in wildlife protection treaties between the United States and several countries including Great Britain, Mexico, Japan, and countries

that are part of the former Soviet Union. A “migratory bird” includes the living bird, any parts of the bird, its nests or eggs. Disturbance of the nest of a migratory bird requires a permit issued by the USFWS pursuant to Title 50 of the Code of Federal Regulations (CFR). Almost all birds, except for some nonnative pests, are covered by the Act. The administering agency is the USFWS. Executive Order 13186 outlines the responsibilities of federal agencies to protect migratory birds, in furtherance of the MBTA, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, ESA, and NEPA.

**Clean Water Act of 1977 (33 U.S.C. 1251 et seq.).** The Clean Water Act (CWA, also known as the Federal Water Pollution Control Act) is the principal federal law governing protection of wetlands and water pollution control. This Act provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation’s waters. Section 402 of the CWA, which establishes conditions and permitting for point-source discharges of pollutants under the National Pollutant Discharge Elimination System (NPDES), is applicable to the Proposed Project. Pursuant to NPDES requirements, a General Construction Activity Storm Water Permit would be required for project construction. A Storm Water Pollution Prevention Plan (SWPPP) must be prepared in order to obtain the NPDES permit. The SWPPP would outline Best Management Practices (BMPs) to minimize water contamination during construction. These may include, but are not limited to, “in the dry” crossings of streams, seeding or revegetation of disturbed areas according to an established re-vegetation and landscaping plan, using water bars, diversion channels and terraces to control erosion on steep terrain, maintaining construction sites in a sanitary condition, disposal of wastes at appropriate locations, and control of stream sediments.

**Executive Order 11990 – Protection of Wetlands.** This order directs federal agencies to avoid to the extent possible long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Specifically, federal agencies are directed to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities when acquiring, managing, and disposing of federal lands and facilities, and providing federally sponsored, financed, or assisted construction and improvements, or conducting federal activities and programs affecting land use. This Order does not apply to the issuance of permits (by federal agencies), licenses, or allocations to private parties for activities involving wetlands on non-federal property.

**Executive Order 13112 – Invasive Species.** The National Invasive Species Management Plan was developed in response to this order in 1997. This order established the National Invasive Species Council (Council) as the leaders in development of the plan, and directs the Council to provide leadership and oversight on invasive species issues to ensure that federal activities are coordinated and effective. In addition, the Council has specific responsibilities including: promoting action at Local, State, Tribal, and ecosystem levels; identifying recommendations for international cooperation; facilitating a coordinated network to document, evaluate, and monitor invasive species’ effects; developing a web-based information network on invasive species; and developing guidance on invasive species for federal agencies. The Council has developed nine plan priorities that provide direction for federal agencies.

**Coastal Zone Management Act of 1972 (16 U.S.C. 1455 et seq.).** The Coastal Zone Management Act (CZMA) regulates development and use of the Nation’s coastal zone by encouraging states to develop and implement coastal zone management programs. California’s Coastal Zone Management Program has been certified by the U.S. Department of Commerce, and the California Coastal Commission is responsible for reviewing proposed federal agency and federally authorized activities to assess their consistency with the approved state coastal management program.

**Marine Mammal Protection Act (MMPA) of 1972 (16 U.S.C. 1361 et seq.).** Under the Marine Mammal Protection Act of 1972, the Secretary of Commerce is responsible for the protection of all cetaceans and pinnipeds and has delegated this authority to the NMFS. The Secretary of Interior is responsible for sea otters and has delegated this authority to the USFWS. The Marine Mammal Protection Act established a moratorium on the taking of marine mammals in waters under U.S. jurisdiction. The Act defines “take” as hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” “Harassment” is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. The moratorium may be waived when the affected species or population stock is within its optimum sustainable population range and would not be disadvantaged by the authorized taking. The Act directs the Secretary, upon request, to authorize the unintentional taking of small numbers of marine mammals incidental to activities other than commercial fishing when, after notice and opportunity for public comment, the Secretary finds that the total of such taking during a five-year (or shorter) period would have a negligible impact on the affected species.

The Act also specifies that the Secretary shall withdraw, or suspend for a specified period of time, permission to take marine mammals incidental to oil and gas production, and other activities if the applicable regulations regarding methods of taking, monitoring, or reporting are not being complied with, or the taking is having, or may be having, more than a negligible impact on the affected species or stock.

In 1994, a new subparagraph (D) was added to Section 101(a)(5) to simplify the process of obtaining “small take” exemptions when unintentional taking is by incidental harassment only. Specifically, the incidental take of small numbers of marine mammals by harassment can now be authorized for periods of up to one year without rulemaking, as required by Section 101(a)(5)(A), which remains in effect for other authorized types of incidental taking.

To ensure that activities on the outer-continental shelf (OCS) adhere to Marine Mammal Protection Act, MMS must actively seek information concerning impacts of OCS activities on local species of marine mammals during the regular MMS audits of the OCS facilities.

**Magnuson-Stevens Act.** The Magnuson-Stevens Fishery Conservation and Management Act of 1976 is the cornerstone legislation of fisheries management in U.S. jurisdictional waters. Its purpose was to stop overfishing by foreign fleets and aid in the development of the domestic fishing industry. The Act gave the U.S. sole management authority over all living resources within the 200-nautical mile exclusive economic zone of the U.S. The Act created eight regional Fishery Management Councils and mandated a continuing planning and management program for marine fisheries by the Councils. The Act, as amended, requires that a Fishery Management Plan based upon the best available scientific and economic data be prepared for each commercial species or group of related species of fish that is in need of conservation and management within each respective region. The regional council for the Pacific OCS is the Pacific Fishery Management Council. In accordance with the Act, the councils report directly to the U.S. Secretary of Commerce who reviews, approves, and prepares fishery management plans. In practice, this function is delegated to the Administrator of the National Oceanic and Atmospheric Administration (NOAA) and the NMFS.

The Act has been amended several times. In 1996, federal law governing fisheries management underwent a major overhaul. The amendments, termed the Sustainable Fisheries Act of 1996, identified fish habitat as critical to healthy fish stocks and sustainable fisheries. The Act implemented a program to

designate and conserve Essential Fish Habitat (EFH) for species managed under a Fishery Management Plan. EFH is defined as “those waters and substrate necessary for spawning, breeding, feeding, or growth to maturity.” The intention is to minimize any adverse effects on habitat caused by fishing or nonfishing activities and to identify other actions to encourage the conservation and enhancement of such habitat. The documents prepared for West Coast groundfish EFH include all species of rockfish managed by the Pacific Fishery Management Council (Bloeser, 1999).

**MCBCP Integrated Natural Resources Management Plan.** The INRMP was prepared by Camp Pendleton for the purpose of cataloging and managing natural resources on MCBCP while completing their mission of military readiness between the years 2002 and 2007. Biological data used for the preparation of the INRMP was compiled over various years by researchers and consultants and included focused surveys of sensitive flora and fauna between the years of 1992 and 2001. The INRMP serves as a reference document and management tool that is expected to evolve as mission requirements, environmental and regulatory conditions, and natural resources management programs and initiatives evolve. Camp Pendleton conducts semiannual document reviews to monitor progress of planned action implementation, make adjustments where necessary, and ensure the continued usefulness of this plan. The INRMP was produced to meet requirements established by the Sikes Act Improvement Act (Public Law 105-85, Div. B Title XXIX, November 18, 1997, 111 Stat. 2017-2019, 2020-2033) and the implementing directives of the Department of Defense (DoD), the Secretary of the Navy, and the Commandant of the Marine Corps.

**California Endangered Species Act.** The California Endangered Species Act parallels the main provisions of the federal Endangered Species Act and is administered by CDFG. Under the California Act, an “endangered species” is defined as a species of plant, fish, or wildlife that is “in serious danger of becoming extinct throughout all, or a significant portion of its range” and is limited to species or subspecies native to California. The Act establishes a petitioning process for the listing of threatened or endangered species. The CDFG is required to adopt regulations for this process and establish criteria for determining whether a species is endangered or threatened.

The California Endangered Species Act prohibits the “taking” of listed species except as otherwise provided in State law. Unlike its federal counterpart, the California Act applies the “take” prohibitions to species petitioned for listing (i.e., State candidates). CDFG code defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” State lead agencies are required to consult with the CDFG to ensure that any action it undertakes is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Fish and Game Code Section 2080.1 states the requirements and procedures for a 2080.1 Consistency Determination. Section 2080.1 allows an applicant who has obtained a federal incidental take statement pursuant to a federal Section 7 consultation or a federal Section 10(a) incidental take permit to notify the Director in writing that the applicant has been issued an incidental take statement or an incidental take permit pursuant to the federal Endangered Species Act of 1973. The applicant must submit the federal opinion incidental take statement or permit to the Director of Fish and Game for a determination as to whether the federal document is “consistent” with CESA. Receipt of the application by the Director starts a 30-day clock for processing the Consistency Determination.

The classification of Fully Protected was the State’s initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Common and scientific names are given in the Fish and Game Code Sections 3511, 4700, 5050 and 5515.



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 Coastal Act (PRC 30000 et seq.).** The California Coastal Act is the principal planning and regulatory program for the coastal zone of California. New development in the Coastal Zone that requires a permit from the Coastal Commission or the appropriate local government generally includes the placement of any solid material or structure, a change in land use density or intensity (including any land division), change in the intensity of water use or access to water, and removal of major vegetation. The Coastal Act protects coastal access, environmentally sensitive habitats, agricultural lands, fisheries, cultural resources, and scenic qualities of the shoreline. The Act also establishes guidelines for development in the coastal zone and contains provisions for protecting life and property from coastal hazards. Implementation of the Coastal Act is through Local Coastal Programs (LCP) that are developed and adopted by county and city jurisdictions as well as other State agencies that own land in the coastal zone. The project site is within an area covered by an adopted Local Coastal Program.

