Table 2.4-1

TERRESTRIAL SPECIAL STATUS[1] SPECIES WITH POTENTIAL TO OCCUR ON THE DIABLO CANYON LANDS[2]

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Euphilotes enoptes smithi	Smith's blue butterfly	FE	none	No	North and South Ranches; coastal scrub vegetation containing buckwheat (Eriogonum spp.)	Outside known range; not known from SLO County. Prefers coastal dunes and coastal scrub associated with host plant (several species of wild buckwheat).	**Low** – Outside known range; special habitat elements (coastal scrub with Eriogonon spp.) present; multiple survey results negative.
Helminthoglypta walkeriana	Morro shoulderband snail	FE	none	Yes	none	Near current known range; Los Osos Valley to the coast; south through Montaña de Oro, and north to Toro Creek. Found on dune soils with dense scrub cover, duff layer below.	**Low** – Suitable habitat and special habitat elements lacking; failure to detect during long-term monitoring
Ambystoma californiense	California tiger salamander	FT	ST / SSC	No	South Ranch, Parcel P; ephemeral and intermittent streams may provide some breeding habitat.	within current known range; prefers ephemeral pools for breeding, rodent burrows for escape and estivation.	**Low** - true vernal pools are not present; ephemeral channel pools occur in Diablo Creek and several drainages on the South Ranch; multiple survey results negative

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Rana draytonii	California red-legged frog	FT	SSC	No	North and South Ranches and Parcel P; Lower Coon Creek, Tom's Pond on the North Ranch; Diablo Creek in Parcel P; ephemeral drainages and abandoned irrigation ponds on the South Ranch.	within current known range; occurs in pools in streams and marshes and occasionally in ponds at least 2 feet deep. Requires shoreline vegetation that provides shade at water level and cattails or other emergent vegetation for cover.	**Low** - multiple survey results negative
Taricha torosa	Coast Range newt	none	SSC (Montere y County south only)	No	North and South Ranches and Parcel P; all seasonal and perennial streams and ponds on the Diablo Lands could potentially serve as breeding sites.	within current known range; requires slow moving streams (class 1, 2 or 3) or ponds.	**Moderate** – Suitable habitat and special habitat elements present; multiple survey results negative
Emys marmorata	Western pond turtle	none	SSC	No	North and South Ranches as well as Parcel P; Lower Coon Creek and Tom's Pond on North Ranch; Diablo Creek in Parcel P; intermittant drainages with some persistant pool habitat on the South Ranch.	within current known range; known from San Luis Creek just south of Diablo Lands. Requires slow moving streams (class 1, 2 or 3), pools and / or ponds.	**Moderate** – Suitable habitat and special habitat elements present; multiple survey results negative

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Phrynosoma blainvillii	*Blainville's horned lizard (aka, California horned lizard)*	*none*	*SSC*	*No*	*North and South Ranches and undeveloped portions of Parcel P; coastal scrub, chapparal and bishop pine cover types with friable soils and open vegetative structure.*	*within current known range; found in various vegetation communities with open areas of sandy or gravelly soil present, sandy washes, edges of dirt roads.*	***Moderate** – Suitable habitat and special habitat elements are present; multiple survey results negative.*
Anniella pulchra pulchra	*Silvery legless lizard*	*none*	*SSC*	*Yes*	*North Ranch; mouth of Coon Creek*	*within current known range; Populations occur in coastal dunes north and south of the Diablo Lands.*	***Low -** Suitable habitat very limited (mouth of Coon Creek beach); multiple survey results there negative.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Thamnophis hammondii	*Two-stripped garter snake*	*none*	*SSC*	*No*	*North Ranch and Parcel P; Coon Creek, Tom's Pond, Diablo Creek*	*Within current known range; this snake is highly aquatic and feeds on other aquatic vertebrates (fish and amphibians).*	***Low -** Suitable habitat present in areas of permanent fresh water; multiple survey results negative*
Charina umbratica	*Southern rubber boa*	*none*	*ST*	*Yes; http://www.californiaherps.com/snakes/maps/cbottaemap.jpg*	*North and South Ranches; coastal maritime chaparral and closed cone pine forest areas.*	*not within current known range; SLO records comprise isolated population; could be C. umbratica / C. bottae intergrade. Closed-cone pine forest and riparian corridors.*	***Low –** Survey results negative; taxonomy of San Luis Obispo County records unclear.*
Elanus leucurus	*White-tailed kite*	*none*	*SFP*	*No*	*North and South Ranches and Parcel P; suitable habitat occurs in oak woodlands, grasslands, and riparian corridors*	*not within current breeding range; in SLO County, they are most common from Morro Bay north.*	***Low -** No occurrence records for this species exist for the Diablo Lands; multiple survey results negative*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Asio otus	Long-eared owl	none	SSC (nesting)	No	North Ranch and Parcel P; riparian corridors of Coon and Diablo Creeks suitable for breeding	within historical range, but outside current breeding range;	**Low** - Few records document this owl from coastal SLO County. One wintering owl was observed in Montana de Oro State Park in 1965; survey results negative on Diablo Lands
Athene cunicularia	Burrowing owl	none	SSC (Burrow sites & some wintering sites)	Yes	North and South Ranches; suitable habitat occurs in grazed grassland (North Ranch), and near the edges of agricultural fields (South Ranch). One incidental sighting of a burrowing owl within Parcel P is known (S. Krenn).	within historic breeding range and outside current known breeding range; a grassland species adapted to areas highly altered by human activity (e.g., agriculture). Suitable habitat contains burrows for roosting and nesting and short vegetation.	**High** - Known to occur on the North and South Ranches as a non-breeding winter residents; this bird is believed nearly extirpated as a breeding species in coastal San Luis Obispo County.
Strix occidentalis occidentalis	California spotted owl	none	SSC	No	upper Diablo Creek (Parcel P) and Irish Canyon Creek; coastal live oak riparian woodland	within current known range; In San Luis Obispo County, found in interior canyons with narrow riparian corridors. Some occur in coastal areas, but these are probably wintering birds.	**Low** - Habitat occurs in Diablo and Irish canyons. These areas are known to support great horned owls which reduces suitability for S. o. occidentalis. Multiple survey results negative.
Circus cyaneus	Northern harrier	none	SSC (nesting)	No	North and South Ranches and Parcel P; open grassland and agricultural fields	within current known breeding range; In SLO County, harriers are common winter visitors. Breeding harriers are most common along the coast north of Morro Bay and in the eastern part of the county.	**Low** - Diablo Lands do not offer any highly suitable nesting habitat; multiple survey results negative.

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Aquila chrysaetos	*Golden eagle*	*none*	*SFP*	*Yes*	*North and South Ranches and Parcel P; observed foraging over the Diablo Lands or utilizing both utility poles and designed raptor perch structures provided for their use (North Ranch).*	*within current breeding range; prefers open, sloping landscapes for foraging. Nests on cliffs or in large trees. Sometimes known to nest on electrical transmission towers.*	***High** - Known to forage over Diablo Lands North and South of the plant site; Breeding golden eagles are not common in San Luis Obispo county, and most coastal breeding occurs north of the city of San Luis Obispo. To date, no nest sites have been found on the Diablo Lands.*
Gymnogyps californianus	*California condor*	*FE*	*SE / SFP*	*Yes*	*North Ranch, South Ranch; foraging habitat only*	*within current known range; suitable nesting habitat is lacking on the Diablo Lands; foraging along coastal bluffs and terraces only.*	***Low - Moderate** - A California condor was sighted in 2012 (the first such record from the Pecho Coast since the1970s) during routine monitoring surveys performed on the North Ranch.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Falco peregrinus anatum	*American peregrine falcon*	*DL*	*SFP*	*Yes*	*North Ranch, South Ranch, Plant Site; Nests on off-shore rocks adjacent to and north of the plant site.*	*within current known nesting range; in coastal areas nests on off-shore rocks and coastal bluffs;*	***High** - Known to occur; nests on off-shore rocks at two locations adjacent to the Diablo Lands; forages along coastal bluffs and coastal terrace.*
Lanius ludovicianus	*Loggerhead shrike*	*none*	*SSC (nesting)*	*Yes*	*North and South Ranches; open grassland, agricultural fields.*	*not within current known breeding range; In SLO County, it is a common winter visitor in agricultural areas, grassland, and, to a lesser extent, in oak savannah. Breeding shrikes are not common along the coastal region of the County.*	***High** - Known to occur; records are from outside the breeding season only.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Setophaga petechia	*Yellow warbler*	*none*	*SSC (nesting)*	*Yes*	*North Ranch; riparian habitats with a dense, multi-layered tree canopy and heavy brush understory; lower Coon Creek riparian zone.*	*within current known breeding range; In SLO County, it is found throughout the interior riparian areas and is locally common at some sites on the south coast, including Oso Flaco Lake and Oceano.*	***High** - Known to occur; small numbers of breeding pairs have been recorded from Coon Creek riparian zone.*
Agelaius tricolor	*Tricolored blackbird*	*none*	*SSC (nest colony)*	*Yes*	*North Ranch; tule patches near mouth of Coon Creek and at Tom's Pond; also South Ranch in upper Irish Canyon*	*within current known breeding range; they are colonial birds that seek cover and nest in emergent vegetation, particularly cattails and tules.*	***Low** - only one record of this species has been recorded from the Diablo Lands and it was a solitary bird seen at Tom's Pond during surveys in the early 1990's. Multiple surveys from 2005 through 2011 failed to identify a nesting colony.*
Ammodramus savannarum	*grasshopper sparrow*	*none*	*SSC (nesting)*	*Yes*	*North Ranch; associated with open grasslands (mostly non-native) with moderate ground cover and plant heights from 4 to 18 inches.*	*within current known breeding range; occurs in native and non-native grasslands, preferring open grasslands with bunch grasses and areas of bare ground.*	***High** - Known to occur; multiple survey results suggest a small breeding population exists in grassland habitat on the North Ranch.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Icteria virens	*Yellow-breasted chat*	*none*	*SSC (nesting)*	*No*	*North Ranch; Coon Creek riparian zone*	*within current known breeding range; the yellow-breasted chat inhabits dense riparian thickets throughout the lowlands and foothills of California.*	***Low** - this species is rare in the coastal region. Two records of chats in Coon Creek at Montana de Oro State Park in June indicate this species may occasionally breed there. Multiple survey results negative*
Sternula antillarum browni	*California Least tern*	*FE*	*SE, SFP*	*No*	*North Ranch; mouth of Coon Creek.*	*within current known range; California least terns nest in colonies on bare or sparsely vegetated flat substrates near the coast.*	***Low** - habitat is marginal consisting of one sand beach area near the mouth of Coon Creek; multiple survey results all negative.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Pelecanus occidentalis	Brown pelican	DL	SFP	Yes	North Ranch, South Ranch, Plant Site; roosts on off-shore rocks, coastal bluffs, and man-made structures near the tidal zone (piers and breakwaters)	within current known range (non-breeding); roosts on off-shore rocks, coastal bluffs, and some man-made structures	**High** - Known to occur; forages along coastline during non-breeding season
Vireo bellii pusillus	Least Bell's vireo	FE	SE	No	North Ranch; Coon Creek riparian zone.	within historic range but outside current known range; Preferred habitat is dense willow-dominated riparian habitat having a developed understory where nesting occurs. High and low shrub layers are used as foraging substrate.	**Low** - habitat present; failure to detect during long-term monitoring;
Charadrius alexandrinus nivosus	Western snowy plover	FT	SSC (nesting)	No	North Ranch; habitat limited to one beach area at mouth of Coon Creek.	within current known range of the coastal beach population of this species.	**Low** - There is habitat at the mouth of Coon Creek that is above the high tide mark. Suitability is not optimal due to its small area (< 2 hectares), mixture of sand and gravel substrate and abundant rack debris. Long-term monitoring has failed to identify western snowy plover at Coon Creek beach.