**California Regional Water Quality Control Board (RWQCB).** The RWQCB determines permit requirements on a case-by-case basis. They require a Waste Discharge Permit (WDP) if the action creates problems or if the action becomes permanent. The duration and size of a project are important factors and concerns may include the amount of water quality degradation. The Water Quality Control Plan developed by the California Regional Water Quality Control Board, Central Coast Division established water quality standards for the region. The plan incorporates the California Ocean Plan which establishes standards to protect the quality of ocean waters for use and enjoyment by the people of California. The Ocean Plan is administered by Regional Water Quality Control Boards and is reviewed periodically to guarantee that the current standards are adequate and are not allowing degradation to marine species or posing a threat to public health (State Water Resources Control Board, 1990). In general, Chapters I, II, and III establish discharge standards for non-point discharges to marine waters. For example:

The California Ocean Plan, Chapter I, Beneficial Uses, states: “The beneficial uses of the ocean waters of the State that shall be protected include industrial water supply, water contact and non-contact recreation, including aesthetic enjoyment, navigation, commercial and sport fishing, mariculture, preservation and enhancement of Areas of Special Biological Significance, rare and endangered species, marine habitat, fish migration, fish spawning and shellfish harvesting.”

The California Ocean Plan, Chapter II, Water Quality Objectives, states, in part, in Section E, Biological Characteristics, that:

1. Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded.
2. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.
3. The concentration of organic materials in fish, shellfish or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

The California Ocean Plan, Chapter III, General Requirements for Management of Waste Discharge to the Ocean states, in part, in Section B, that waste discharged to the ocean must be essentially free of the following:

1. Material that is floatable or will become floatable upon discharge.
2. Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.
3. Substances which will accumulate to toxic levels in marine waters, sediments or biota.
4. Substances that significantly decrease the natural light to benthic communities and other marine life.
5. Materials that result in aesthetically undesirable discoloration of the ocean surface.

The State Water Resources Control Board (SWRCB) prepares and adopts the California Ocean Plan (SWRCB, 2001), which incorporates the State water-quality standards that apply to all NPDES discharge permits (Table D.3-4) and which is part of the California's Coastal Management Program. The standards identified in the California Ocean Plan are consistent with the limitations specified in the NPDES General Permit. This determination was made when the California Coastal Commission (2001) concurred with the EPA's consistency certification that the proposed activities are consistent with the enforceable policies of California's Coastal Management Program.

In addition to the narrative standards specified in the Ocean Plan, numerical water-quality objectives are specified. Those likely to be pertinent to discharges from the SONGS are listed in Table D.3-5.

**California Department of Fish and Game (CDFG).** Fish and Game Code Sections 3511, 4700, 5050, and 5515 prohibit the take of animals that are classified as fully protected in California. Fish and Game Code Section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Fish and Game Code Section 3503.5 specifically protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy any such birds of prey or to take, possess, or destroy the nest or eggs of any such bird. Fish and Game Code Section 3513 protects California's migratory non-game birds by making it unlawful to take or possess any migratory non-game bird, as designated in the MBTA, or any part of such migratory non-game bird. Fish and Game Code section 1600 et seq. regulates activities by any entity that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by the CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit.

**Porter-Cologne Water Quality Control Act.** Regional water quality control boards regulate the "discharge of waste" to "waters of the State." All projects proposing to discharge waste that could affect waters of the State must file a waste discharge report with the appropriate regional board. The board responds to the report by issuing waste discharge requirements (WDR) or by waiving WDRs for that project discharge. Both of the terms "discharge of waste" and "waters of the State" are broadly defined such that discharges of waste include fill, any material resulting from human activity, or any other "discharge." Isolated wetlands within California, which are no longer considered "waters of the United States" covered under Section 404 of the CWA, would still be covered under the Porter-Cologne Act.

### Local Ordinances and Policies for Terrestrial and Marine Biological Resources

There are no local ordinances or policies that specifically address biological resources offshore of SONGS or within the study area. However, the San Diego RWQCB has established a Water Quality Control Plan (Basin Plan) for the coastal watersheds of San Diego County (RWQCB, 1994). The standards of the RWQCB incorporate the applicable portions of the Ocean Plan and are more specific to the beneficial uses of

Table D.3-4. California Ocean Plan Water Quality Standards

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**A. Bacterial Characteristics**

**1. Water-Contact Standards**

Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline and in areas outside this zone used for water contact sports, as determined by the Regional Board, but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column:

- a. Samples of water from each sampling station shall have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml); provided that not more than 20% of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 ml) and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 ml).
- b. The fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10% of the total samples during any 60-day period exceed 400 per ml.

The "Initial Dilution Zone" of wastewater outfalls shall be excluded from designation as "kelp beds" for purposes of bacterial standards and Regional Boards should recommend extension of such exclusion zone where warranted to the State Board. Adventitious assemblages of kelp plants on waste discharge structures, e.g., outfall pipes and diffusers, do not constitute kelp beds for purposes of bacterial standards.

**2. Shellfish Harvesting Standards**

At all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column:

The median total coliform density shall not exceed 70 per 100 ml and not more than 10% of the samples shall exceed 230 per 100 ml.

**B. Physical Characteristics**

1. Floating particulates and grease and oil shall not be visible.
2. The discharge of the waste shall not cause aesthetically undesirable discoloration of the ocean surface.
3. Natural light shall not be significantly reduced at any point outside the initial dilution zone as a result of the discharge of waste.
4. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

**C. Chemical Characteristics**

1. The dissolved oxygen concentration shall not at any time be depressed more than 10% from which occurs naturally, as a result of the discharge of oxygen demanding waste materials.
2. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.
3. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.
4. The concentration of substances set forth in Chapter IV, Table B in marine sediments shall not be increased to levels which would degrade indigenous biota.
5. The concentration of organic materials in marine sediments shall not be increased to levels which would degrade marine life.
6. Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.

**D. Biological Characteristics**

1. Marine communities, including vertebrate, invertebrate and plant species, shall not be degraded.
2. The natural taste, odor and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.
3. The concentration of organic materials in fish, shellfish or other marine resources used for human consumption shall not be bioaccumulated to levels that are harmful to human health.

**E. Radioactivity**

1. Discharge of radioactive waste shall not degrade marine life.
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Table D.3-5. Limiting Concentrations (µg/L) for Selected Chemical Constituents to be Applied in Receiving Ocean Water Beyond the Zone of Initial Dilution

Constituent	6-Month Median	30-Day Average	Daily Maximum	Instantaneous Maximum
Arsenic	8.0	—	32.0	80.0
Cadmium	1.0	—	4.0	10.0
Chromium	2.0	—	8.0	20.0
Copper	3.0	—	12.0	30.0
Lead	2.0	—	8.0	20.0
Mercury	0.04	—	0.16	0.4
Nickel	5.0	—	20.0	50.0
Selenium	15.0	—	60.0	150.0
Silver	0.7	—	2.8	7.0
Zinc	20.0	—	80.0	200.0
Cyanide	1.0	—	4.0	10.0
Total Chlorine Residual	2.0	—	8.0	60.0
Ammonia	600.0	—	2400.0	6000.0
Non-Chlorinated Phenolics	30.0	—	120.0	300.0
Chlorinated Phenolics	1.0	—	4.0	10.0
Antimony	—	1,200.0	—	—
Ethylbenzene	—	4,100.0	—	—
Thallium	—	2.0	—	—
Toluene	—	85,000.0	—	—
Total PAH	—	0.0088	—	—

Source: SWRCB, 2001.

marine waters adjacent to the Project site. These water quality objectives are designed to protect the beneficial uses of ocean waters within specific drainage basins. The Basin Plan identifies the following existing beneficial uses for the coastal waters near SONGS: contact and non-contact water recreation, navigation, ocean commercial and sport fishing, shellfish harvesting, aquatic species migration and spawning, as well as habitat for marine ecosystems, terrestrial wildlife, and rare, threatened, or endangered species.

### D.3.3 Environmental Impacts and Mitigation Measures for the Proposed Project

#### D.3.3.1 Definition and Use of Significance Criteria

##### Terrestrial Biological Resources

Significance criteria have been developed based on guidance provided by the CEQA Guidelines and adapted to address the specific issues associated with the Proposed Project, as determined by the CPUC as Lead Agency. The Proposed Project may result in significant impacts to terrestrial biological resources if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a threatened or endangered, candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, streams, marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan.

The criteria described above for determining the significance of project impacts are equally applicable to the OSG removal and disposal, site preparation, RSG transport, staging, installation, and routine maintenance phases of the Proposed Project. Most of the effects on biological resources would be limited to transport of the RSGs to the Del Mar Boat Basin and across MCBCP to SONGS 2 & 3.

### Marine Biological Resources

Significance criteria have been developed based on guidance provided by the CEQA Guidelines and adapted to address specific issues associated with the Proposed Project, as determined by the CPUC as Lead Agency. The Proposed Project may result in significant impacts to marine biological resources if the project would cause:

- Adverse modification to or the reduction in a population or habitat used by a State or federally listed endangered, threatened, regulated or sensitive species. Any “take” of a listed species shall be considered significant.
- Adverse modification to or the reduction in a population or habitat of a species that is recognized as biologically or economically significant in local, State, or federal policies, statutes or regulations.
- Any impedance of fish or wildlife migration routes that lasts for a period that significantly disrupts migration.
- Any alteration or destruction of habitat that prevents re-establishment of biological communities that inhabited the area prior to the project.
- Long-term (more than one year) loss or disturbance to biological communities or to ecosystem relationships.