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Empidonax traillii brewsteri	*Willow flycatcher*	*none*	*SE*	*Yes*	*North Ranch; Willow thickets associated with Coon Creek riparian zone.*	*within historic range and outside current known breeding range for all subspecies; habitat consists of dense willow thickets along streams and rivers.*	***High** - Two willow flycatchers were detected at Coon Creek during the spring migration period on April 23, 2005. The timing of these observations suggests that the birds were transient E. t. brewsteri.*
Corynorhinus townsendii	*Townsend's big-eared bat*	*none*	*SCT, SSC*	*No*	*North Ranch and South Ranches and Parcel P; Rock features may offer marginal roosting sites in the form of shallow rock ledges. However, naturally occurring caves or excavated mine shafts are favored by this bat.*	*within current known range; They occur in various habitats including coastal forests and woodlands. Few records occur from coastal SLO County. This bat requires caves or suitable cave analogues for roosting and for hibernacula. Foraging occurs in wooded canyons and over small wetland areas.*	***Low -** This species was surveyed throughout the Diablo Lands in the early 1990's with negative results. Suitable foraging habitat occurs broadly; suitable roosting habitat appears somewhat marginal north and south of the plant site.*
Antrozous pallidus	*Pallid bat*	*none*	*SSC*	*Yes*	*North and South Ranches and Parcel P; oak woodlands and canyons with mature oaks (e.g. Ruda Canyon, northeast of Green Peak, and upper Crowbar, Dry, Water, Irish, Pecho, Diablo, and Rattlesnake canyons.*	*within current known range; many records from San Luis Obispo County. Pallid bats are a crevice roosting species. Common roost sites are rock crevices, old buildings, bridges, caves, mines, and hollow trees. Often associated with oak habitat, particularly lower elevation oak savannah.*	***High** - Known to occur, positively identified from two sites on the South Ranch (Pecho Canyon and Irish Canyon).*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Dipodomys heermanni	*Morro Bay kangaroo rat*	*FE*	*SE, SFP*	*No*	*North Ranch*	*near current known range; some potential habitat present mouth of Coon Creek*	***Low** - multiple survey results negative*
Neotoma bryanti intermedia	*Bryant's woodrat*	*none*	*SSC*	*Yes*	*North and South Ranches and Parcel P; They occur in coastal scrub, coastal bluff scrub, chaparral, and grassland areas with rock outcrops.*	*within current known range; found along the Pacific slope region from Baja California to San Luis Obispo County. This woodrat usually lives in rock outcrops on slopes with coastal scrub and chaparral vegetation.*	***High** - Known to occur; positively identified during live-trapping surveys performed north and south of the plant site.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Bassariscus astutus	*Ring-tailed cat*	*none*	*SFP*	*No*	*North and South Ranches and Parcel P; suitable habitat occurs in wooded canyons, chaparral and riparian zones*	*within current known range; Ringtails are widely distributed in California but more common in the north. They occur in forest and shrub habitats in rocky areas and riparian zones. There are few records of ringtails from San Luis Obispo County and none from the coastal area.*	***Low -** absence of records for the species from other nearby locations in the County, and no evidence found during surveys performed in the early 1990's suggest it does not occur on the Diablo lands.*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Taxidea taxus	American badger	none	SSC	Yes	North and South Ranches and Parcel P; where local records occur (North Ranch), utilizes open grassland areas on the marine terrace for foraging and for breeding.	within current known range; occurs in a wide variety of open, uncultivated habitats, with dry friable soils and sufficient prey. Prefers habitats such as grassland, oak savanna, sparse scrub, and chaparral.	**High** - Known to occur based on surveys performed on the North Ranch (2006 - 2011).
Arctostaphylos morroensis	Manzanita, Morro	FT	none	No	North Ranch	near current known range; habitat not present	**Low** - absence of special habitat elements; sandy soils

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Arenaria paludicola	*Marsh sandwort*	*FE*	*SE*	*No*	*North Ranch*	*near current known range; habitat marginal*	***Low** - absence of special habitat elements; fresh or brackish marsh*
Astragalus tener titi	*Coastal dunes milk-vetch*	*FE*	*none*	*No*	*North Ranch*	*near current known range; habitat marginal*	***Low** - outside known geographic range; dune habitat lacking*

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Cirsium fontinale obispoense	San Luis Obispo fountain thistle (aka Chorro Creek bog thistle)	FE	SE	No	North and South Ranches; requires serpentine springs and seeps not present	near current known range; special habitat elements lacking (serpentine springs or seeps)	**Low** - absence of special habitat elements; serpentine seeps
Dithyrea maritima	Beach spectaclepod	none	ST	No	North Ranch; mouth of Coon Creek	within current known range; usually found on transverse foredunes, 50-300 meters from the surf	**Low** - absence of special habitat elements; survey results negative
Eriodictyon altissimum	Indian Knob mountain balm	FE	SE	No	North and South Ranch; If present, the plant would most likely occur in polygons of the central maritime chaparral that conincide with units of the Pismo sandstone geologic formation.	within current known range; habitat present, maritime chaparral	**Low** - multiple survey results negative
Hesperocyparis goveniana	Cypress, Gowen	FT		No	North Ranch	near current known range; habitat present	**Low** - multiple survey results negative

Table 2.4-1

Species	Common Name	Species Status[3] Federal	State	Record of Occurrence	Area(s) of Potential Occurrence	Range/Habitat Assessment	Occurrence Potential
Lasthenia conjugens	Goldfields, Contra Costa	FE	none	No	North Ranch,	outside current known range; habitat not present (vernal pools)	**Low** - absence of special habitat elements; vernal pools/alkaline playas
Nasturtium gambellii	Gambel's watercress	FE	none	No	North Ranch (Coon Creek, Tom's Pond)	near current known range; habitat present	**Low** - failure to detect during long-term monitoring
Piperia yadonii	Rein orchid, Yadon's	FE	none	No	North Ranch (ridge top)	near current known range; habitat present	**Low** - multiple survey results negative
Poa diaboli	Diablo Canyon blue grass	none	none	Yes	North Ranch (ridge top)	near current known range; habitat present	**High** - Known to occur in several locations on North Ranch from Crowbar Canyon north along ridge road.
Suaeda californica	California suaeda	FE	none	No	North Ranch; mouth of Coon Creek	near current known range; habitat not present	**Low** - special habitat requirements not met (salt marsh); survey results negative

[1] - In this context, "Special Status" refers to species listed under the federal and/or state Endangered Species Acts (ESA), species proposed for listing under the federal ESA, species that are candidates for listing under the state ESA, state Fully Protected species, and state Species of Special Concern.
[2] - The North Ranch and South Ranch are the more than 11,000 acres of owner-controlled lands lying north and south of the plant site, and outside of Parcel P.
[3] - Designations used to identify special status of species presented in the table are as follows:
SE - State listed as Endangered, ST - State listed as Threatened, SR - State listed as Rare (plants only), SCE - State candidate for listing as Endangered, SCT – State candidate for listing as Threatened, SFP – State (CDFW) Fully Protected species, SSC – State (CDFW) species of special concern, FE - Federally listed as Endangered, FT - Federally listed as Threatened, FPE - Federally proposed for listing as Endangered, FPT - Federally proposed for listing as Threatened, FPD - Federally proposed for delisting, DL - Delisted

Table 2.5-1 Sheet 1 of 3

LIST OF ~~FEDERALLY~~ THREATENED OR ENDANGERED SPECIES THAT MAY ~~EXIST IN THE VICINITY OF~~ *OCCUR ON THE* DCPP *SITE OR IMMEDIATELY OFFSHORE*.

Class	***Species***	***Common Name***	***Status[1, 2]***
Amphibians	*Ambystoma califoniense*	*California tiger salamander*	*T*
Amphibians	*Rana draytonii*	*California red-legged frog*	*T*
Fishes	*Oncorhynchus mykiss*	*Steelhead trout (SCCC DPS)*	*T*
Fishes	*Oncorhynchus kisutch*	*Coho Salmon (Central California Coast ESU)*	*E*
Fishes	*Acipenser medirostris*	*Green Sturgeon (Southern DPS)*	*T*
Fishes	*Eucyclogobius newberryi*	*Tidewater goby*	*E*
Mammals	*Enhydra lutris nereis*	*Southern sea otter*	*T*
Mammals	*Arctocephalus townsendi*	*Guadalupe fur seal*	*T*
Mammals	*Balaenoptera musculus*	*Blue whale*	*E*
Mammals	*Physeter macrocephalus*	*Sperm whale*	*E*
Mammals	*Balaenoptera physalus*	*Fin whale*	*E*
Mammals	*Megaptera novaeangliae*	*Humpback whale*	*E*
Mammals	*Balaenoptera borealis*	*Sei whale*	*E*
Mammals	*Orcinus orca*	*Killer whale*	*E*
Mammals	*Eubalaena japonica*	*North Pacific right whale*	*E*
Gastropods	*Haliotis cracherodii*	*Black abalone*	*E*
Gastropods	*Haliotis sorenseni*	*White abalone*	*E*
Reptiles	*Chelonia mydas*	*Green sea turtle*	*T*
Reptiles	*Lepidochelys olivacea*	*Olive ridley sea turtle*	*T*
Reptiles	*Dermochelys coriacea*	*Leatherback sea turtle*	*E*
Reptiles	*Caretta caretta*	*Loggerhead sea turtle*	*E*

Notes:
1. E: Endangered, T: Threatened
2. The species' status was updated by PG&E in 2014.

~~Class~~	~~Species~~	~~Common Name~~	~~Status[1, 2]~~
~~Amphibians~~	~~Ambystoma califoniense~~	~~California tiger salamander~~	~~E~~
~~Amphibians~~	~~Ambystoma macrodactylum croceum~~	~~Salamander, Santa Cruz long-toed~~	~~E~~
~~Amphibians~~	~~Bufo microscaphus californicus~~	~~Toad, Arroyo southwestern~~	~~E~~
~~Amphibians~~	~~Rana aurora draytonii~~	~~California red-legged frog~~	~~T~~
~~Birds~~	~~Brachyramphus marmoratus marmora~~	~~Murrelet, marbled~~	~~T~~
~~Birds~~	~~Charadrius alexandrinus nivosus~~	~~Plover, western snowy~~	~~T~~
~~Birds~~	~~Charadrius montanus~~	~~Mountain plover~~	~~not listed~~
~~Birds~~	~~Empidonax traillii extimus~~	~~Flycatcher, southwestern willow~~	~~E~~
~~Birds~~	~~Gymnogyps californianus~~	~~Condor, California~~	~~E~~
~~Birds~~	~~Haliaeetus leucocephalus~~	~~Eagle, bald~~	~~delisted~~

Table 2.5-1 Sheet 2 of 3

Class	Species	Common Name	Status[1,2]
Birds	Pelecanus occidentalis	Pelican, brown	FPD
Birds	Rallus longirostris levipes	Rail, light-footed clapper	E
Birds	Rallus longirostris obsoletus	Rail, California clapper	E
Birds	Sterna antillarum browni	Tern, least	E
Birds	Vireo bellii pusillus	Vireo, lest Bell's	E
Crustaceans	Branchinecta longiantenna	Fairy shrimp, longhorn	E
Crustaceans	Branchinecta lynchi	Fairy shrimp, vernal pool	T
Fishes	Eucyclogobius newberryi	Goby, tidewater	E
Fishes	Gasterosteus aculeatus Williamson	Stickleback, unarmored three spin	E
Fishes	Oncorhynchus mykiss	Steelhead trout	T
Insects	Euphilotes enoptes smithi	Butterfly, Smith's blue	E
Insects	Euproserpinus euterpe	Moth, Kern primrose sphinx	T
Mammals	Arctocephalus townsendi	Seal, Guadulupe fur	T
Mammals	Dipodomys heermanni	Kangaroo rat, Morro Bay	E
Mammals	Dipodomys ingens	Kangaroo rat, giant	E
Mammals	Dipodomys nitraloide	Kangaroo rat, Tipton	E
Mammals	Enhydra lutris nereis	Otter, Southern sea	T
Mammals	Sorex ornatus relictus	Buena Vista Lake ornate shrew	E
Mammals	Vulpes macrotis mutica	Fox, San Joaquin kit	E
Plants	Arabis hoffmannii	Rock-cress, Hoffmann's	E
Plants	Arctostaphylos confertiflora	Manzanita, Santa Rosa Island	E
Plants	Arctostaphylos morroensis	Manzanita, Morro	T
Plants	Arenaria paludicola	Marsh sandwort	E
Plants	Astragalus tener titi	Marsh sandwort	E
Plants	Berberis pinnata insularis	Barberry, island	E
Plants	Castilleja mollis	Paintbrush, soft-leaved	E
Plants	Caulanthis californicus	California jewelflower	E
Plants	Chlorogalum purpureum	Amole, purple	T
Plants	Chorizante pungens pungens	Spineflower, Monterey	T
Plants	Chorizanthe robusta	Spineflower, Robust	E
Plants	Cirsium fontinale fontinale	Fountain thistle	E
Plants	Cirsium fontinale obispoense	Thistle, Chorro Creek bog	E
Plants	Cirsium loncholepis	Thistle, La Graciosa	E
Plants	Clarka speciosa immaculate	Clarkia, Pismo	E
Plants	Cordylanthus maritimus maritimus	Salt marsh bird's beak	E
Plants	Cupressus goveniana goveniana	Cypress, Gowen	T
Plants	Dudleya cymosa marcescens	Dudleya, Marcescent	T
Plants	Dudleya nesiotica	Liveforever, Santa Cruz Island	T
Plants	Dudleya setchellii	Santa Clara Valley dudleya	E
Plants	Dudleya traskiae	Santa Barbara Island	E

Table 2.5-1 Sheet 3 of 3

Class	Species	Common Name	Status[1,2]
		liveforever	
Plants	Eremalche kernensis	Kern mallow	E
Plants	Eriastum hooveri	Hoover's woolly-star	T
Plants	Eriodictyon altissimum	Mountain balm, Indian Knob	E
Plants	Eriodictyon capitatum	Yerba santa, Lompoc	E
Plants	Erysimum menziesii	Menzies' wallflower	E
Plants	Galium buxifolium	Bedstraw, island	E
Plants	Gilia tenuiflora arenaria	Monterey gilia	E
Plants	Gilia tenuiflora hoffmannii	Gilia, Hoffmann's	E
Plants	Hemizonia increscens villosa	Tarweed, Gaviota	E
Plants	Holocarpha macradenia	Tarweed, Santa Cruz	T
Plants	Lasthenia conjugens	Goldfields, Contra Costa	E
Plants	Layia carnosa	Beach layia	E
Plants	Lembertia congdonii	San Joaquin wooly-threads	E
Plants	Lupinus nipomensis	Lupine, Nipomo Mesa	E
Plants	Lupinus tidestromii	Clover lupine	E
Plants	Malacothamnus fasciculatus nesioticus	Bush-mallow, Santa Cruz Island	E
Plants	Malacothrix indecora	Malocothrix, Santa Cruz Island	E
Plants	Malacothrix squalida	Malocothrix, island	E
Plants	Navarretia leucocephala pauciflora	Navarretia, few-flowered	E
Plants	Navarretia leucocephala plieantha	Navarretia, many-flowered	E
Plants	Opuntia treleasei	Bakersfield cactus	E
Plants	Parvisedum leiocarpum	Stonecrop, Lake County	E
Plants	Phacelia insularis insularis	Phacelia northern island	E
Plants	Piperia yadonii	Piperia, Yadon's	E
Plants	Potentilla hickmanii	Cinquefoil, Hickman's	E
Plants	Rorippa gambellii	Gambel's watercress	E
Plants	Suaeda californica	Seablite, California	E
Plants	Thysanocarpus conchuliferus	Fringepod, Santa Cruz Island	E
Plants	Trifolium trichocalyx	Clover, Del Monte	E
Reptiles	Chelonia mydas	Turtle, green sea	T
Reptiles	Gambelia silus	Lizard, blunt-nosed leopard	E
Reptiles	Gopherus agassizii	Tortoise, desert	T
Reptiles	Lepidochelys olivacea	Turtle, olive ridley	T
Reptiles	Xantusia riversiana	Lizard, Island night	T
Snails	Helminthoglypta walkeriana	Snail, Morro shoulderband	E

Notes:
1. E: Endangered, T: Threatened, FPD: federal proposed for delisting (Feb. 2008)
2. The species' status was updated by PG&E in 2008.