Significance criteria have been developed based on guidance provided by the CEQA Guidelines and adapted to address specific issues associated with the Proposed Project, as determined by the CPUC as Lead Agency. Changes in marine biological resources caused by the Proposed Project are considered significant if the changes:

- Last longer than a month for toxicological impacts (e.g., those caused by oiling events or toxicity caused by the resuspension of contaminated sediments).

- Last longer than one year for impacts caused by habitat disturbance (e.g., suspended sediments) or habitat reduction (e.g., damage to hard-bottom structures).
- Cause adverse modifications to, or reductions in a population or habitat used by a State or federally listed endangered, threatened, rare, or candidate species.
- Cause observable reductions in the population, community composition, or ecosystem relationships for species that are recognized for scientific, recreational, ecological, or commercial importance.

### D.3.3.2 Biological Avoidance and Minimization Measures

The Proposed Project, specifically the transport of the RSGs through MCBCP, would be required to comply with all the “programmatic instructions” developed in the INRMP, particularly in Appendix D of the INRMP, the Estuarine and Beach Ecosystem Conservation Plan (EBCP). The INRMP was formulated as part of the 1995 USFWS Biological Opinion issued for on-going and planned training activities, infrastructure maintenance activities, and several construction projects on the MCBCP. The mission of MCBCP is to operate amphibious training and support operations in order to prepare marines and sailors for combat while at the same time protecting sensitive resources. Therefore, in order to meet the goal of the mission to protect sensitive resources, MCBCP implements programmatic instructions which are strict management practices that fall into four categories: (1) avoidance and minimization; (2) maintenance and enhancement of estuarine/beach ecosystems; (3) mitigation; and (4) compensation. These practices are implemented when operating vehicles or conducting training exercises when in the vicinity of riparian ecosystems, as defined by the 100-year flood plain, and when near the estuary and beach zone, as defined by the areas between salt/fresh water marshes, the head of the tidal action, and the low tide line at the beach. Management practices include avoidance of any future, permanent project impacts other than transient training traffic or exercises from construction. Permanent impacts of any kind are not authorized by the management plan. Indirect effects for noise, light, and dust are considered mitigated by this conservation plan.

The transport of the RSGs from the boat basin to SONGS is similar to activities associated with regular military training activities on the beach, dirt, and paved roads. For these activities, the MCBCP installs additional seasonal fencing from the White Beach least tern colony to the French Creek Lagoon annually during the breeding season (March 15 through August 31) where vehicular and troop movements occur. In addition, the MCBCP distributes notification to military personnel regarding sensitive species and habitat areas and implements a host of programmatic instructions outlined in the INRMP and the EBCP.

The Proposed Project’s RSG transport activities would be consistent with the military training activities for troops and vehicles authorized by the USFWS Biological Opinion (USFWS, 1995) via implementation of the INRMP and the EBCP. In order to comply with the 1995 Biological Opinion, the Proposed Project’s compliance with the INRMP’s programmatic instructions is required, and compliance will need to be demonstrated prior to MCBCP’s issuance of the real estate license for the Proposed Project. To verify compliance, it is anticipated that an official letter of compliance will need to be obtained from the USFWS prior to issuance of the real estate license.

The following “avoidance and minimization measures” are modified versions of programmatic instructions from INRMP Sections D.2.4.1, *Avoidance and Minimization*, and D.2.5.2, *Instructions for Military Training Activities*, that SCE and MCBCP would need to implement during transport of the RSGs to ensure no unauthorized impacts to sensitive resources occur as a result of the Proposed Project. At least one biological monitor appointed by SCE would be present during transport to observe and implement these measures and any mitigation provisions in the following sections. Because compliance with these measures

will be required by MCBCP if a real estate license is issued for the Proposed Project, these measures are considered to be part of the Proposed Project. Although MCBCP will be responsible for implementation, recommendations to facilitate CPUC monitoring are identified in Section D.3.6, below.

- 1. Obtain Qualified Biological Monitor.** SCE shall appoint a qualified biological monitor(s) who holds any State scientific collecting permits or federal 10(a)(1)(A) permits necessary to survey for the Western snowy plover, tidewater goby, California gnatcatcher, and the San Diego fairy shrimp. The biological monitor shall have the following responsibilities and authority.
  - 1a. The biological monitor shall be responsible for reviewing the MCBCP INRMP, specifically INRMP Appendix D, the EBCP, and the permissions and restrictions for transport activities adjacent to the Santa Margarita Estuary and the coastal lagoons of Cocklebur, French, Aliso, and Las Flores Creeks.
  - 1b. The biological monitor shall have authority to order the cessation of all project operations if the monitor determines that any impacts to sensitive biological resources cannot be safely avoided.
  - 1c. The biological monitor shall ensure that the transporter and all support vehicles remain on the designated route at all times. The biological monitors shall be proficient with the vegetation communities and sensitive plant species mapped in the coastal areas of the MCBCP.
- 2. Pre-Transport Coordination with MCBCP.** Prior to transport, SCE shall coordinate with the MCBCP to verify that the appropriate signage and fencing is in place at the Del Mar recreation area, atop the bluffs at Cocklebur Beach, and along the dirt road running along the southern and eastern portions of the Santa Margarita River Estuary. The monitor shall verify this activity has been completed prior to transport and provide documentation to the CPUC.
- 3. Pre-Transport Bird Surveys.** The SCE biological monitor shall coordinate with MCBCP staff biologists to conduct pre-transport bird surveys for nesting or foraging western snowy plovers within the transport route. In the event that the biological monitor observes the species nesting outside the fenced management zones identified in the INRMP, individual nests and any young produced shall be afforded protection by posting and fencing around the immediate vicinity of the nest(s) consistent with MCBCP procedures. Transport would remain at least 15 feet from the plover nests.
- 4. Pre-Transport Personnel Training.** The SCE biological monitor shall insure that all transport personnel have received environmental training prior to commencing work on the Proposed Project. Training shall include a description of all sensitive species potentially occurring on or near the transport route or greater project area, details on each species habitat requirements, the protective measures to be implemented for each species, a description of the role of the biological monitor, and the responsibilities of those on site to protect biological resources. Training shall provide information and legal consequences regarding the potential effects of trash, trespassing, harassing, or harming designated sensitive habitat areas and species outside of the transport route. Personnel shall be directed to follow all programmatic instructions of the EBCP and remain at least 15 feet from fenced or posted management areas.
- 5. Pre-Transport Analysis for High Creek Flows.** To reduce the likelihood that tidewater gobies would be present in the mouth of the Santa Margarita River during transport of the RSGs SCE shall conduct a weather analysis prior to transport activities. Transport activities shall not be conducted during high-flow events. High-flow events have the potential to wash tidewater gobies from the lagoons and river mouths into the ocean. Under normal circumstances, the tidewater goby would not be expected to occur in the river mouth where transport activities would occur. SCE shall provide documentation of the weather report to the CPUC prior to conducting transport activities.

6. **Maintain Buffer From Sensitive Birds.** Transport vehicles shall remain in a direct line along the marked corridor bordering the southern edge of the Santa Margarita Management Zone before heading up-coast. Transport vehicles shall remain on hard packed sand and remain at least 15 feet from nesting areas.
7. **Direct Night Lighting Away from Sensitive Habitat Areas.** The Proposed Project may require activities such as placing matting and servicing vehicles at night through the beach portion of the transport route. Broad-coverage lighting would be supplied to facilitate this work. However, the duration and intensity of the night-lighting shall be minimized to the greatest extent practicable and shall be directed away from sensitive habitat areas including sand dune, estuarine, riparian, and coastal sage scrub habitats.

### Applicant-Proposed Measures

SCE has proposed to include the following measures as part of the Proposed Project in order to minimize impacts on sensitive species and habitats, and ensure revegetation of disturbed areas (SCE, 2004b):

- **Bio-1:** A biological monitor will be appointed by SCE as necessary. The monitor will be present during transport-related activities to ensure that additional disturbance does not occur.
- **Bio-2:** Project lighting will be directed away from the land where potential wildlife resources may exist.
- **Bio-3:** Areas of vegetation disturbance at the transition areas will be revegetated to restore prior conditions.

### B.3.3.3 Replacement Steam Generator Transport

#### Terrestrial Biological Resources

The approximately 15-mile transport route between the boat basin and SONGS traverses dirt roads, paved roads, and compacted beach sand. The transport route is surrounded by sensitive habitats which support a host of federal- and State-listed species. During transport, temporary impacts may occur to vegetation within or adjacent to the route. The transport of the RSGs would be scheduled between October and February, which is outside of the bird breeding season. Consequently, the Proposed Project would avoid impacts to migratory species, such as the least Bell's vireo, southwestern flycatcher, and the California least tern, and to residential species, such as the California gnatcatcher and the Western snowy plover. In addition, transport would not occur during high flows in the Santa Margarita River, thereby avoiding impacts to the tidewater goby. Minor indirect temporary effects to wildlife could occur as a result of increased lighting and noise during transport and while crossing the beach sand, the Santa Margarita River, and ephemerally ponded road ruts. The following is a discussion of specific impacts to vegetation and wildlife resulting from RSG transport activities.

#### Impact B-1: Transport of the RSGs could impact sensitive plants in order to avoid Skull Canyon

The transportation route is unvegetated with the exception of two small patches of disturbed annual grassland/ruderal habitat consisting of mustard, red-stem filaree, and brome grasses. Native shrub species such as coyote brush and coast golden bush are also present but to a limited extent. These two areas would be temporarily crushed (approximately 0.20 miles) during transport in order to avoid Skull Canyon and while transitioning equipment to I-5 between Segment E/F Segment F/G. Activities in this area



would include removing the chain link fencing protecting the southbound lane of I-5 and minor vegetation disturbance. Impacts would be at most 50 feet wide by 100 feet long in both locations. Temporary impacts of this magnitude are typically considered less than significant without mitigation; however, several sensitive perennial plants are known to occur in grasslands throughout MCBCP. One of these species, Blochman's dudleya, is known to occur in Skull Canyon, within 100 feet of the proposed impact area. Therefore, mitigation measures are being proposed to ensure that potential impacts to sensitive plants remain less than significant (Class II).

***Mitigation Measure for Impact B-1, Transport of the RSGs could impact sensitive plants in order to avoid Skull Canyon***

**B-1a Conduct pre-transport sensitive plant surveys.** SCE shall conduct three sensitive plant surveys at the transition areas along the RSG transport routes between the months of March and June. Each survey event shall occur at least 2 weeks apart. The results of each survey shall be submitted to the CPUC for review at least 30 days prior to the initiation of RSG transport. Surveys shall be conducted the year of the proposed activities in accordance with survey guidelines published in the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2001). These guidelines have been adopted by the USFWS, the CDFG, and the CNPS. If sensitive plants are observed, the location and number of each species shall be recorded and marked in the field. During transport activities, SCE shall make all reasonable efforts to avoid the sensitive plants. If avoidance is not possible, the plants shall be transplanted to suitable habitat in the vicinity of the project.

**Impact B-2: Vehicular travel into undisturbed areas along the transport route could impact native vegetation**

Adjacent to the route, often within 10 feet or less, are several sensitive vegetation communities including estuarine, coastal dunes, chaparral, and coastal sage scrub. Because the beach, dirt, and paved roads of the transport route are regularly used military roads and they are sufficiently wide to support the size of the transport vehicles, no direct impacts to these communities are expected to occur. However, if vehicles or construction crew travel beyond the limits of the proposed routes, native vegetation may be impacted. With the implementation of Mitigation Measure B-2a below, potential impacts to native vegetation communities would be less than significant (Class II).

***Mitigation Measure for Impact B-2, Vehicular travel into undisturbed areas along the transport route could impact native vegetation***

**B-2a Delineate transport route.** SCE shall clearly mark the limits of the transport route with construction flagging and or fencing along dirt and paved roads in areas with adjacent sensitive habitat. Transport workers, vehicles, and equipment shall stay outside of these marked areas. Because transport or other support activities would also occur as night, the fencing or alternative material shall be reflective such that it is easily seen.

**Impact B-3: Transport of the RSGs could temporarily disturb beach sand macro-invertebrates, tidewater goby, and San Diego fairy shrimp**

Minor impacts to beach macro-invertebrates, the tidewater goby, and the San Diego fairy shrimp could occur during RSG transport across the beach sand, the Santa Margarita River, and ephemerally ponded ruts. As described in Section B.3.2.1, to minimize potential impacts to these species, SCE proposes to utilize specialized matting that has been used to transport heavy loads through wetlands, marshes, soft

sub-grades, beach sands, and areas of open water six inches in depth. This system can be used in all types of weather conditions without damaging the underlying sensitive environments (URS, 2004). The matting disperses heavy loads evenly to improve traction and decrease impacts on surfaces. Transport activities would not occur unless the flow in the riverhead at the beach crossing is at a rate and depth at which the transporter can safely utilize this matting system. During the crossing, SCE would incorporate guidance for ford crossing based on best management practices specified by the Electric Power Research Institute (in their report titled “Best Management Practices (BMPs) Manual for Access Road Crossings of Wetlands and Waterbodies” March 2002, PEA p. 3-11) or a similar source.

The matting is capable of dispersing heavy loads and bridging flowing and open water habitats without disturbances at depths of 6 inches without crushing sensitive habitats. Therefore, the effects of the matting on beach sand macro-invertebrates, tidewater goby, and the San Diego fairy shrimp are considered to be less than significant and no mitigation is required (Class III) for three reasons: (1) the entire transport route is a regularly used military road and the matting will disperse the excess weight of the RSGs; (2) the tidewater goby is not expected to occur in the river mouth under normal flow conditions; (3) and the San Diego fairy shrimp rarely occur in pools that are disturbed on a regular basis (MCBCP, 2001).

#### Impact B-4: Transport of the RSGs would temporarily disturb sensitive wildlife as a result of increased night lighting along the route

Although the roads are regularly traveled by military amphibious vehicles, tanks, and trucks, the type of equipment used for transport of the RSGs could temporarily disturb sensitive wildlife if the RSGs were transported at night or if project support services need to be implemented at night. As part of the Proposed Project Biological Avoidance and Minimization Measures (see measure number 7 in Section D.3.3.2 above), these impacts have been minimized and are in compliance with the USFWS Biological Opinion (USFWS, 1995). Therefore, impacts from increased night lighting associated with transport activities or vehicle maintenance are not considered significant and no mitigation is required (Class III).

#### Impact B-5: Transport of the RSGs would temporarily disturb sensitive wildlife as a result of increased noise along the route

The noise expected from the transport vehicle is approximately 80dBA, a level permitted in the EBCP for routine military training activities conducted during the breeding season. However, the Proposed Project would occur outside of the breeding season and the transporter and other prime movers would at most require 7 one-way trips between the boat basin and SONGS (Section B.3). Therefore, impacts from increased noise associated with transport activities or vehicle maintenance are not considered significant and no mitigation is required (Class III).

### Marine Biological Resources

Barges and support vessels would be used to transport the RSGs to Del Mar Boat Basin. Increased vessel traffic can have an adverse impact on sea life.

#### Impact B-6: Vessel traffic would increase the likelihood of collisions with protected marine mammals

**Marine Mammals.** Watkins (1986), Malme et al. (1989), and Richardson et al. (1991) have reported that noises from vessels elicit a startle reaction from gray whales and mask their reception capabilities. They also reported that avoidance and approach responses vary according to whale activity. Migrating gray whales have been observed to avoid the approach of vessels to within 200 to 300 m (Wyrick, 1954) or to

within 350 to 550 m (Bogoslovskaya et al., 1981). Based upon the results of Wyrick (1954) and Bogoslovskaya et al. (1981), noise effects on gray whales from vessels can be expected to be limited to within 200 to 550 m of approaching vessels and to be sublethal and temporary. However, collisions between vessels and gray whales occur frequently. Twelve collisions resulting in six deaths of gray whales occurred off southern California between 1975 and 1980 (Patten et al., 1980). Young gray whales, especially, are more likely to be hit by moving vessels (Laist et al., 2001).

The frequency and duration of offshore support vessels would increase substantially as a result of this project. Since collisions between vessels and gray whales, a federally protected marine mammal species, can result in severe injury or death, collisions are considered to be a potentially significant impact.

Very little information describing pinniped responses to vessels is available. Johnson et al. (1989) reported that northern fur seals can be wary and show an avoidance reaction to vessels at distances of up to one mile. Wickens (1994), however, reported that fur seals are often attracted to fishing vessels to feed. Sea lions in the water often tolerate close and frequent approaches by vessels, especially around fishing vessels. Sea lions hauled out on land are more responsive and react when boats approach within 100 to 200 m (Peterson and Bartholomew, 1967). Also, harbor seals often move into the water in response to boats. Even small boats that approach within 100 m displace harbor seals from haulout areas, and less severe disturbance can cause alert reactions without departure (Bowles and Stewart, 1980; Allen et al., 1984; and Osborn, 1985).

Dolphins of many species tolerate or even approach vessels. Reactions to boats often appear to be related to the dolphins' activity. Resting and foraging dolphins tend to avoid boats, while socializing dolphins may approach them (Richardson et al., 1995).

Riedman (1983) reported that, while sea otters often allow close approaches by small boats, they tend to avoid high activity areas. He also noted that some rafting sea otters exhibit mild interest in boats at distances of a few hundred meters and are not alarmed. Garshelis and Garshelis (1984) reported that sea otters in Alaska tend to avoid areas with frequent boat traffic. Udevitz et al. (1995) reported that sea otters tend to move away from approaching boats.

Overall, potential impacts associated with increased vessel traffic resulting from the Proposed Project and associated impacts on marine mammals would be considered significant, but can be mitigated to a less than significant level (Class II).

***Mitigation Measure for Impact B-6, Vessel traffic would increase the likelihood of collisions with protected marine mammals***

**B-6a Provide marine mammal observer training and trained observers.** SCE shall ensure that vessel operators are trained by a marine mammal expert, provided by SCE, to recognize and avoid marine mammals. The operators shall be retrained annually. Retraining sessions shall focus on the identification of marine mammal species, the specific behavior of species common to the project area, and awareness of seasonal concentrations of marine mammals. In addition, SCE shall meet with the vessel operator prior to final transport to the Del Mar Boat Basin to convey all requirements regarding marine mammal safety measures. SCE shall also provide a minimum of two marine mammal observers on all support vessels during the spring and fall gray whale migration periods and during periods/seasons having high concentrations of marine mammals in the project area. SCE shall provide written documentation to CPUC verifying meetings with the vessel operators and identifying the marine mammal observers. Gray whales can be present from December to May, with the greatest numbers in January during the southward migration. A secondary peak occurs in March during the northward migration.