TABLE 2.6-1

POPULATION TRENDS OF THE STATE OF CALIFORNIA AND OF SAN LUIS OBISPO AND SANTA BARBARA COUNTIES

Year	State of California	San Luis Obispo County	Santa Barbara County	Notes
1940	6,907,387	33,246	70,555	(a)
1950	10,586,233	51,417	98,220	(a)
1960	15,717,204	81,044	168,962	(a)
1970	19,953,134	105,690	264,324	(a)
1980	23,668,562	155,345	298,660	(a)
1990	29,760,021	217,162	369,608	(a)
2000	33,871,648	246,681	399,347	(a)
2010	~~39,135,676~~	~~269,734~~	~~434,497~~	(~~b~~a)
	37,253956	*269,637*	*423,895*	
2020	~~44,135,923~~	~~293,540~~	~~459,498~~	(b)
	40,643,643	*287,744*	*449,505*	
2030	~~49,240,891~~	~~316,613~~	~~484,570~~	(b)
	44,279,354	*311,349*	*473,356*	
2040	~~54,266,115~~	~~338,760~~	~~509,920~~	(b)
	47,690,186	*328,677*	*492,610*	
2050	~~59,507,876~~	~~364,748~~	~~534,447~~	(b)
	50,365,074	*338,808*	*506,466*	

Notes: (a) U.S. Census Bureau (References 74 *and* 144)
(b) Population Projections by State of California Department of Finance (Reference 73)

TABLE 2.6-2

MINORITY AND LOW INCOME POPULATION INFORMATION

County	Total Block Groups Within 50 Miles	American Indian or Alaskan Native	Asian	Native Hawaiian or Pacific Islander	Black	All Other Single Minorities	Multi-Racial Minorities	Aggregate of Minority Races	Hispanic Ethnicity	Low-Income
Kern	1	0	0	0	0	0	0	1	1	0
Monterey	2	0	0	0	0	0	0	0	0	0
San Luis Obispo	~~160~~162	0	0	0	~~0~~2	0	0	~~8~~12	~~8~~10	~~0~~13
Santa Barbara	~~131~~132	0	0	0	0	~~0~~7	0	~~56~~77	~~43~~60	~~12~~10
Total	~~194~~297	0	0	0	~~0~~2	~~0~~7	0	~~65~~90	~~52~~71	~~12~~23
State Averages		~~0.5~~0.8%	~~10.8~~13.1%	~~0.3~~0.4%	~~6.4~~6.1%	~~0.2~~13.9%	~~2.7~~3.9%	~~53~~59.3%	~~32.4~~37.2%	~~10.6~~14.4%

TABLE 2.7-1

PROPERTY TAX BREAKDOWN FOR 2004-~~2008~~*2014*

Year	SLO County Property Tax Revenues (Millions)	Property Tax paid by DCPP (Millions)	Percent of SLO County Property Tax Revenues
2013-2014	*430*	*25.6*	*6.0%*
2012-2013	*417*	*26.4*	*6.3%*
2011-2012	*413*	*25.4*	*6.2%*
2010-2011	*420*	*25.0*	*6.0%*
2009-2010	*424*	*24.5*	*5.8%*
2008-2009	425	22.3	5.6%
2007-2008	404	20.7	5.6%
2006-2007	371	20.1	5.8%
2005-2006	334	21.4	6.3%
2004-2005	301	20.4	6.6%

Source: References 78, 79, 80, 81, 82, ~~and~~ 83, *147, 149, 150, 151, and 152.*

TABLE 2.8-1

HOUSING STATISTICS FOR SAN LUIS OBISPO AND SANTA BARBARA COUNTIES

	1990	2000	*2010[a]*	Percent Change
San Luis Obispo County				
Total Housing Units	90,200	102,275	*117,315*	*14.7*~~11.8~~
Occupied Units	80,281	92,739	*102,016*	*10.0*~~13.4~~
Vacant Units	9,919	9,536	*15,299*	*60.4*~~3.9~~
Median House Value ($)	213,200	230,000	*449,300*	*95.3*~~7.3~~
Santa Barbara County				
Total Housing Units	138,149	142,901	*152,834*	*7.0*~~3.3~~
Occupied Units	129,802	136,622	*142,104*	*4.0*~~5.0~~
Vacant Units	8,347	6,279	*10,730*	*70.9*~~24.8~~
Median House Value ($)	249,200	293,000	*482,400*	*64.6*~~14.9~~

(a) Median house value is not available for 2010. Data is for the period 2008-2012.

Source: References 89 ~~and~~ 90, *144, and 182*

TABLE 2.9-2

CURRENT AND FUTURE – ROADWAYS LOS CLASSIFICATIONS

Road/Route (Class)	Current			Future *(2025)*		
	ADT	LOS*	Peak Hr	ADT	LOS	Peak Hr
Avila Beach Drive (Collector – 2 Lanes)**	*13,495* ~~10,157~~	*E*~~D~~	*1,562* ~~1,396~~	*15,537* ~~12,359~~	F	*1,798* ~~1,699~~
San Luis Bay Drive (Collector – 2 Lanes)	*7,460* ~~6,532~~	*B*~~A~~	*806* ~~625~~	*8,589* ~~7,948~~	A	*928* ~~761~~
~~Shell Beach~~*Ontario* Road (Collector – 2 Lanes)	*1,620* ~~4,945~~	A	*232* ~~429~~	*1,865* ~~6,017~~	A	*267* ~~522~~
Los Osos Valley Road (Arterial – 2 Lanes)	*14,563* ~~16,568~~	D	*1,328* ~~1,673~~	*16,767* ~~20,160~~	F	*1,529* ~~2,036~~
Diablo Canyon Road (Collector – 2 Lanes)	*1,800* -	A	*180* -	*1,800* -	A	*180* -
Pecho Valley Road (Collector – 2 Lanes)	*3,217* ~~1,512~~	A	*301* ~~178~~	*3,704* ~~1,840~~	A	*347* ~~217~~
Traffic on Highway 101 at specified exits (Major – 4 Lanes)						
SLO County Jct. Rte. 166 East	*50,100* ~~62,000~~	*C*~~D~~	*5,400* ~~6,400~~	*57,683* ~~79,542~~	*C*~~F~~	*6,217* ~~7,788~~
Tefft St.	*50,600* ~~51,000~~	C	*5,100* ~~4,500~~	*58,258* ~~54,145~~	*D*~~C~~	*5,872* ~~5,476~~
Los Berros Rd.	*50,100* ~~51,000~~	C	*5,500* ~~4,700~~	*57,683* ~~54,145~~	C	*6,332* ~~5,719~~
Arroyo Grande, Bridge St.	*44,700* ~~51,000~~	*B*~~C~~	*5,400* ~~6,000~~	*51,465* ~~54,145~~	C	*6,217* ~~7,301~~
Arroyo Grande, Jct. Rte. 227 North, Grand Ave.	*50,600* ~~45,000~~	*C*~~B~~	*6,100* ~~5,500~~	*58,258* ~~47,067~~	*D*~~B~~	*7,023* ~~6,692~~
Arroyo Grande, Brisco Rd.	*54,200* ~~46,000~~	*C*~~B~~	*6,500* ~~5,700~~	*62,403* ~~48,065~~	*D*~~B~~	*7,484* ~~6,936~~
Pismo Beach, Oak Park Rd.	*60,100* ~~51,000~~	*D*~~C~~	*7,300* ~~6,400~~	*69,196* ~~53,056~~	*E*~~C~~	*8,405* ~~7,788~~
Pismo Beach, Pismo Oaks	*67,400* ~~58,000~~	*D*~~C~~	*9,000* ~~7,400~~	*77,601* ~~60,047~~	*F*~~D~~	*10,362* ~~9,004~~
Pismo Beach, So. Pismo Beach (Villa Creek)	*61,900* ~~66,000~~	D	*7,000* ~~8,400~~	*71,268* ~~70,201~~	E	*8,059* ~~10,221~~
Pismo Beach, Jct. Rte. 1 South	*64,400* ~~55,000~~	*D*~~C~~	*7,500* ~~8,400~~	*74,147* ~~66,925~~	*F*~~D~~	*8,635* ~~10,221~~
North Shell Beach	*66,700* ~~55,000~~	*D*~~C~~	*7,400* ~~4,750~~	*76,795* ~~66,925~~	*F*~~D~~	*8,520* ~~5,780~~
Avila Rd.	*65,300* ~~62,000~~	D	*7,100* ~~7,800~~	*75,183* ~~73,660~~	*F*~~E~~	*8,175* ~~9,491~~
North Avila Rd./San Luis Bay Dr.	*68,100* ~~58,000~~	*E*~~C~~	*7,200* ~~6,900~~	*78,407* ~~75,861~~	*F*~~F~~	*8,290* ~~8,396~~
Santa Fe	*63,300* ~~69,000~~	*D*~~E~~	*6,500* ~~8,300~~	*72,880* ~~89,189~~	*E*~~F~~	*7,484* ~~10,100~~
San Luis Obispo, Los Osos	*58,700*	*D*~~E~~	*5,900*	*67,584*	*E*~~F~~	*6,793*

TABLE 2.9-2

Road/Route (Class)	Current			Future *(2025)*		
	ADT	LOS*	Peak Hr	ADT	LOS	Peak Hr
Rd.	~~69,000~~		~~8,000~~	~~103,881~~		~~9,735~~
San Luis Obispo, Madonna Rd.	*67,100* ~~54,000~~	*D*~~C~~	*6,700* ~~5,500~~	*77,255* ~~72,240~~	*F*~~E~~	*7,714* ~~6,692~~
San Luis Obispo, Jct. Rte. 227 So., Marsh St.	*62,300* ~~75,000~~	*D*~~F~~	*6,200* ~~8,600~~	*71,729* ~~101,287~~	*E*~~F~~	*7,138* ~~10,465~~
San Luis Obispo, Jct. Rte. 1 North, Osos St.	*54,800* ~~71,000~~	*C*~~E~~	*5,400* ~~8,000~~	*63,094* ~~97,766~~	*D*~~F~~	*6,217* ~~9,735~~
San Luis Obispo, California Blvd.	*44,800* ~~62,000~~	*B*~~D~~	*4,400* ~~7,000~~	*51,580* ~~86,343~~	*C*~~F~~	*5,066* ~~8,518~~
San Luis Obispo, Grand Ave.	*37,600* ~~54,000~~	*B*~~C~~	*3,700* ~~6,000~~	*43,291* ~~77,695~~	*B*~~F~~	*4,260* ~~7,301~~
San Luis Obispo, Buena Vista	*43,800* ~~41,000~~	B	*4,300* ~~4,600~~	*50,429* ~~57,275~~	*C*~~C~~	*4,951* ~~5,597~~
San Luis Obispo North City Limits	*43,800* ~~48,500~~	B	*4,500* ~~5,300~~	*50,429* ~~62,299~~	*C*~~D~~	*5,181* ~~6,449~~
Jct. Rte. 58 East, Santa Margarita Creek	*41,400* ~~40,500~~	B	*4,100* ~~4,300~~	*47,666* ~~51,731~~	*B*~~C~~	*4,721* ~~5,232~~
Atascadero, Santa Barbara Rd.	*44,000* ~~38,500~~	B	*4,400* ~~4,150~~	*50,659* ~~49,881~~	C	*5,066* ~~5,050~~
Atascadero, Santa Rosa, Rd.	*47,900* ~~40,500~~	B	*4,800* ~~4,450~~	*55,150* ~~51,731~~	C	*5,526* ~~5,415~~
Atascadero, Curbaril Ave.	*51,800* ~~41,500~~	*C*~~B~~	*5,200* ~~4,650~~	*59,640* ~~54,252~~	*D*~~C~~	*5,987* ~~5,658~~
Atascadero, Jct. Rte. 41	*56,900* ~~41,500~~	*C*~~B~~	*5,700* ~~4,550~~	*65,512* ~~54,252~~	*D*~~C~~	*6,563* ~~5,537~~
Atascadero, Traffic Way	*57,700* ~~44,500~~	*C*~~B~~	*5,800* ~~4,900~~	*66,433* ~~55,480~~	*D*~~C~~	*6,678* ~~5,962~~
Atascadero, San Anselmo Rd.	*55,800* ~~47,000~~	*C*~~B~~	*5,500* ~~5,100~~	*64,245* ~~62,562~~	D	*6,332* ~~6,206~~
Atascadero, Del Rio Rd.	*56,700* ~~42,000~~	*C*~~B~~	*5,900* ~~4,500~~	*65,281* ~~46,350~~	*D*~~B~~	*6,793* ~~5,476~~
San Ramon Rd.	*58,400* ~~42,000~~	*D*~~B~~	*5,800* ~~4,450~~	*67,239* ~~46,350~~	*E*~~B~~	*6,678* ~~5,415~~
Templeton, Vineyard Dr.	*53,400* ~~44,000~~	*C*~~B~~	*5,300* ~~4,550~~	*61,482* ~~50,811~~	*D*~~C~~	*6,102* ~~5,537~~
Templeton, Los Tablas Ave.	*53,100* ~~42,000~~	*C*~~B~~	*5,300* ~~3,900~~	*61,137* ~~51,632~~	*D*~~C~~	*6,102* ~~4,746~~
Templeton, Main St.	*49,500* ~~42,000~~	B	*5,000* ~~3,900~~	*56,992* ~~51,632~~	C	*5,757* ~~4,746~~
Jct. Rte. 46 West	*60,500* ~~44,500~~	*D*~~B~~	*6,100* ~~3,750~~	*69,657* ~~57,015~~	*E*~~C~~	*7,023* ~~4,563~~
South Paso Robles	*36,600* ~~49,500~~	B	*3,700* ~~5,800~~	*42,139* ~~63,227~~	*B*~~D~~	*4,260* ~~7,058~~
Paso Robles, 13th St.	*33,300*	B	*3,300*	*38,340*	B	*3,799*

TABLE 2.9-2

Road/Route (Class)	Current			Future *(2025)*		
	ADT	LOS*	Peak Hr	ADT	LOS	Peak Hr
	~~33,500~~		~~3,950~~	~~42,104~~		~~4,806~~
Paso Robles, Jct. Rte. 46 East	*21,600* ~~29,000~~	A	*2,500* ~~3,450~~	*24,869* ~~36,358~~	*A*~~B~~	*2,878* ~~4,198~~
Paso Robles, North Paso Robles	*22,600* ~~21,500~~	A	*2,600* ~~2,150~~	*26,020* ~~31,389~~	*A*~~B~~	*2,994* ~~2,616~~

Notes: *LOS calculated using Santa Barbara County thresholds or *LOS developed specifically for the Avila Beach area*~~Highway Capacity Software~~. ADT=Average Daily Traffic, LOS=Level of Service, Peak Hr=Peak hour
** LOS for Avila Beach Drive based on peak ~~hour~~ *season (summer)* numbers.
Percent growth based on ~~1.8~~*1.13*% annual population growth ~~predicted~~ for the state of California, which is comparable to San Luis Obispo *County*'s 1.4*09*% growth rate between 1990 and ~~2000~~ *2010* (Reference ~~93~~*144*).
~~Growth numbers based on data available from CalTrans over past 5 years. Ten year growth numbers are not available~~.
Sources: Highway 101=CalTrans, ~~2001~~*2012*; Avila Beach Roads=San Luis Obispo Traffic Volumes, ~~2002~~*2012*~~, which included data from as far back as 1993~~.

TABLE 2.9-3

SAN LUIS OBISPO COUNTY SCHOOL DISTRICT STATISTICS

School Districts	City	Number of Schools	Number of Students	Student to Teacher Ratio
Atascadero Unified	Atascadero	12	4,9045,030	22.820.6
Cayucos Elementary	Cayucos	1	223212	17.817.1
Coast Unified	Cambria	5	745862	15.616.8
Lucia Mar Unified	Arroyo Grande	1817	10,58810,866	23.720.9
PasoRobles Joint Unified	Paso Robles	1312	6,7476,835	23.320.5
Pleasant ValleyJoint Union Elementary	San Miguel	1	115137	23.017.1
San Luis Coastal Unified	San Luis Obispo	1716	7,3507,241	19.419
~~San Luis Obispo Co. CYA District~~	~~Paso Robles~~	~~1~~	~~204~~	~~8.7~~
San Luis Obispo Co. Off. of Education	San Luis Obispo	4	640765	16.812.6
San Miguel Joint Union Elementary	San Miguel	32	610454	19.717.7
Santa Lucia ROP	Arroyo Grande	1	N/AN/A	N/AN/A
Shandon Joint Unified	Shandon	4	304384	15.814.2
Templeton Unified	Templeton	87	2,2942,563	23.021.1

N/A = Information not available.
Source: Reference 95 *and 183*

TABLE 2.10-1

ATTAINMENT STATUS OF SLO COUNTY, ALL MONITORING STATIONS

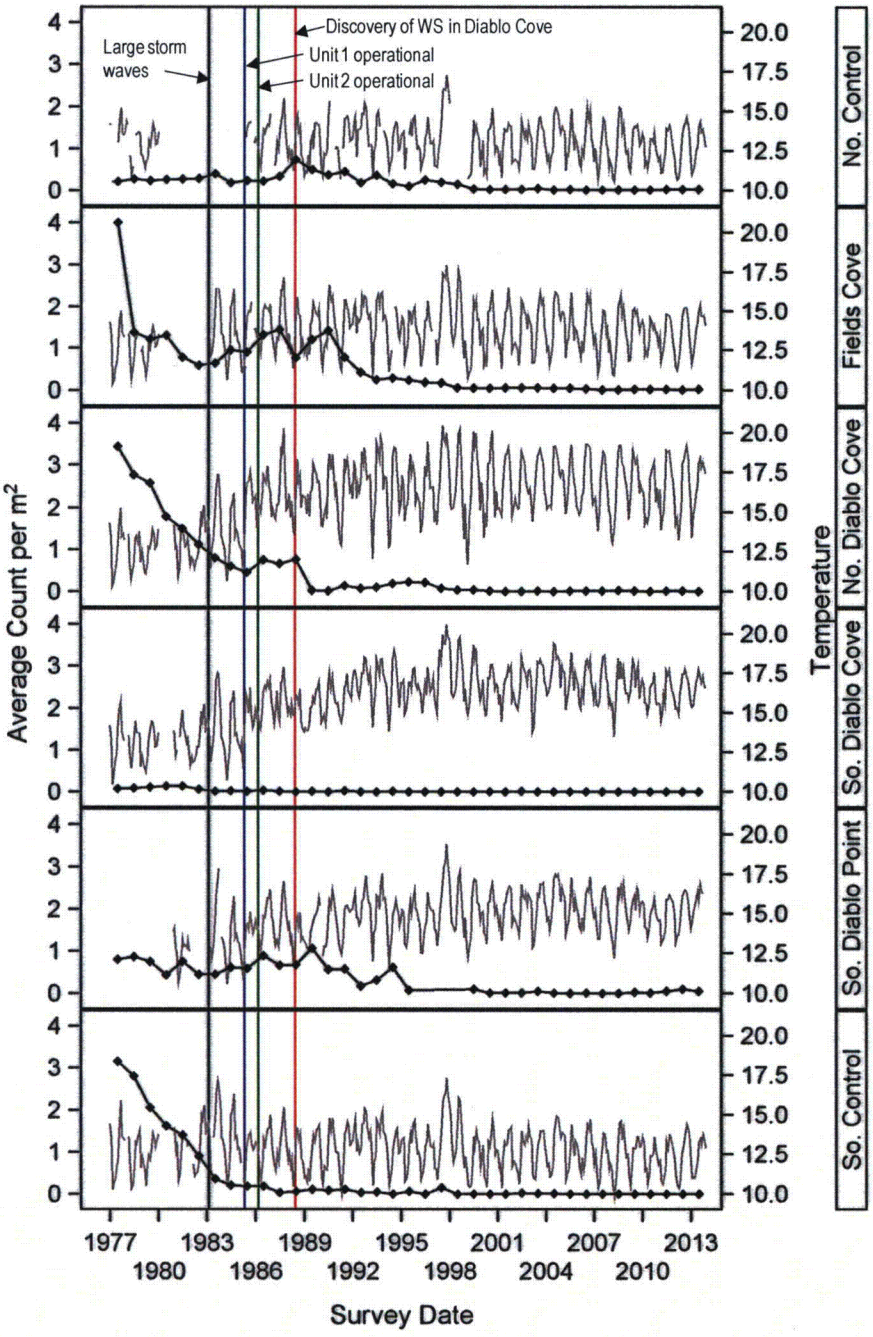
Air Basin	O_3		CO		NO_2		SO_2		$PM_{2.5}$		PM_{10}	
	State	*Fed*	*State*	*Fed*	*State*	*Fed*	*State*	*Fed*	*State*	*Fed*	*State*	*Fed*
SLO County	N	U/A	A	U/A	A	U/A	A	U	A	U/A	~~A~~*N*	U

Notes: A=Attainment of Standards; N=Non-Attainment; U=Unclassified; U/A=Unclassified/Attainment

Source: Reference 96, Last updated ~~February 2, 2009~~*June 2013*.

Environmental Report
Diablo Canyon Power Plant

Figure 2.3-1
Onsite Monitoring Well Locations



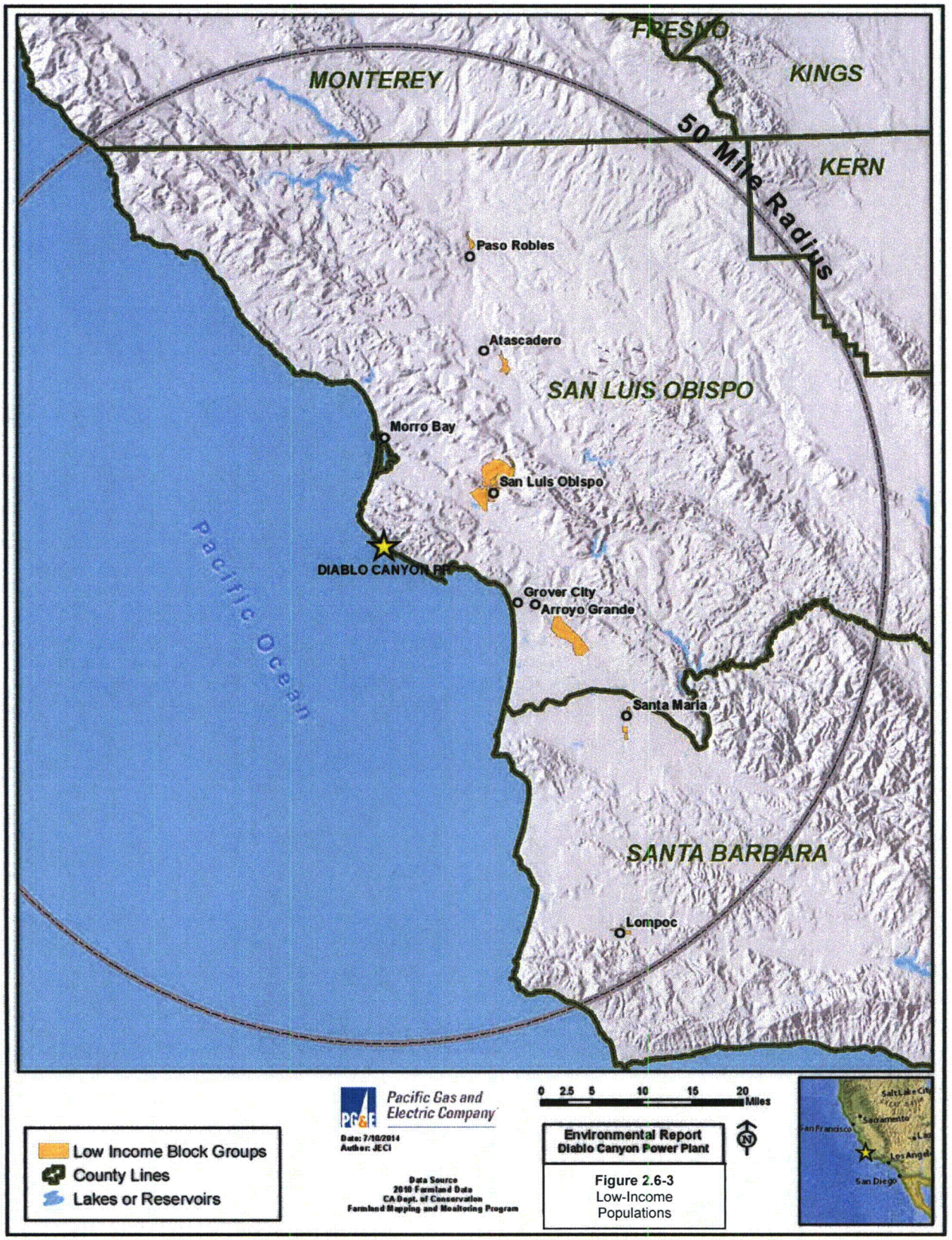
Environmental Report
Diablo Canyon Power Plant

Figure 2.5-2
Black Abalone Decline

Annual average densities of black abalone (# per m^2) (heavy black line with diamond symbols) and average monthly seawater temperatures (lighter line without symbols) from Thermal Effects Monitoring Program (TEMP) studies. The vertical lines off the x-axis represent the occurrence of large waves during February 1983 (black line), the start of DCPP commercial operations for Unit 1 in May 1985 (blue line) and Unit 2 in March 1986 (green line), and the discovery of WS in Diablo Cove (red line). The abalone data were from intertidal horizontal band transect sampling of 30 m transects at two tidal elevations (+0.3 m and +0.9 m MLLW), except from the South Diablo Point area where all transects were located at the +0.9 m MLLW tidal level. The count data on black abalone from the ten m^2 quadrats sampled at each transect were averaged for each survey and then the survey averages from all of the transects for each sampling area were averaged for each year. The temperature data were collected from instruments situated at the +0.6 m tidal level in each of the areas. The data were corrected to remove all of the data collected when the instruments were out of the water during periods when the tide was below the +0.6 m tidal level.