The observers shall have unobstructed views onboard each vessel and shall serve as lookouts so that collisions with marine mammals can be avoided. Additionally, SCE shall provide to vessel operators and the CPUC a contingency plan that focuses on avoidance procedures when marine mammals are encountered at sea. Minimum components of the plan include:

- Vessel operators will make every effort to maintain a distance of 1,000 feet from sighted whales and other threatened or endangered marine mammals or marine turtles.
- Support vessels will not cross directly in front of migrating whales or any other threatened or endangered marine mammals or marine turtles.
- When paralleling whales, support vessels will operate at a constant speed that is not faster than the whales.
- Female whales will not be separated from their calves.
- Vessel operators will not herd or drive whales.
- If a whale engages in evasive or defensive action, support vessels will drop back until the animal moves out of the area.
- Any collisions with marine wildlife will be reported promptly to the federal and State agencies listed below pursuant to each agency's reporting procedures:
  - National Marine Fisheries Service
  - California Department of Fish and Game

**Marine Turtles.** Noise from service-vessel traffic may elicit a startle reaction from marine turtles and produce a temporary sublethal stress (NRC, 1990). Service vessels could also collide with and injure marine turtles at the sea surface, but turtles are estimated to be at the sea surface for less than 4 percent of the time (Byles, 1989; and Lohofener et al., 1990). Vessel-related injuries have not been reported in project waters but have been noted in the Gulf of Mexico. In the Gulf of Mexico, 9 percent of stranded turtles examined showed signs of vessel injuries (USDOC, 1989).

Although marine turtles could be harmed or killed by project related vessels, collision impacts are considered to be adverse but not significant. Marine turtles are very rare in the project area, and collisions with vessel traffic are not expected to occur.

#### D.3.3.4 Staging and Preparation

##### Terrestrial Biological Resources

The RSGs would be staged on hardwood or concrete cribbing on developed land at the SONGS 2 & 3 facility. No impacts to native vegetation would occur. Ornamental vegetation including eucalyptus trees surrounding the perimeter of the facility would not be impacted. The construction of temporary facilities on the Mesa would occur on disturbed or developed land where native vegetation including sage scrub, native grassland, and chaparral do not occur. However, if vehicles travel beyond the limits of any previously disturbed or developed areas on the Mesa in order to construct the temporary facilities, native vegetation may be impacted.

### Impact B-7: Vehicular travel into undisturbed areas on the Mesa could directly impact native vegetation as a result of the temporary facilities

Although unlikely, vehicular travel beyond the limits of disturbed areas on the Mesa could result in the direct loss of vegetation and wildlife habitat as a result of construction activities associated with development of the temporary support facilities. Depending on the area and level of impact, unintended disturbance to native communities and wildlife habitat could be significant. With the adoption of Mitigation Measure B-7a, impacts to native vegetation and wildlife would be less than significant (Class II).

#### *Mitigation Measure for Impact B-7, Vehicular travel into undisturbed areas on the Mesa could directly impact native vegetation as a result of the temporary facilities*

**B-7a Delineate disturbance limits on the Mesa.** To ensure that vehicles and equipment do not enter native habitat outside of the defined area, SCE shall clearly delineate the limits of disturbance with flagging or construction fencing prior to project-related activities at the site. A plan delineating the limits of sensitive habitats areas to be avoided shall be submitted to the CPUC. The construction fence shall remain in place until the temporary facilities are dismantled and the activities in the area have ceased.

### Marine Biological Resources

All activities associated with staging and preparation activities would occur onshore and, therefore, would not adversely impact marine biological resources.

### D.3.3.5 Original Steam Generator Removal, Staging, and Disposal

#### Prepare for and Create Containment Opening

**Terrestrial Biological Resources.** Preparation for cutting access holes in the SONGS 2 & 3 containments involves moving reactor fuel to the used fuel pool. Removal and transport of this fuel is a regular activity and occurs on developed lands according to strict procedures developed to comply with industry codes and standards. No impacts to vegetation or wildlife would occur as a result of these activities. In addition, removal and staging of the OSG would also occur on existing developed land contained in the SONGS facility and no direct impacts to vegetation or wildlife would occur as a result of these activities. However, potential indirect effects on biological resources may occur from the noise and light generated from cutting access holes in the containment domes of SONGS 2 & 3. These indirect impacts are difficult to assess due to the current noise and light generated from the facility, which likely deters wildlife use in the area. Potential impacts to wildlife associated with this activity would be speculative. Therefore, these potential indirect effects are considered to be less than significant (Class III) and no mitigation is required.

**Marine Biological Resources.** All activities associated with creating a containment opening at the Unit 2 and 3 reactors would occur onshore and, therefore, would not adversely impact marine biological resources.

#### Original Steam Generator Transport and Disposal

**Terrestrial Biological Resources.** Preparation of the OSGs for disposal would occur in a temporary enclosure facility located on paved and developed areas of SONGS. The OSGs would be packaged for shipment to a licensed LLRW disposal facility and all travel would occur on paved roads. Therefore, no impacts to vegetation or wildlife associated with these activities are expected to occur.

**Marine Biological Resources.** All activities associated with OSG removal, staging and offsite disposal would occur onshore and, therefore, would not adversely impact marine biological resources.

### D.3.3.6 Steam Generator Installation and Return to Service

#### Terrestrial Biological Resources

The installation of the RSGs would take place within completely developed portions of the SONGS facility. No impacts to biological resources are anticipated.

#### Marine Biological Resources

All activities associated with the RSG installation would occur onshore and, therefore, would not adversely affect marine biological resources. No impacts would occur.

## D.3.4 Environmental Impacts and Mitigation Measures for the Alternatives

The transportation alternatives would use a variety of existing roads with some off-road transitions to transport the replacement steam generators to SONGS 2 & 3. The basic equipment to be used and methods for barge offloading, transporter loading, and trip numbers for the alternatives are very similar to those described for the Proposed Project. The I-5/Old Highway 101 Route would follow a combination of I-5, Old Highway 101, and dirt and paved roads on MCBCP. A total of 4 transitions between surfaces would be required. The MCBCP Inland Route would follow dirt and paved roads with only two transitions through disturbed vegetation.

### D.3.4.1 Transportation Route Alternatives

#### I-5/Old Highway 101 Route Alternative

##### *Environmental Setting*

This approximately 14-mile route would occur almost entirely on I-5 and west of I-5, except for a 0.8-mile segment, located east of I-5, on Cocklebur and Stuart Mesa Roads. The route consists of four transitions over annual grassland and ruderal habitat supporting very little native vegetation. The following is a description of the route.

**Segment K.** The initial portion of the I-5/Old Highway 101 Route Alternative occurs at the Camp Pendleton Del Mar Boat Basin and travels east through Camp Pendleton Del Mar on Harbor Road to A Street at the western edge of I-5. All roads are paved and do not support vegetation, including the surrounding areas such as Fallbrook Junction, a military operations facility.

**Segment L.** The route transitions from the northeast corner of A Street to the southbound lanes of I-5 by removing the chain link fence that protects the freeway. The transition area is barren ground on the west of the fence and barren ground with scattered sagebush and fennel on the east side of the fence. The transition may require installation of a temporary on-ramp made of asphalt over compacted road base. There is an existing road swale along I-5 that would not be impacted, but currently supports coyote bush, buckwheat, annual grasses, mustard, and other weedy species. No sensitive wildlife is expected to occur in this segment.

**Segment M.** The transporter would travel 2.1 miles northbound in the southbound lanes of I-5 over the Santa Margarita River Estuary, which supports populations of the California gnatcatcher. Other than the river, I-5 is completely surrounded by agriculture and no sensitive species are mapped in the vicinity.

**Segment N.** The route circumvents two overpasses, the Cockleburr and Cook Road, by transitioning from I-5 to Coaster Way, an existing rail frontage road. Access via this route may require the construction of a temporary asphalt pathway to connect the northbound section of I-5 and Coaster Way. Habitat in this area consists of ruderal vegetation which is regularly maintained by California Transportation Authority. No sensitive species are mapped in the vicinity and are not expected to occur in the project area.

**Segments O and P.** The route continues on the paved Coaster Way to Cockleburr Road and then to Stuart Mesa Road. Vegetation on the surrounding slopes consists of non-native annual grassland/ruderal vegetation that is subject to regularly mowing. In addition, agriculture areas occur to the south of the paved road and eucalyptus groves exist surrounding various support facilities in the area. The route continues over Cockleburr Canyon which supports riparian vegetation in the creek and coastal sage scrub on the creek slopes. California gnatcatchers are known to occur in the general vicinity, but outside of the proposed transport route.

**Segments Q, R, and S.** Ramps would be used to move the transporter over the San Diego Northern Railroad tracks and across annual grassland and ruderal habitat to the northbound lanes of I-5. The route continues to the southbound lanes directly east of the Navy Landing Craft Assault Center facility. The existing fence would be removed and restored following transit. The transporter would travel 3.7 miles northbound in the southbound lanes of I-5. No sensitive species are known to or expected to occur in the vicinity.