Figure 2.6-1
Aggregate Minority Populations


FRESNO
MONTEREY
KINGS
50 Mile Radius
KERN
Paso Robles
Atascadero
SAN LUIS OBISPO
Morro Bay
San Luis Obispo
DIABLO CANYON PP
Grover City
Arroyo Grande
Pacific Ocean
Santa Maria
SANTA BARBARA
Lompoc
Hispanic Ethnicity
County Lines
Lakes or Reservoirs
Pacific Gas and Electric Company
Date: 7/10/2014
Author: JECI
Data Source
2010 Farmland Data
CA Dept. of Conservation
Farmland Mapping and Monitoring Program
0 2.5 5 10 15 20 Miles
Environmental Report
Diablo Canyon Power Plant
Figure 2.6-2
Hispanic Minority
Populations
San Francisco
Sacramento
Los Angeles
San Diego


FRESNO
MONTEREY
KINGS
50 Mile Radius
KERN
Paso Robles
Atascadero
SAN LUIS OBISPO
Morro Bay
San Luis Obispo
DIABLO CANYON PP
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SANTA BARBARA
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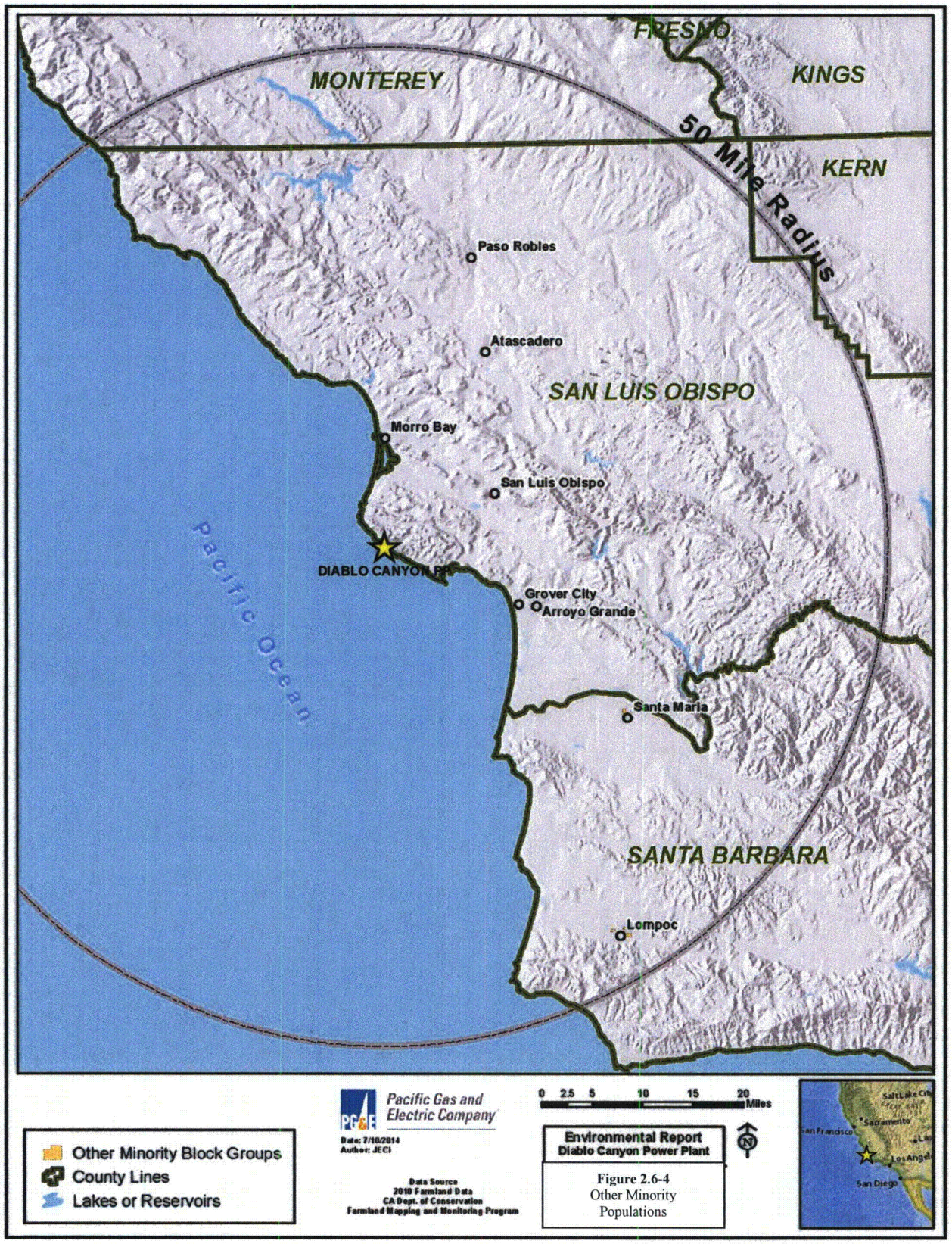
Low Income Block Groups
County Lines
Lakes or Reservoirs
Pacific Gas and Electric Company
Date: 7/10/2014
Author: JECI
Data Source
2010 Farmland Data
CA Dept. of Conservation
Farmland Mapping and Monitoring Program
0 2.5 5 10 15 20 Miles
Environmental Report
Diablo Canyon Power Plant
Figure 2.6-3
Low-Income
Populations
N
Salt Lake City
Sacramento
San Francisco
Los Angeles
San Diego


FRESNO
MONTEREY
KINGS
50 Mile Radius
KERN
Paso Robles
Atascadero
SAN LUIS OBISPO
Morro Bay
San Luis Obispo
DIABLO CANYON PP
Grover City
Arroyo Grande
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Other Minority Block Groups
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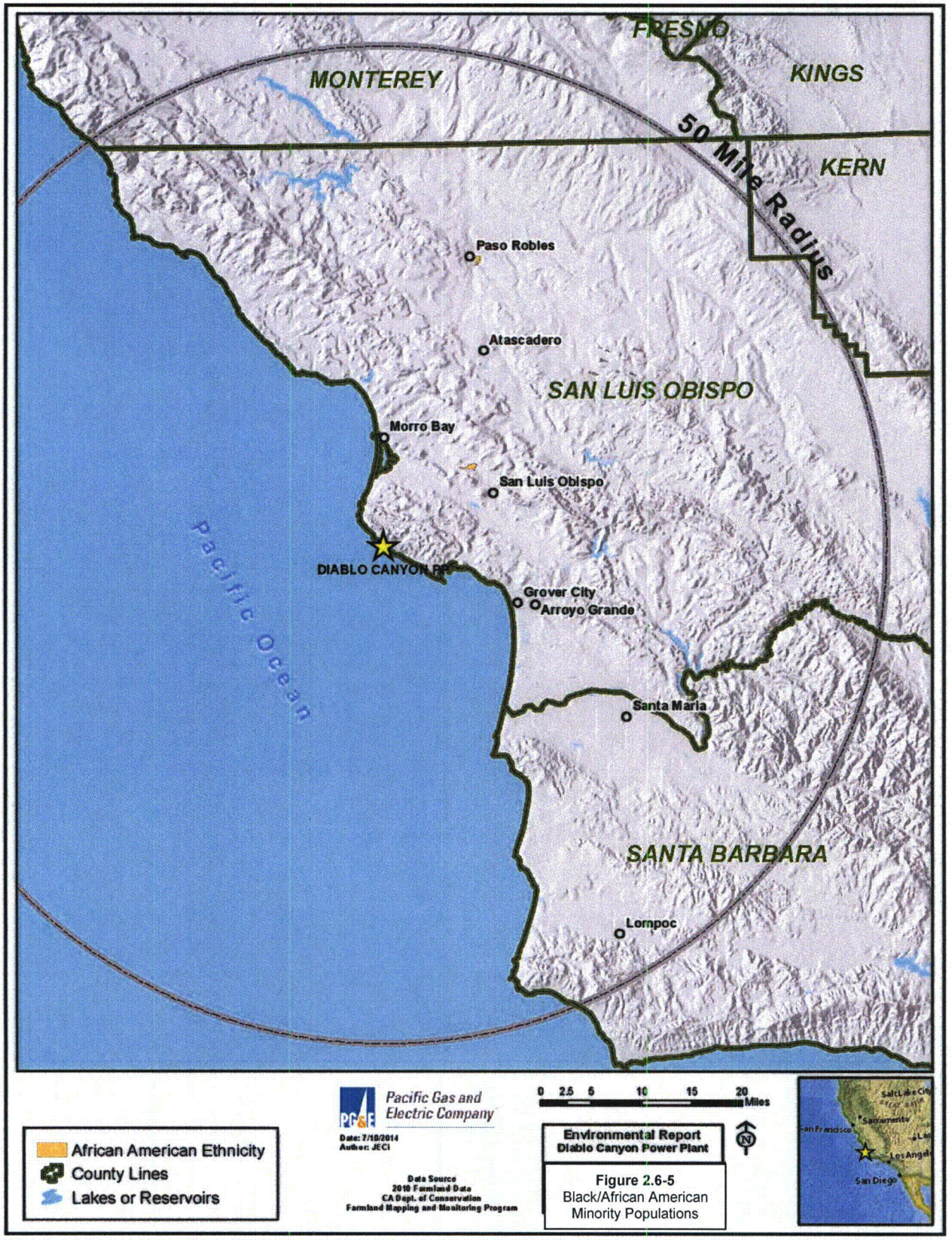
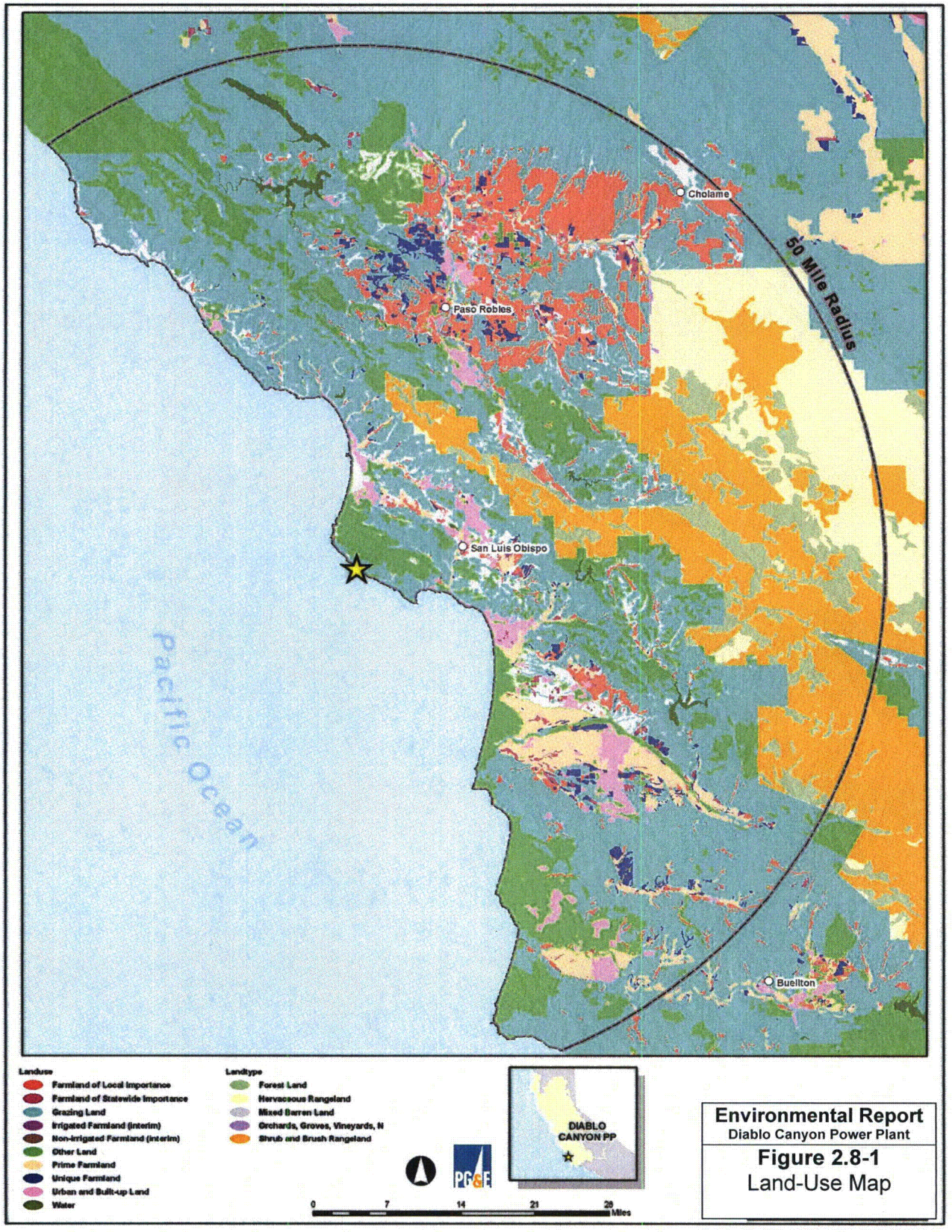
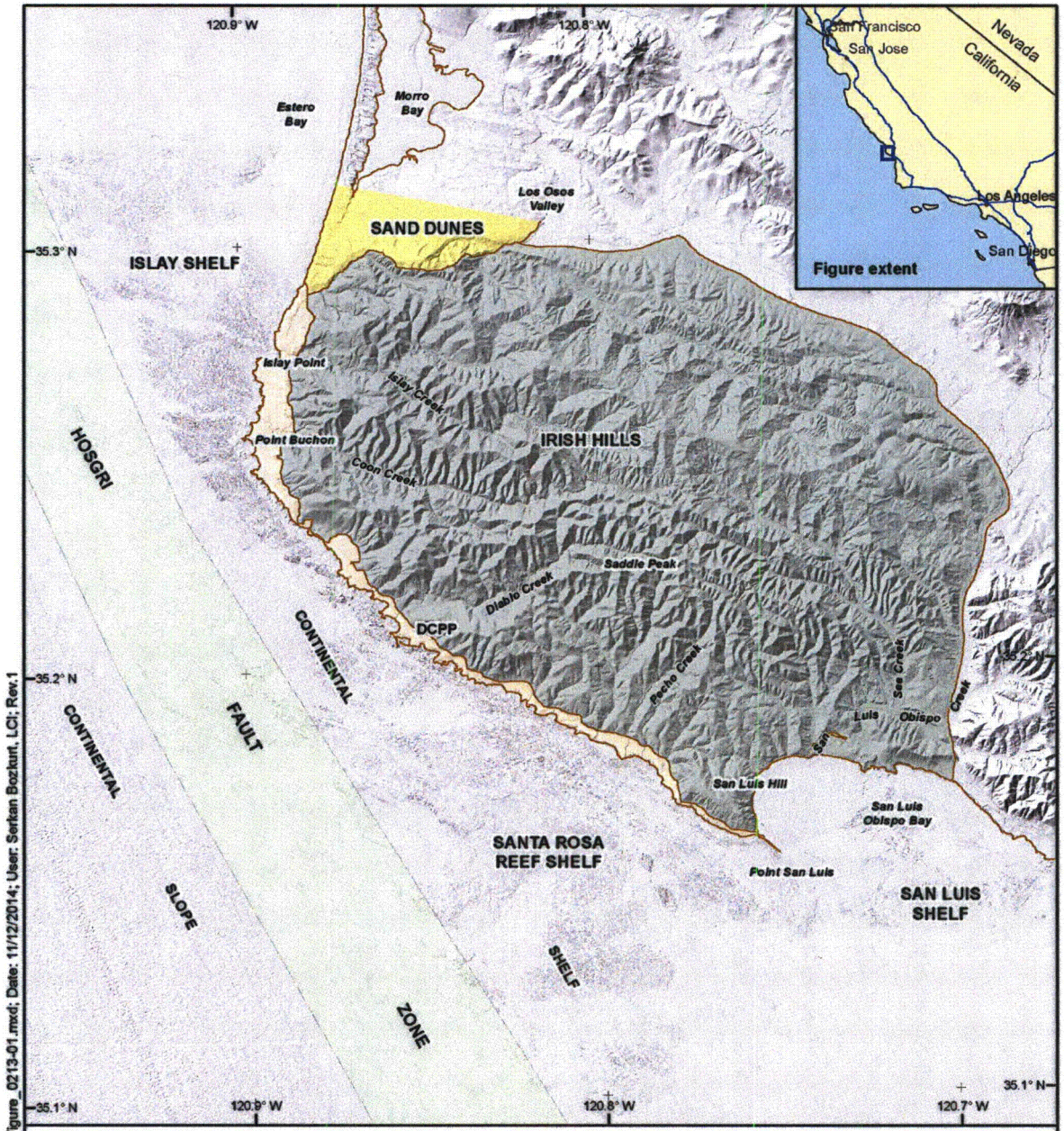
0 2.5 5 10 15 20 Miles
Environmental Report
Diablo Canyon Power Plant
Figure 2.6-4
Other Minority
Populations
Salt Lake City
Sacramento
San Francisco
Los Angeles
San Diego


FRESNO
MONTEREY
KINGS
50 Mile Radius
KERN
Paso Robles
Atascadero
SAN LUIS OBISPO
Morro Bay
San Luis Obispo
DIABLO CANYON PP
Grover City
Arroyo Grande
Pacific Ocean
Santa Maria
SANTA BARBARA
Lompoc
African American Ethnicity
County Lines
Lakes or Reservoirs
Pacific Gas and Electric Company
Date: 7/10/2014
Author: JECi
Data Source
2010 Farmland Data
CA Dept. of Conservation
Farmland Mapping and Monitoring Program
0 2.5 5 10 15 20 Miles
Environmental Report
Diablo Canyon Power Plant
Figure 2.6-5
Black/African American
Minority Populations
Salt Lake City
Sacramento
San Francisco
Los Angeles
San Diego



Environmental Report
Diablo Canyon Power Plant

Figure 2.8-1
Land-Use Map


120.9° W
120.8° W
35.3° N
35.2° N
35.1° N
120.9° W
120.8° W
120.7° W
Estero Bay
Morro Bay
Los Osos Valley
SAND DUNES
ISLAY SHELF
Islay Point
Islay Creek
Point Buchon
Coon Creek
IRISH HILLS
HOSGRI
CONTINENTAL
FAULT
ZONE
SLOPE
SHELF
Saddle Peak
Diablo Creek
DCPP
Pecho Creek
San Luis Creek
Obispo Creek
San Luis Hill
San Luis Obispo Bay
Point San Luis
SANTA ROSA REEF SHELF
SAN LUIS SHELF
San Francisco
San Jose
Nevada
California
Los Angeles
San Diego
Figure extent
EXPLANATION
Hosgri fault zone
Marine Terraces
Irish Hills
Sand Dunes
Note: Boundary between the Islay and Santa Rosa Reef shelves is uncertain and not shown. The Hosgri fault generally separates the continental shelf and continental slope.
Sources: Modified from Shoreline Fault Zone Study, PGE (2011). Base map is Composite DEM, version 7 (DCPP Geodatabase, 2013)
N
0 2 4 mi.
0 4 8 km
Map projection and scale: WGS 84 / UTM Zone 10N, 1:150,000
Geomorphic Regions in the DCPP Vicinity
ENVIRONMENTAL REPORT
Pacific Gas and Electric Company
Figure 2.13-1
File path: S:\1005\0511\Figures\EnvironmentalReport\Figure_0213-01.mxd; Date: 11/12/2014; User: Serkan Bozkurt, LCI; Rev.1

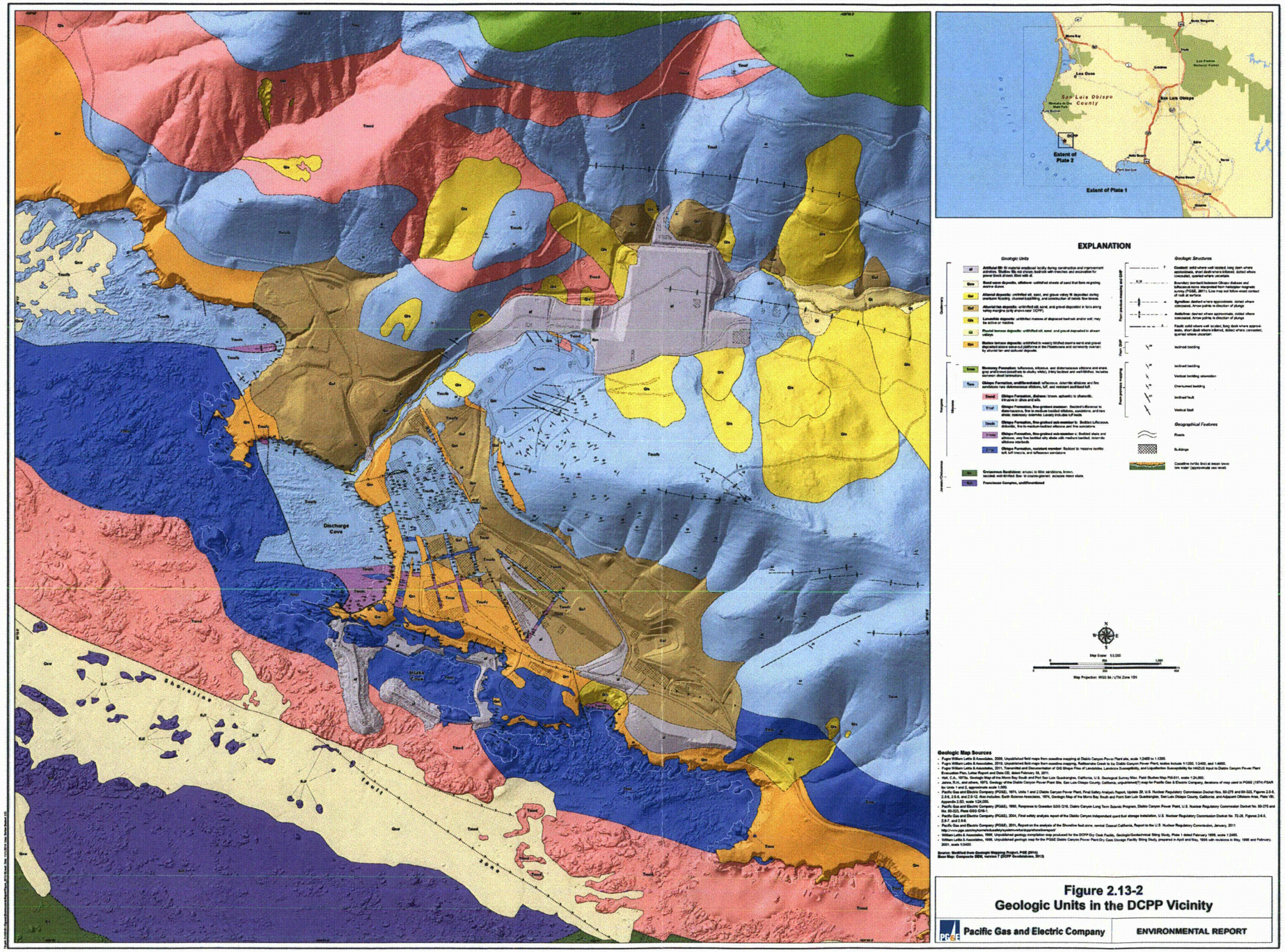
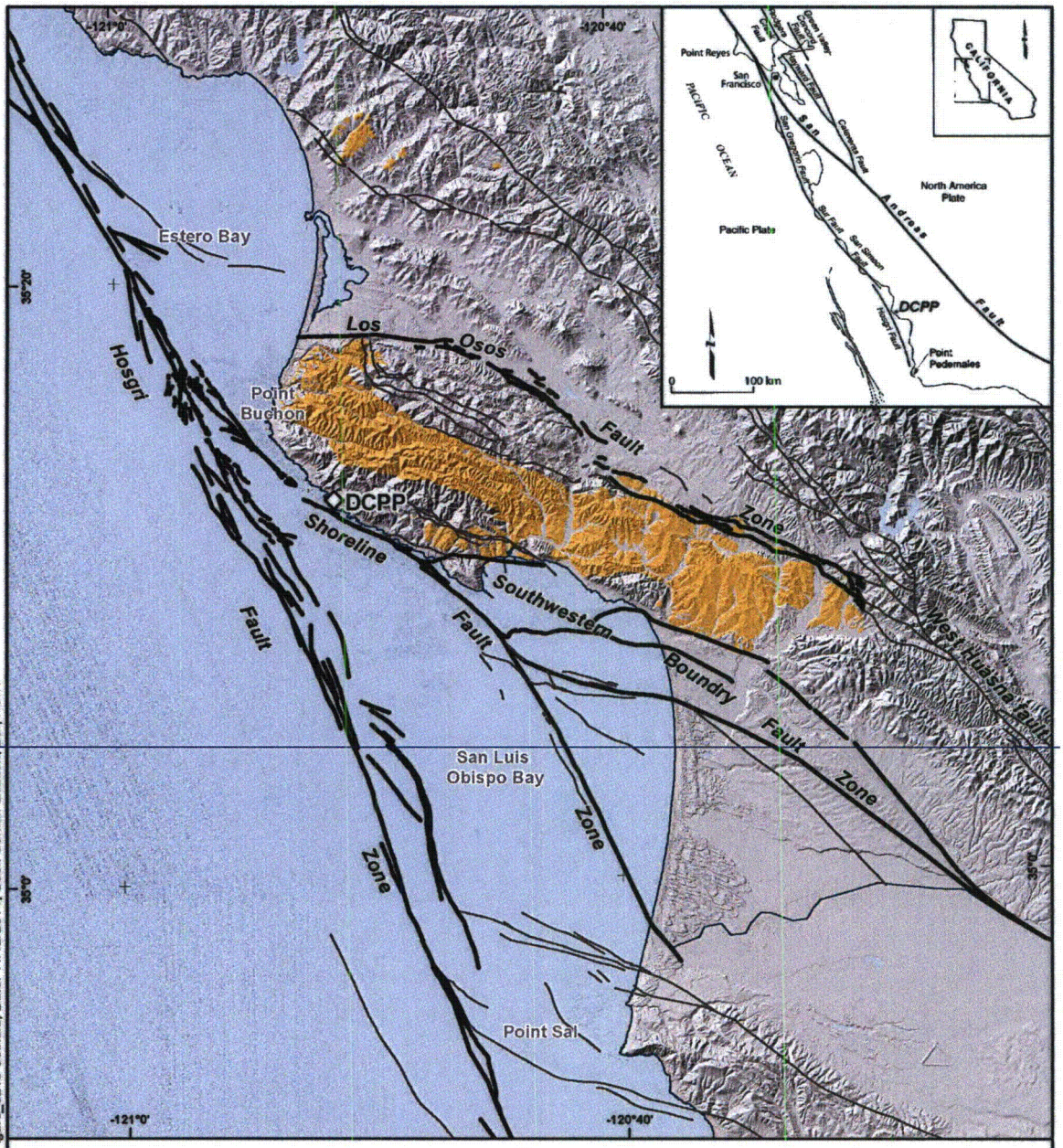


Figure 2.13-2
Geologic Units in the DCPP Vicinity

Pacific Gas and Electric Company | ENVIRONMENTAL REPORT


-121°0'
-120°40'
35°20'
35°0'
Estero Bay
Hosgri
Point Buchon
Los Osos
Fault
DCPP
Shoreline
Fault
Southwestern
Boundry
Fault
Zone
West Huasna fault
Fault
Zone
San Luis Obispo Bay
Zone
Zone
Point Sal
Point Reyes
San Francisco
PACIFIC
OCEAN
San Andreas Fault
Calaveras Fault
Hayward Fault
San Gregorio Fault
Sur Fault
San Simeon Fault
Hosgri Fault
North America Plate
Pacific Plate
DCPP
Point Pedernales
100 km
CALIFORNIA
EXPLANATION
Siginificant faults
Other faults
Pismo formation
N
0 5 10 mi.
0 5 10 km
Map projection and scale: WGS 84 / UTM Zone 10N,1:359,028
Sources:
- PG&E (1988, 2011, 2013, 2014)
- Regional tectonic sketch map from Hanson et al. (2004)
- AMEC (2011)
- Base map is Composite DEM, version 7 (DCPP Geodatabase, 2013)
Faults in the DCPP Vicinity
ENVIRONMENTAL REPORT
Pacific Gas and Electric Company
Figure 2.13-8
File path: S:\11005\051\Figures\EnvironmentalReport\Figure_0213-03.mxd; Date: 11/12/2014; User: Serkan Bozkurt, LCI; Rev.1

CHAPTER 3 – THE PROPOSED ACTION

NRC
"... The report must contain a description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures..." 10 CFR 51.53(c)(2)

Pacific Gas and Electric (PG&E) proposes that the U.S. Nuclear Regulatory Commission (NRC) renew the operating licenses for Diablo Canyon Power Plant (DCPP) for an additional 20 years. Renewal would give PG&E and the state of California the option of relying on DCPP to meet future electricity needs. Section 3.1 discusses the plant in general. Sections 3.2 through 3.4 address potential changes that could occur as a result of license renewal.