**Segments F through J.** The route transitions from the I-5 north of Skull Canyon, as described under the Proposed Project. As with the Proposed Project, this transition would temporarily impact non-native annuals such as mustard, red-stem filaree, and an occasional native shrub such as coyote brush and coast golden bush (Impact B-1). California gnatcatchers are mapped in the vicinity of Skull Canyon approximately 100 feet from the transport route. The remainder of the I-5/Old Highway 101 Route would be identical to the Beach and Road Route described in Section D.3.1.1.

### Terrestrial Biological Resources

The transport route for the I-5/Old Highway 101 Alternative is approximately 14-miles from the boat basin to SONGS. The route occurs primarily on paved and dirt roads and is unvegetated with the exception of the four transition sites. Habitat in these areas consists of annual grassland and ruderal habitat. The transitions occur between A Street and I-5 (Segment L), I-5 and Cockleburr Street (Segment N), Stuart Mesa Road and I-5 (Segment Q), and between I-5 and a dirt road located on MCBCP (Segment G). Segment G corresponds to a transition point discussed for the Proposed Project and also supports a few native species. This segment is in proximity (approximately 100 feet) from mapped sensitive plants in Skull Canyon. Therefore, pre-transport sensitive plant surveys have been recommended per Mitigation Measure B-1a. No sensitive wildlife is expected to occur in the vicinity of this alternative transport route; therefore, impacts to sensitive wildlife are not expected to occur.

**Impact B-8: Temporary impacts to annual grassland and ruderal habitat from temporary pavement would occur in Segments L, N, Q, and F**

The route transitions from dirt and paved roads over annual grassland and ruderal habitat at four locations. In order to accomplish the transition safely, temporary pavement may be necessary. Temporary pavement for the transition ramps may include an approximate 220-foot-by-50-foot asphalt pathway that would be placed over compacted road base. Both segments A and G contain non-native grassland and

ruderal habitat with a few scattered native species including coyote brush and California buckwheat. Temporary impacts to this type of habitat are generally considered less than significant; however, removing the temporary pavement and leaving bare ground that could erode and create sediment problems would be considered significant without mitigation (Class II).

***Mitigation Measure for Impact B-8, Temporary impacts to annual grassland and ruderal habitat from temporary pavement over annual grassland and ruderal habitat would occur in Segments L, N, O, and F***

**B-8a** **Revegetation of temporarily disturbed areas.** SCE shall prepare and implement a revegetation plan to be approved by CPUC prior to RSG transport. The plan shall provide for the revegetation of the disturbed areas associated with the removal of temporary pavement or other temporary road or bridge construction. Based on the location of the proposed access ramps (i.e., maintained areas of I-5, and railroad right of way) it is unlikely that native sage scrub vegetation would be suitable for these areas. The plan shall include a mixture of native grasses and herbaceous vegetation that is tolerant of routine maintenance. The plan shall include best management practices to control erosion and minimizes off-site sediment transport from the restoration areas. One year of monitoring shall be required with an emphasis on monitoring following rain events to verify that erosion of the revegetated area has not occurred. If remedial actions are necessary, subsequent years of monitoring would also be required.

### Marine Biological Resources

Potential impacts associated with this RSG transportation route would be identical to the Proposed Project (Beach and Road Route). As described for the Beach and Road Route, the vessel traffic associated with the barges and support vessels would be used to transport the RSGs to the Del Mar Boat Basin would increase the likelihood of collisions with protected marine mammals. This impact is potentially significant, but can be mitigated to a less than significant level (Class II) with the implementation of Mitigation Measure B-6a.

All marine biological resource impacts associated RSG transport are related to the delivery of the RSGs to the Del Mar Boat Basin and are independent of the overland route taken to deliver the RSGs to SONGS.

### MCBCP Inland Route Alternative

#### ***Environmental Setting***

The MCBCP Inland Route Alternative is approximately 18-miles from the Del Mar Boat Basin to SONGS. The transport would occur east and west of I-5 and on I-5, with most of the route on paved roads within MCBCP. The route is unvegetated with the exception of two transition areas.

**Segments K and T.** Similar to the I-5/Old Highway 101 Route Alternative, the MCBCP Inland Route Alternative travels east through Camp Pendleton Del Mar on Harbor Road to A Street at the western edge of I-5. All roads are paved in this area and support no vegetation, including the surrounding areas such as Fallbrook Junction, a military operations facility. The route transitions through a chain link gate and a partially paved crossing over the railroad tracks. This area supports populations of non-native fennel and scattered native species such as coast golden bush. The route continues along a narrow dirt road along the San Diego Northern Railroad and Fallbrook Spur tracks to pass under I-5.



**Segments U through Y.** Travel through these segments would be on paved roads located adjacent to areas containing ornamental, coastal sage scrub, and ruderal vegetation. Movement on MCBCP roadways may require travel only at night or non-peak hours, as directed by MCBCP, to minimize the impact on normal vehicle traffic. The route includes travel north on Stuart Mesa Road, Las Pulgas Road, and El Camino Real through MCBCP over Los Flores Creek and to the east of I-5, Skull Canyon, and San Onofre State Park Campground. Several pairs of California gnatcatchers are mapped adjacent to these segments and least Bell's vireo and southwestern flycatcher are known to nest in many of the creeks that occur along the route.

**Segments Z and AA.** The transporter would approach I-5 north of the immigration checkpoint facility along a short paved access road connecting to El Camino Real. The transporter would transition to I-5 via this dirt road and would cross a section of non-native grassland. The vegetation at this location is regularly mowed and no sensitive species are expected to occur in this area. Directly east of the North Road/Old Highway 101 intersection, the transporter would leave the southbound lanes of I-5, possibly using a paved transition road that would be constructed to support the transporter. From this location the transition would lead to ramps that would bridge over the existing San Diego Northern Railroad tracks ballast to a second transition. This transition would accommodate the grade differential between the top of the San Diego Northern Railroad tracks and North Road. The area is vegetated with remnant chaparral and sage scrub species intermixed with non-native shrubs and grasses. There is potential for a man-made wetland to occur at the bottom of the slope adjacent to the railroad tracks.

**Segments AB through AD.** These segments are located on paved roads adjacent to annual grassland. The second transitions would occur at Segment AC and AD that would cross over the highly disturbed road shoulders of I-5. Vegetation in this location includes castor bean (*Ricinus communis*), short-pod mustard, and spotted spurge (*Euphorbia maculata*). A few isolated native species including mule fat and coast golden bush also occur (URS, 2004). No sensitive species are mapped or expected to occur in this area due to the close proximity of urban development and the I-5.

### Terrestrial Biological Resources

Under the MCBCP Inland Route Alternative, the transport route would utilize a combination of both dirt and paved roads. Two transition points would also be required under this alternative with one transition over disturbed habitat near the immigration checkpoint and a second near Basilone Road. This area may support man-made wetlands adjacent to I-5 that could be disturbed by construction of temporary pavement or bridge structures. Although the route travels adjacent to known locations of the California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher, these species would not occur within the project area. In addition, least Bell's vireo and the southwestern willow flycatcher are migratory species and would not be present during the transport period.

### Impact B-9: Transition through Segments AA and AC could cause impacts to waters of the U.S. or wetlands

It is unclear whether jurisdictional waters or wetlands occur within Segments AA or in AC in locations where temporary pavement or bridges would be installed for a safe transition to SONGS. If jurisdictional areas occur in Segment AA, SCE would be required to obtain the permits for temporary construction activities in jurisdictional waters prior to implementation of the Proposed Project. As part of the permit process, a restoration plan would need to be developed including a plant palette, success criteria, and monitoring protocols approved by the regulatory agencies. Temporary impacts to waters or wetlands are considered significant without mitigation (Class II).

*Mitigation Measure for Impact B-9, Transition through Segments AA and AC could cause impacts to waters of the U.S. or wetlands*

**B-9a Complete jurisdictional delineation for waters and wetlands in Segments AA and AC.** SCE shall complete a jurisdictional delineation of waters of the U.S. regulated by the Army Corps of Engineers. The delineation shall be in accordance with the Field Guide for Wetland Delineation (Corps, 1987). The results of the wetland delineation shall be submitted to the CPUC for approval prior to transport.

In the event that jurisdictional waters and or wetlands are present, SCE shall prepare a Habitat Mitigation and Monitoring Plan for approval by Army Corps of Engineers. The restoration plan shall include a plant palette, success criteria, and monitoring protocols approved by the regulatory agencies. SCE shall provide verification of agencies approval to the CPUC prior to transport activities. The plan shall ensure that the acreage and ecological function of existing resources are matched or exceeded following temporary impacts.

### Marine Biological Resources

Potential impacts associated with this RSG transportation route would be identical to the Proposed Project (Beach and Road Route). As described for the Beach and Road Route, the vessel traffic associated with the barges and support vessels would be used to transport the RSGs to the Del Mar Boat Basin would increase the likelihood of collisions with protected marine mammals. This impact is potentially significant, but can be mitigated to a less than significant level (Class II) with the implementation of Mitigation Measure B-6a.

All marine biological resource impacts associated RSG transport are related to the delivery of the RSGs to the Del Mar Boat Basin and are independent of the overland route taken to deliver the RSGs to SONGS.

### D.3.4.2 OSG Disposal Alternative

#### OSG Onsite Storage Alternative

**Terrestrial Biological Resources.** The construction of an OSG Storage Facility would occur on existing developed land within the SONGS facility. As such, no direct impacts to vegetation or wildlife would occur as a result of these activities. Although unlikely, vehicular travel beyond the limits of disturbed areas on the Mesa area for the OSG Storage Facility site could result in the direct loss of vegetation and wildlife habitat. In order to prevent significant impacts to the Mesa if this site was chosen for an OSG Storage Facility, the Proposed Project would implement Mitigation Measure B-7a, Delineate disturbance limits on the Mesa (see Section D.3.3.4). As with the Proposed Project, impacts would be less than significant with the incorporation of this mitigation measure (Class II).