3.1 GENERAL PLANT INFORMATION

DCPP is a nuclear-powered steam electric generating facility that began commercial operation on May 7, 1985 for Unit 1 and March 13, 1986 for Unit 2. Each unit is powered by a Westinghouse pressurized water reactor (PWR). Unit 1 produces a reactor core power of 3,411 megawatts-thermal; Unit 2 produces 3,411 megawatts-thermal. The design net electrical capacities are 1,138 and 1,147 megawatts-electric for Units 1 and 2, respectively. Figure 3.1-1 depicts the site layout.

The following subsections provide information on the reactor and containment systems, the cooling and auxiliary water systems, and the electric transmission system. Additional information about DCPP is available in the following documents:

- Final Environmental Statement (FES) for operation of the plant (Reference 2),
- Generic Environmental Impact Statement for License Renewal of Nuclear Plants (Reference 3), and
- DCPP's Final Safety Analysis Report Update (Reference 1).

3.1.1 REACTOR AND CONTAINMENT SYSTEMS

The nuclear steam supply system at DCPP is a four-loop Westinghouse pressurized water reactor. The reactor core heats up to approximately 581°F. Because the pressure exceeds 2,000 psi, the water does not boil. The heated water is pumped to four U-tube heat exchangers known as steam generators where the heat boils the water on the shell-side into steam. After drying, the steam is routed into the turbines. The steam yields its energy to turn the turbines, which are connected to the electrical generator. Both Unit 1 and Unit 2 steam generators were replaced in 2008 and 2009 by new Westinghouse steam generators (Reference 4). The nuclear fuel is low-enriched

uranium dioxide with enrichments 5 percent by weight uranium-235 or less and fuel burnup levels of a batch average of approximately 49,000 megawatt-days per metric ton of uranium (MWD/MTU), and less than a maximum of 62,000 MWD/MTU.

The reactor, steam generators, and related systems are enclosed in a containment building that is designed to prevent leakage of radioactivity to the environment in the improbable event of a rupture of the reactor coolant piping. The containment building is a reinforced concrete cylinder with a slab base and hemispherical dome. A welded steel liner is attached to the inside face of the concrete shell to ensure a high degree of leak tightness. In addition, the 3.6 ft thick concrete walls serve as a radiation shield for both normal and accident conditions.

The containment building is ventilated to maintain pressure and temperatures within acceptable limits. The containment ventilation system can also purge the containment prior to entry. Exhaust from the ventilation system is monitored for radioactivity before being released to the plant vent. High efficiency particulate air (HEPA) filters can be used when needed to filter the air before releasing it. The containment building can be isolated if needed.

3.1.2 COOLING AND AUXILIARY WATER SYSTEMS

The water systems most pertinent to license renewal are those that draw from surface water bodies and groundwater. At DCPP, the once-through cooling (OTC) Circulating Water System draws from and discharges to the Pacific Ocean. The system removes the heat rejected from the main condensers.

A seawater reverse osmosis treatment unit provides the majority of freshwater for plant primary and secondary systems makeup, fire protection system source water, and plant domestic water system supply. The unit is supplied with raw seawater drawn from the power plant OTC system intake, and has the capacity to produce 450 gpm of freshwater. Groundwater from an onsite deep well is also available to supplement freshwater supply as necessary. Supplement of reverse osmosis system supply by the deep well is generally only required during equipment maintenance periods, or during plant start-up following refueling or forced outage when freshwater consumption is significantly increased.

3.1.2.1 Surface Water

Condenser circulating water is seawater from the Pacific Ocean. The ocean water level normally varies between zero and +6 ft mean lower low water (MLLW) datum. Mean sea level (MSL) zero is equivalent to +2.6 ft MLLW.

A curtain wall at the front of the intake structure limits the amount of floating debris entering the intake structure. Bar racks near the front of the intake structure intercept large submerged debris. The bar racks have 3/8 inch thick bars at 3-3/8 inch centers.

Traveling screens intercept all material larger than the screen mesh opening (3/8 inch clear square openings).

The total flow in each Unit's circulating water system is nominally 867,000 gpm, which is pumped by two circulating water pumps with motors cooled by an air-to-water heat exchanger. The cooling water is provided from the fire water system via a small demineralizer. Each pump has a discharge isolation valve and bypass line around the valve. Approximately 4,000 gpm of the circulating water flow is used per Unit to cool the service water heat exchangers and 1,000 gpm to cool the pump motor cooling water.

Once Through Cooling System
DCPP utilizes an OTC water system whereby seawater is drawn from the Pacific Ocean through a shoreline intake structure, and discharged back to the Pacific Ocean at a second, separate, shoreline location. Ambient temperature seawater is pumped through heat exchanging steam condensers located in the turbine building. Figure 3.1-2 provides a diagram of the OTC system (not to scale). Each Unit utilizes an independent cooling system, however the systems share common intake and discharge structures.

The two main steam condensers for each Unit are in-line directly under the low pressure turbine exhaust. Each condenser consists of two halves with each half independently supplied by one of the 2 intake conduits. Each Unit has two intake seawater conduits that split under the turbine building, and supply one half of each condenser. This configuration provides four distinct condenser quadrants per Unit, with each seawater conduit supplying cooling flow to the inlet of two condenser quadrants.

Individual condenser quadrants contain 58,126 1-inch diameter 41-ft horizontal titanium tubes that provide a large surface area for efficient heat transfer between secondary side turbine steam exhaust and the seawater cooling flow. Following transfer of waste heat, the warmed seawater is discharged back into the ocean through the shoreline outfall located at Diablo Cove. Condensed water on the secondary side is re-circulated to the stream generators and flashed back to turbine steam.

Seawater Intake System
For each Unit, two main seawater circulating water pumps (CWP) provide cooling flow to the main condenser inlets. Each CWP discharges into a concrete conduit approximately 1,800 ft in length that rises from the shoreline intake structure to the turbine building. The conduits measure 11.75-ft square with exception of an initial tapered section leading directly from the pump discharge, and a circular section used for flow monitoring. The CWPs produce a combined rated flow for Unit 1 between 778,000 gpm and 854,000 gpm, and for Unit 2 between 811,000 gpm and 895,000 gpm. Two-Unit combined flow is between 1,589,000 gpm minimum and 1,749,000 gpm maximum during normal plant operations.

Each Unit also has two auxiliary saltwater system (ASW) pumps that supply cooling flow to the safety related component cooling water (CCW) heat exchangers. Each ASW pump is rated at 11,500 gpm. During routine plant operations, only one ASW train is in

use for each Unit, with the second pump in standby mode. Two operating pumps contribute an additional OTC flow of 23,000 gpm. Using maximum pump ratings, total OTC flow during routine full power operations is 1,772,000 gpm, equivalent to 2.55 billion gallons of seawater circulated per day.

Seawater transit time through the power plant is approximately 5 minutes. At full power, cooling flow temperatures are elevated approximately 20°F during condenser pass-through. Average aggregate power plant discharge temperature is 19.6°F above ambient intake seawater temperatures (ΔT). Temperature elevation can vary in response to ocean ambient temperatures, Unit power levels, plant transients, and planned Unit curtailments which may be accompanied by seawater circulator clearance. During the initial license period, OTC system discharge ΔT has been limited by permit to 22°F above intake ambient temperature.

The shoreline intake structure for Units 1 and Unit 2 house the CWPs, vertical debris bar racks, vertical traveling water screen mechanisms (3/8 inch mesh screens), and associated screen rotation and washing equipment. Figure 3.1-3 provides a scaled diagram of the Unit 1 main and auxiliary circulator pump bays, and layout of the debris control and screen wash equipment. Each main circulator draws from an isolated pump bay. Each pump bay is open to the ocean through 3 individually gated 11-ft wide rectangular passages leading through 10-ft wide (nominal) perpendicular vertical traveling screens. Each screening mechanism provides approximately 300 square feet (sq-ft) of filtration area at mean sea level for a total of approximately 900 sq-ft for each CWP. The isolation gates for an individual pump bay can be closed and sealed, and the bay dewatered for maintenance or inspection activities independent of the other bays.

The two ASW pumps for each Unit are serviced by a single 6-ft wide rectangular concrete passage leading through 5-ft wide (nominal) perpendicular vertical traveling screens. The screening mechanism for the auxiliary pump bays provides approximately 150 sq-ft of filtration surface at mean sea level. Leading from the common debris screened inlet passage; the bay then widens and is partitioned into two sides, one for each ASW pump suction inlet.

Unit 1 and Unit 2 intake configuration is mirrored, with the auxiliary pumps and associated bays located near the center of the intake structure. The structure is flat-faced, with all bar racks, dewatering gates, and traveling screen systems installed parallel to the shoreline, and perpendicular to the inlet flow. Total equipment inventory includes 4 CWPs and associated inlet bays, 4 ASW pumps and 2 associated partitioned inlet bays, 14 individual vertical traveling screen wash systems, and 14 bar rack Units installed in front of each traveling screen inlet passage. Figure 3.1-4 provides a scaled cross sectional view of an inlet passage. An additional 9-ft wide bar rack bay serving as a fish escape route is provided at each end of the intake structure bringing the total number of bar rack units to 16. A central concrete partition supporting a screen wash debris collection sump splits the submerged face of the intake into distinct Unit 1 and Unit 2 openings to the ocean environment. The partition is open between the Units

behind the bar racks. The opening provides for free flow of seawater and a migration route for fish from one end of the structure to the other.

Cooling System Debris Intrusion Control
During routine operations, the traveling water screens are rotated and washed by high pressure saltwater spray for 15 minutes every 4 hours. In high energy ocean swell events, and/or periods of increased source water debris loading conditions, the traveling screens can be placed into continuous operation at either low or high speed.

The traveling screen wash system spray nozzles discharge into sluiceways located on the intake structures exterior upper deck. The sluiceways flow to a central refuse collection sump. The sump is dewatered by pumping systems capable of transferring high percentage solids laden flow. The saltwater screen wash effluent and entrained debris is pumped from the sump to a discharge outside of the power plant intake cove. Grinding and mincing equipment installed in the inlets of the refuse sump process debris captured by the traveling screens and subsequently washed off. The debris grinders reduce potential for clogging of the sump when seawater inlet flow is laden with significant quantities of ocean debris (primarily kelp and under story algae). Entrained debris smaller than the 3/8-inch screening mesh passes through the cooling system.

Cooling System Heat Treatment
The main condenser OTC system was initially designed for heat treatment to control marine fouling organisms. Heat treatments, effective for management of biofouling primarily caused by mussels, was implemented but discontinued early during the initial license period. Heat treatments were found to be ineffective at managing acorn barnacles (*Megabalanus tintinnabulum*), the primary seawater systems fouling problem. Heat treatment of seawater systems will not be used in the license renewal period.

Discharge and Thermal Effluent
Heated discharge from the main condensers of each Unit combine and flow to a common structure terminating in a shoreline outfall. The discharge for Unit 1 and Unit 2 are parallel within the structure separated by a central concrete partition. Cutouts exist in the dividing wall to promote mixing of thermal effluent between the operating Units. The mixing also provides dilution and reduction of residual oxidants from seawater inlet systems chemical treatments. Figure 3.1-5 provides a side view of the discharge structure and associated cascading weir system.

Discharge flows by gravity from the elevated turbine building into the outfall structure. Within the structure, flow passes over three weirs and across horizontal platforms fitted with vertical impact blocks. The cascading effect of the design creates mixing of the thermal effluent as well as dissipation of hydraulic energy. Width of the discharge flow out the mouth of the structure is 27.5 ft per Unit. Once discharged, the thermal effluent mixes with the receiving water and dissipates across the ocean surface.

Cooling System Biofouling and Chemical Control
The seawater conduits are susceptible to colonization by entrained marine organisms. During the initial operating license period, concrete conduit surfaces in both the intake and discharge systems have been susceptible to extensive fouling with acorn barnacles (*Megabalanus tintinnabulum*), gooseneck barnacles (*Polycipes polymerus*), and to a lesser extent mussels (*Mytilus edulis*). Other marine species also find habitat among the protective substrate created by the primary hard-shelled fouling organisms.

Heavy colonization and growth in the condenser inlet conduits can result in sloughing of fouling material. Individual acorn barnacles or clusters of smaller barnacles, with hard durable calcareous shells larger than 1 inch in diameter, can impinge on main condenser tube sheets and block flow. Sloughed fouling material accumulates on inlet tube sheets resulting in increased backpressure on the intake main circulating water pumps, and reduction of condenser performance. Significant fouling requires manual removal of growth during refueling outages. Mid-cycle Unit curtailments are also often necessary to conduct conduit cleanings and/or perform main condenser inlet debris removal when fouling slough and subsequent tube sheet occlusion become significant.