While potential indirect impacts to biological resources may occur from the noise and light that would be generated during construction of the OSG Storage Facility, these impacts are difficult to assess due to the current noise and light generated from the facility, which likely deters wildlife in the area. As discussed for the Proposed Project, potential impacts to wildlife would be speculative, and the effects of the OSG Storage Facility would be considered less than significant (Class II).

**Marine Biological Resources.** All activities associated with OSG removal, transportation and storage would occur onshore and, therefore, would not adversely impact marine biological resources.

## D.3.5 Environmental Impacts of the No Project Alternative

### D.3.5.1 Terrestrial Biological Resources

Under the No Project Alternative, the habitats at the SONGS site would remain largely unchanged for the short term and project-related impacts during RSG transport and other activities would not occur. No ground disturbance or other physical modification of the lands surrounding SONGS would occur. Because the plant would not be able to operate until the NRC license expiration, some limited areas may be returned to native habitat sooner than under the Proposed Project.

Potential impacts associated with the No Project Alternative include the development of replacement energy sources that would likely be constructed and operated to make up for the generating capacity lost with the shutdown of SONGS 2 & 3. A wide range of potential new power generating and transmission solutions could be implemented. These could include the construction of new generating facilities including natural gas-fired power plants with associated linear facilities such as supply pipelines and transmission system interconnections or expansions. Wind energy technologies could involve especially severe impacts to avian species from bird strikes on impeller units. Construction of new facilities would also involve large areas of ground disturbances for footings and transmission facilities. Impacts to other terrestrial biological resources would be significant if new facilities are built on or through the MCBCP, which is known to support numerous federal- and State-listed species, as well as large numbers of locally rare plants and animals. Currently, the MCBCP is the largest tract of open space remaining in San Diego County and occupies approximately 125,000 acres of which only 10,000 acres is developed.

### D.3.5.2 Marine Biological Resources

The No Project Alternative could generate limited impacts to marine biological resources depending on the source of replacement power; however, it would eliminate adverse effects of normal SONGS operations such as the thermal plume and cooling water intake impingement and entrainment.

**Replacement Generation Impacts.** Replacement generation facilities would not likely cause substantial impacts to marine biological resources. Because of environmental concerns, use of once-through cooling or substantial alteration of marine habitat is not expected under any reasonably foreseeable replacement generation scenario. None of the foreseeable alternative power generation alternatives would have direct, adverse impacts to the marine environment. It is unlikely that any alternative to SONGS would utilize the existing SONGS cooling water system without substantial modification. The adverse effects of the SONGS thermal plume and cooling water uptake entrainment that exist in the baseline conditions would abate much sooner under the No Project Alternative when compared to the Proposed Project, and project-related impacts of the SONGS cooling water system on the marine environment would be avoided.

Potential SONGS cooling water system impacts were evaluated as part of the Environmental Impact Statement (EIS) that was prepared by the Atomic Energy Commission (AEC, 1973) and Nuclear Regulatory Commission (NRC, 1981). While potential impacts associated with most of the above resources were evaluated in the EIS, many of the predictions were found to be incorrect according to the MRC studies. In addition, many of the SONGS cooling water system observed impacts that have been observed and documented were not predicted in the original EIS for the facility but would be considered environmentally significant.

Under the No Project Alternative, impingement and entrainment would cease and cooling water thermal discharges would no longer occur, thus avoiding significant impacts that are currently attributed to SONGS Unit 2 and 3 operations. Cessation of the SONGS cooling water system operations would also allow for the slow natural restoration of the marine environment as it existed prior to SONGS operations. Therefore, entrainment and impingement impacts associated with the No Project Alternative would be considered significant beneficial impacts (Class IV).

## D.3.6 Mitigation Monitoring, Compliance, and Reporting Table

Table D.3-6 shows the mitigation monitoring, compliance, and reporting program for Biological Resources.

Table D.3-6. Project Biological Avoidance and Minimization Measures and Mitigation Monitoring Program

### Biological Avoidance and Minimization Measures

1. **Obtain Qualified Biological Monitor** – The SCE biological monitor shall appoint a qualified biological monitor who holds any State scientific collecting permits or federal 10(a)(1)(A) permits necessary to survey for the Western snowy plover, tidewater goby, California gnatcatcher, and the San Diego fairy shrimp. The biological monitor shall have the following responsibilities and authority.
  - 1a. The biological monitor shall be responsible for reviewing the MCBCP INRMP, specifically INRMP Appendix D, the EBCP, and the permissions and restrictions for transport activities adjacent to the Santa Margarita Estuary and the coastal lagoons of Cocklebur, French, Aliso, and Las Flores Creeks.
  - 1b. The biological monitor shall have authority to order the cessation of all project operations if the monitor determines that any impacts to sensitive biological resources cannot be safely avoided.
  - 1c. The biological monitor shall ensure that the transporter and all support vehicles remain on the designated route at all times. The biological monitors shall be proficient with the vegetation communities and sensitive plant species mapped in the coastal areas of the MCBCP.

**CPUC Monitoring/Reporting Requirements:** SCE shall provide a description of qualifications and experience of the biological monitor(s) to the CPUC prior to RSG transport. The SCE-appointed monitor shall coordinate with the CPUC-designated monitor(s) on plans for compliance with INRMP permissions and restrictions, and on corrective actions to be taken if any violations occur.
2. **Pre-Transport Coordination with MCBCP** – Prior to transport, SCE shall coordinate with the MCBCP to verify that the appropriate signage and fencing is in place at the Del Mar recreation area, atop the bluffs at Cocklebur Beach, and along the dirt road running along the southern and eastern portions of the Santa Margarita River Estuary. The monitor shall verify this activity has been completed prior to transport and provide documentation to the CPUC.

**CPUC Monitoring/Reporting Requirements:** SCE shall report to the CPUC on coordination efforts with the MCBCP and provide documentation to the CPUC verifying that appropriate signage and fencing has been installed. The CPUC-designated monitor will also verify compliance with this measure in the field.
3. **Pre-Transport Bird Surveys** – The SCE biological monitor shall coordinate with MCBCP staff biologists to conduct pre-transport bird surveys for nesting or foraging western snowy plovers within the transport route. In the event that the biological monitor observes the species nesting outside the fenced management zones identified in the INRMP, individual nests and any young produced shall be afforded protection by posting and fencing around the immediate vicinity of the nest(s) consistent with MCBCP procedures. Transport would remain at least 15 feet from the plover nests.

**CPUC Monitoring/Reporting Requirements:** SCE shall report to the CPUC on coordination efforts with the MCBCP. If needed, SCE shall provide documentation to the CPUC verifying that posting and fencing has been implemented consistent with MCBCP procedures. The CPUC-designated monitor will also verify compliance with this measure in the field.
4. **Pre-Transport Personnel Training** – The SCE biological monitor shall insure that all transport personnel have received environmental training prior to commencing work on the Proposed Project. Training shall include a description of all sensitive species potentially occurring on or near the transport route or greater project area, details on each species habitat requirements, the protective measures to be implemented for each species, a description of the role of the biological monitor, and the responsibilities of those on site to protect biological resources. Training shall provide information and legal consequences regarding the potential effects of trash, trespassing, harassing, or harming designated sensitive habitat areas and species outside of the transport route. Personnel shall be directed to follow all programmatic instructions of the EBCP and remain at least 15 feet from fenced or posted management areas.

**CPUC Monitoring/Reporting Requirements:** SCE shall provide documentation verifying that transport personnel have received the required training.
5. **Pre-Transport Analysis for High Creek Flows** – To reduce the likelihood that tidewater gobies would be present in the mouth of the Santa Margarita River during transport of the RSGs SCE shall conduct a weather analysis prior to transport activities. Transport activities shall not be conducted during high-flow events. High-flow events have the potential to wash tidewater gobies from the lagoons and river mouths into the ocean. Under normal circumstances, the tidewater goby would not be expected to occur in the river mouth where transport activities would occur. SCE shall provide documentation of the weather report to the CPUC prior to conducting transport activities.

Table D.3-6. Project Biological Avoidance and Minimization Measures and Mitigation Monitoring Program

**CPUC Monitoring/Reporting Requirements:** SCE shall provide the results of its weather analysis to the CPUC prior to transport activities. The CPUC-designated monitor shall verify that transport across the Santa Margarita River does not occur during high-flow events.

6. **Maintain Buffer from Sensitive Species** – Transport vehicles shall remain in a direct line along the marked corridor bordering the southern edge of the Santa Margarita Management Zone before heading up-coast. Transport vehicles shall remain on hard packed sand and remain at least 15-feet from nesting areas.

**CPUC Monitoring/Reporting Requirements:** The CPUC-designated monitor shall verify compliance with this measure by observing transport activities in the field.

7. **Direct Night Lighting Away from Sensitive Habitat Areas** – The Proposed Project may require activities such as placing matting and servicing vehicles at night through the beach portion of the transport route. Broad-coverage lighting would be supplied to facilitate this work. However, the duration and intensity of the night-lighting shall be minimized to the greatest extent practicable and shall be directed away from sensitive habitat areas including sand dune, estuarine, riparian, and coastal sage scrub habitats.

**CPUC Monitoring/Reporting Requirements:** SCE shall provide to the CPUC a description of its plans to minimize night lighting and directed light away from sensitive habitat areas. The CPUC-designated monitor shall verify compliance with this measure in the field.

<b>IMPACT B-1</b>	<b>Transport of the RSGs could impact sensitive plants in order to avoid Skull Canyon (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>B-1a: Conduct pre-transport sensitive plant surveys.</b> SCE shall conduct three sensitive plant surveys at the transition areas along the RSG transport routes between the months of March and June. Each survey event shall occur at least 2 weeks apart. The results of each survey shall be submitted to the CPUC for review at least 30 days prior to the initiation of RSG transport. Surveys shall be conducted the year of the proposed activities in accordance with survey guidelines published in the <i>Inventory of Rare and Endangered Vascular Plants of California</i> (CNPS, 2001). These guidelines have been adopted by the USFWS, the CDFG, and the CNPS. If sensitive plants are observed, the location and number of each species shall be recorded and marked in the field. During transport activities, SCE shall make all reasonable efforts to avoid the sensitive plants. If avoidance is not possible, the plants shall be transplanted to suitable habitat in the vicinity of the project.
<b>Location</b>	Transition between Segments E and F and between F and G.
<b>Monitoring / Reporting Action</b>	Submittal of a Sensitive Plant Survey Report and Mitigation Plan, if necessary, to the CPUC.
<b>Effectiveness Criteria</b>	Complete avoidance of sensitive plants in place, by relocation, or by acceptable mitigation for impacts.
<b>Responsible Agency</b>	CPUC
<b>Timing</b>	Between March and June during the year of transport
<b>IMPACT B-2</b>	<b>Vehicular travel into undisturbed areas along the transport route could impact native vegetation (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>B-2a: Delineate transport route.</b> SCE shall clearly mark the limits of the transport route with construction flagging and or fencing along dirt and paved roads in areas with adjacent sensitive habitat. Transport workers, vehicles, and equipment shall stay outside of these marked areas. Because transport or other support activities would also occur as night, the fencing or alternative material shall be reflective such that it is easily seen.
<b>Location</b>	Entire length of transport route
<b>Monitoring / Reporting Action</b>	On-site monitoring of transport activities and preparation of an "As-Built" report to agencies describing any unexpected impacts.
<b>Effectiveness Criteria</b>	Avoidance of all flagged or fenced sensitive habitat areas.
<b>Responsible Agency</b>	CPUC
<b>Timing</b>	During project implementation

Table D.3-6. Project Biological Avoidance and Minimization Measures and Mitigation Monitoring Program

<b>IMPACT B-6</b>	<b>Vessel traffic would increase the likelihood of collisions with protected marine mammals (Class II)</b>
<b>MITIGATION MEASURE</b>	<p><b>B-6a: Provide marine mammal observer training and trained observers.</b> SCE shall ensure that vessel operators are trained by a marine mammal expert, provided by SCE, to recognize and avoid marine mammals. The operators shall be retrained annually. Retraining sessions shall focus on the identification of marine mammal species, the specific behavior of species common to the project area, and awareness of seasonal concentrations of marine mammals. In addition, SCE shall meet with the vessel operator prior to final transport to the Del Mar Boat Basin to convey all requirements regarding marine mammal safety measures. SCE shall also provide a minimum of two marine mammal observers on all support vessels during the spring and fall gray whale migration periods and during periods/seasons having high concentrations of marine mammals in the project area. SCE shall provide written documentation to CPUC verifying meetings with the vessel operators and identifying the marine mammal observers. Gray whales can be present from December to May, with the greatest numbers in January during the southward migration. A secondary peak occurs in March during the northward migration. The observers shall have unobstructed views onboard each vessel and shall serve as lookouts so that collisions with marine mammals can be avoided. Additionally, SCE shall provide to vessel operators and the CPUC a contingency plan that focuses on avoidance procedures when marine mammals are encountered at sea. Minimum components of the plan include:</p> <ul style="list-style-type: none"> <li>• Vessel operators will make every effort to maintain a distance of 1,000 feet from sighted whales and other threatened or endangered marine mammals or marine turtles.</li> <li>• Support vessels will not cross directly in front of migrating whales or any other threatened or endangered marine mammals or marine turtles.</li> <li>• When paralleling whales, support vessels will operate at a constant speed that is not faster than the whales.</li> <li>• Female whales will not be separated from their calves.</li> <li>• Vessel operators will not herd or drive whales.</li> <li>• If a whale engages in evasive or defensive action, support vessels will drop back until the animal moves out of the area.</li> <li>• Any collisions with marine wildlife will be reported promptly to the federal and State agencies listed below pursuant to each agency's reporting procedures:             <ul style="list-style-type: none"> <li>– National Marine Fisheries Service</li> <li>– California Department of Fish and Game</li> </ul> </li> </ul>
<b>Location</b>	Ocean transportation route between Ports of Los Angeles/Long Beach and Del Mar Boat Basin.
<b>Monitoring / Reporting Action</b>	Continuous monitoring by the onboard marine mammal observers. If a collision occurs, the observers shall submit a report to the CPUC describing the details of the incident.
<b>Effectiveness Criteria</b>	Avoidance of marine mammal collisions.
<b>Responsible Agency</b>	CPUC, CDFG, NMFS
<b>Timing</b>	Prior to RSG transport
<b>IMPACT B-7</b>	<b>Vehicular travel into undisturbed areas on the Mesa could directly impact native vegetation as a result of the temporary facilities (Class II)</b>
<b>MITIGATION MEASURE</b>	<p><b>B-7a: Delineate disturbance limits on the Mesa.</b> To ensure that vehicles and equipment do not enter native habitat outside of the defined area, SCE shall clearly delineate the limits of disturbance with flagging or construction fencing prior to project-related activities at the site. A plan delineating the limits of sensitive habitats areas to be avoided shall be submitted to the CPUC. The construction fence shall remain in place until the temporary facilities are dismantled and the activities in the area have ceased.</p>
<b>Location</b>	Temporary facilities on the Mesa
<b>Monitoring / Reporting Action</b>	Submission of a plan to the CPUC delineating the limits of sensitive habitats areas to be flagged or fenced. The CPUC will monitor the construction of the temporary facilities to ensure that flagged or fenced areas are avoided.

**Table D.3-6. Project Biological Avoidance and Minimization Measures and Mitigation Monitoring Program**

Effectiveness Criteria	No impacts to native vegetation.
Responsible Agency	CPUC
Timing	During the Replacement Steam Generator Staging and Preparation and until temporary facilities on the Mesa are dismantled.
<b>IMPACT B-8</b>	<b>Temporary impacts to annual grassland and ruderal habitat from temporary pavement would occur in Segments L, N, Q, and F (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>B-8a: Revegetation of temporarily disturbed areas.</b> SCE shall prepare and implement a revegetation plan to be approved by CPUC prior to RSG transport. The plan shall provide for the revegetation of the disturbed areas associated with the removal of temporary pavement or other temporary road or bridge construction. Based on the location of the proposed access ramps (i.e., maintained areas of I-5, and railroad right of way) it is unlikely that native sage scrub vegetation would be suitable for these areas. The plan shall include a mixture of native grasses and herbaceous vegetation that is tolerant of routine maintenance. The plan shall include best management practices to control erosion and minimizes off-site sediment transport from the restoration areas. One year of monitoring shall be required with an emphasis on monitoring following rain events to verify that erosion of the revegetated area has not occurred. If remedial actions are necessary, subsequent years of monitoring would also be required.
Location	Temporarily paved or disturbed transition areas
Monitoring / Reporting Action	Submittal of a revegetation plan to the CPUC and MCBCP that includes one year of monitoring to evaluate the success of the revegetation.
Effectiveness Criteria	Restoration will be considered successful if 75% of the ground cover consists of native species in the revegetated areas. Minimal erosion of temporarily disturbed areas.
Responsible Agency	CPUC
Timing	Plan to be submitted at least 30 days prior to RSG transport. Revegetation shall occur immediately following completion of RSG transport activities.
<b>IMPACT B-9</b>	<b>Transition through Segments AA and AC could cause impacts to waters of the U.S. or wetlands (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>B-9a: Complete jurisdictional delineation for waters and wetlands in Segments AA and AC.</b> SCE shall complete a jurisdictional delineation of waters of the U.S. regulated by the Army Corps of Engineers. The delineation shall be in accordance with the Field Guide for Wetland Delineation (Corps, 1987). The results of the wetland delineation shall be submitted to the CPUC for approval prior to transport. In the event that jurisdictional waters and or wetlands are present, SCE shall prepare a Habitat Mitigation and Monitoring Plan for approval by Army Corps of Engineers. The restoration plan shall include a plant palette, success criteria, and monitoring protocols approved by the regulatory agencies. SCE shall provide verification of agencies approval to the CPUC prior to transport activities. The plan shall ensure that the acreage and ecological function of existing resources are matched or exceeded following temporary impacts.
Location	Transition areas that have the potential to support waters or wetlands.
Monitoring / Reporting Action	Confirmation of issuance of permits as needed by the Corps, CDFG, and RWQCB prior to transport activities. Submission of Annual Reports to the regulatory agencies as required by permits.
Effectiveness Criteria	Verification of compliance with Corps, CDFG, and RWQCB permit conditions. Approval of the HMMP by the permitting agencies as adequate to replace temporarily lost functions and values.
Responsible Agency	CPUC
Timing	Permits shall be obtained prior to RSG transport activities. HMMP implementation will continue until success criteria specified in the HMMP are met.



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