The chlorination system provides chemical treatment of the circulating water to control the macro and micro fouling in the intake tunnels, piping, and the condenser tubes. The system is used as needed. Liquid sodium hypochlorite and a supplemental chemical, sodium bromide, are stored in tanks at the intake structure (common to both Units). Adequate valving is provided for isolating any of the tanks from the system. Each tank is within a secondary containment tank sized to contain the entire contents of the storage tank. When chlorination is required (based on a time schedule), the chemicals are injected via metering pumps and injected into the intake structure.

Chemical treatment to inhibit initial colonization of seawater conduit surfaces, as well as retard growth rates of established fouling, will continue to be used during the period of extended operation. Biofouling inhibition coatings are also used within the seawater systems, however, such coatings are not entirely effective, nor can be successfully applied to all equipment surfaces susceptible to fouling.

3.1.2.2 Groundwater

Groundwater reserves at the site are limited by the nature of the plant location, and lack of hydraulic connection with groundwater resources on properties outside of plant controlled lands.

DCPP has one active permitted deep well (Deep Well #2) located south of Diablo Creek in the Diablo Mesa area. This well supplies water to the makeup water system, which includes supplying the Raw Water Storage Reservoir used primarily for fire water and domestic drinking water. This well is permitted through the San Luis County Health Department. Until 2008, two adjacent Ranney wells were available to collect excess water runoff from Diablo Creek. The Ranney wells have been abandoned. Conveyance piping and associated pumps were removed. A refurbished Ranney well system, or any

other system capable of drawing from Diablo Creek surface waters, will not be installed or used in the future in accordance with the provisions of the Coastal Development Permit for the Replacement Steam Generator Projects conducted during the current licensed period.

Deep Well #2 has a maximum capacity of 170 gpm, and a tested reliable production rate of 150-155 gpm that can be maintained even during drought conditions without depleting the taped aquifer. However, the well is not intended to operate continuously, and is only in-service as needed. Average production from the well on an annual basis is projected to be significantly less than 100 gpm during the period of extended operation. The estimate for total well use is approximately 2 weeks (or approximately 350 hours) on average per year at the 150 gpm production rate.

Deep Well #2 will normally only be used in the event the Seawater Reverse Osmosis (SWRO) Unit freshwater production is insufficient to maintain plant makeup or firewater reserves *or in the event that water conditioning of the SWRO product water is required*. This is anticipated to occur only during a non-routine period of unusually high freshwater consumption by Unit 1 and/or Unit 2 (such as an extended dual unit forced outage with Units maintained in hot standby), or during periodic planned or unplanned clearance of the SWRO. SWRO supply is generally only insufficient when the system is unavailable for an extended period of time due to scheduled equipment maintenance, an unplanned equipment failure, or a system trip from a transient event such as electrical power loss or excessive pump backpressures. Continuous use of the well at maximum rated capacity is therefore not anticipated during the period of extended operation. The system will remain a back-up freshwater resource, and be used only infrequently.

3.1.3 RADIOACTIVE WASTE TREATMENT PROCESSES

DCPP uses liquid, gaseous, and solid waste processing systems to collect and treat, as needed, radioactive materials that are produced as a by-product of plant operations. Radioactive materials in liquid and gaseous effluents are reduced to levels as low as reasonably achievable.

Radioactive material in the reactor coolant is the source of most liquid, gaseous, and solid radioactive wastes in light water reactors. Radioactive fission products build up within the fuel as a consequence of the fission process. The fission products are contained within the sealed fuel rods; however, small quantities of radioactive materials may be transferred from the fuel elements to the reactor coolant under normal operating conditions.

Reactor fuel assemblies that have exhausted a certain percentage of their fissile uranium content are referred to as spent fuel. Spent fuel assemblies are removed from the reactor core and replaced by new fuel assemblies during routine refueling outages. The spent fuel assemblies are then stored for a period of time in the spent fuel pool and may later be transferred to dry storage at an onsite Independent Spent Fuel Storage

Installation. DCPP also provides onsite storage of mixed waste, which contain both radioactive and chemically hazardous materials.

Storage of radioactive materials is regulated by the NRC under the Atomic Energy Act of 1954, as amended, and storage of hazardous wastes is regulated by the EPA under the Resource Conservation and Recovery Act of 1976.

Systems used at DCPP to process liquid, gaseous, and solid radioactive wastes are described in the following sections.

3.1.3.1 Gaseous Waste System

The Gaseous Radwaste System (GRS) is designed to process radioactive gases consisting primarily of nitrogen and hydrogen with low levels of oxygen. The gases are collected by the vent header system from various primary and auxiliary systems. Radioactive or potentially radioactive gaseous wastes result from collection of excess cover gas in the liquid holdup tanks, gases stripped from reactor coolant in the boric acid evaporator, degasification in the volume control tank, and cover gas displaced in the pressurizer relief tank and reactor coolant drain tank.

Each Unit's surge tank feeds that Unit's waste gas compressor and/or a shared spare compressor through a pressure control valve set to maintain constant compressor suction pressure. The system is designed such that the shared spare compressor will automatically start if the pressure in the surge tank rises above 3 psig. An oxygen monitor on the moisture separator discharge limits the concentration of oxygen that can be fed to the gas decay tanks. The monitor actuates an annunciator at 2 percent 0_2 concentration and trips the compressors at 4 percent 0_2 concentration.

The gas decay tanks are provided for the holdup of radioactive gases prior to release to the environment. The holdup time required is that which would result in releases that are in compliance with release rate and dose limits. Each gas decay tank may be operated as a cover gas supply for the liquid holdup tanks. Normal coolant letdown then displaces the gases back into the GRS. This process effectively increases the volume of storage available for gaseous holdup.

Each gas decay tank is equipped with a flow control valve connected to the plant vent. The discharge of each valve is routed into a common flow control valve that is key-operated to ensure that no inadvertent venting may take place. Downstream of the key-operated valve is a radiation monitor that controls a downstream control valve. If the activity in the discharging waste gas exceeds its upper limit, the control valve closes, terminating the release. The final processing of waste gas prior to release to the atmosphere is by a high-efficiency particulate air (HEPA) filter located just downstream of the radiation control valve and just upstream of the plant vent.

The sampling system associated with the GRS is used to monitor the hydrogen and oxygen content of the gases in the system. Thirteen sample points exist in this system

including all influent sources and each of the gas decay tanks. These sample points may be monitored continuously, or intermittently as required, or grab samples may be taken from manual sample taps. The gas analyzer is equipped with a sample tap for taking bottled samples to undergo radiological testing.

3.1.3.2 Liquid Waste System

Units 1 and 2 share a common Liquid Radwaste System (LRS), except for equipment located inside containment. The common waste system consists of the equipment drain subsystem, floor drain subsystem, chemical drain subsystem, laundry and hot shower and laundry/distillate subsystem, and the demineralizer regenerant subsystem.

The floor drain, chemical drain, laundry/distillate, laundry and hot shower, and demineralizer regenerant subsystems generally collect low radioactivity level liquid wastes. The equipment drain subsystem collects liquids with variable radioactivity levels. The demineralizer regenerant subsystem is also used as backup for the floor drain and equipment drain subsystem.

Following treatment, effluents from the LRS are released to the environment at either of the Units' circulating water system (CWS) discharge structures via the ASW system. The waste liquid releases are diluted in the ASW system and Main CWS flows. Releases require positive operator action, are continuously monitored, and are automatically isolated in the event of a high radiation alarm or a power failure.

A major source of radioactive waste liquids is the reactor coolant system (RCS). The bulk of these wastes are processed and retained within the chemical and volume control system (CVCS), with a fraction being discharged to the LRS.

The concentration of radioactivity in the turbine building drains is expected to be low, even in the event of significant primary-to-secondary steam generator leakage. The radiation concentration and flow of liquid from the turbine building drains are monitored at the oily water separator to verify that there are no unaccounted for or unexpected releases from the turbine building drains. If significant radioactivity is detected coming from the turbine building drains, the discharge can be routed to the LRS for treatment. The monitoring system is in conformance with Regulatory Guide RG 1.21, Revision 0 (Reference 6).

Turbine building sump wastes are normally released to the environment via each Unit's circulating water discharge structure.

Equipment Drain or Closed Drain Subsystem
The closed drain system is so called because drains from equipment are connected directly to the drainage system. Closed drain wastes are not exposed to the atmosphere until they reach their destination. Inside containment closed drain wastes

flow to the reactor coolant drain tank. Closed drainage from equipment in the auxiliary building is collected in the miscellaneous equipment drain tank.

Floor Drains and Open Drain Subsystem
The open drain system drains potentially contaminated areas in the containment buildings and the auxiliary building with equipment that does not normally handle reactor coolant. The piping systems and trenches used in this system are not enclosed.

Inside containment, floor drain wastes are collected in the containment sumps and the reactor cavity sump. Potentially contaminated auxiliary building floor drain wastes are collected in the auxiliary building sump. The uncontaminated floor drains from the auxiliary building drain to other discharge pathways such as the sanitary drainage system, outside, etc.

Chemical Drain Subsystem
Chemical wastes are generated due to routine chemical and radiochemical sampling and analyses. Chemical wastes from both Units drain by gravity to a divided chemical drain tank. When one half of the tank is filled, flow is automatically diverted into the second half. The filled section is recirculated, sampled, and analyzed before further batch processing.

Laundry and Hot Shower, and Laundry/Distillate Subsystem
Laundry and hot shower wastes are generally very low in activity. The laundry and hot shower wastes are generated by laundering contaminated protective clothing and by personnel decontamination. A source of waste is the liquid holdup tank liquid that is processed and drained to the laundry/distillate tank. When a holding tank is filled, the contents are recirculated, sampled, and analyzed before further batch processing or discharge.

Demineralizer Regenerant Subsystem
The demineralizer regenerant subsystem consists of two 15,000 gallon demineralizer regenerant receivers (arranged in parallel) located adjacent to the equipment drain receivers in the auxiliary building. Regeneration wastes from the steam generator blowdown treatment system, deborating demineralizers, or evaporator distillate demineralizers are neutralized by concentrated sulfuric acid or sodium hydroxide in the demineralizer regenerant receivers. After neutralization, the waste is recirculated, sampled and analyzed before further batch processing.

The demineralizer regenerant receivers (formerly called spent regenerant receiver tanks) can also receive equipment or floor drain liquid and function as surge capacity for these systems. In addition, the liquid holdup tank liquid that is processed can be drained to the demineralizer regenerant receivers for additional processing.

3.1.3.3 Solid Waste Processing Systems

The Solid Radwaste System (SRS) is designed to process, package, and store the radioactive wastes generated by plant operations until they are shipped offsite for permanent disposal at a licensed burial facility. The SRS has the following major subsystems: the spent filter/ion exchange media processing system, the spent resin processing system, the spent filter cartridge processing system, the mobile radwaste processing system (MRPS), and the dry active waste processing system.

Spent Resins Processing System
The system for transferring spent resins from any of the ion exchangers to the spent resin storage tanks (SRSTs) consists of 4 separate headers connected to 4 eductors and discharge systems that permit the transfer of resin from any of the 30 ion exchanger units to either of 2 SRSTs. A spent resin sampling system allows for the collection of grab samples as resins enter the SRSTs or while the spent resins are being transferred out of the SRSTs to the MRPS.

All of the equipment associated with this system is potentially highly radioactive. The equipment is located behind shielding, and is approached for operation or maintenance only under the direction of plant radiation protection personnel under the special work permit rules of the plant.

Spent Filter/Ion Exchange Media Processing System
Pressurized air is used to transfer exhausted media from either of the two radwaste media filters to the loadout station to which the MRPS container is connected.

Spent Filter Cartridge Processing System
This system is designed to remove and handle spent filter cartridges generated in the filters of the CVCS, Spent Fuel Storage System, and LRS. The radioactively contaminated spent filter cartridges can be removed from the filter housing or vessels with the operator remaining behind shielding. The spent cartridges are transferred to storage or to the MRPS in shielded transfer casks.

Mobile Radwaste Processing System
The MRPS is a skid-mounted mobile radwaste dewatering/solidification system. It is operated on a batch basis to solidify concentrates, to dewater or solidify spent ion exchange or filtration media, and to encapsulate spent cartridge filters. Waste concentrates are transferred to the MRPS through a flexible connection from the boric acid concentrates loadout station and solidified. Slurries from the media filter vessels are sluiced out to the MRPS and dewatered or solidified. Spent resin slurries are sluiced to the MRPS from the spent resin storage tank and dewatered or solidified. Filter cartridges are transferred to the MRPS container in a shielded spent filter transfer cask, if required. Waste concentrates, ion exchange media, filtration media, and cartridge filters will be dewatered or solidified.

Dry Active Waste Processing System
Potentially radioactive dry wastes are collected at appropriate locations throughout the plant, as dictated by the volume of the wastes generated during operation or maintenance. The wastes are then segregated, processed, and packaged. Compressible dry active wastes may be processed by compaction in either a drum or box compactor. During compaction, the airflow in the vicinity of the compactor is directed by the compactor exhaust fan through a high-efficiency particulate filter before it is discharged.

Large or highly radioactive components and equipment that have been contaminated during reactor operation and that are not amenable to compaction are handled either by qualified plant personnel or by outside contractors specializing in radioactive materials handling, and the components and equipment are packaged in shipping containers of an appropriate size and design.

3.1.4 TRANSPORTATION OF RADIOACTIVE MATERIALS

The shipment of prepacked solid waste from the plant site to burial locations is contracted to firms licensed to transport radioactive material in accordance with applicable Department of Transportation regulations. All shipping containers and transportation casks are in conformance with 49 CFR 171 to 49 CFR 178 and 10 CFR 71, as applicable. ~~On average, DCPP transports approximately 620 ft^3 of radioactive materials offsite annually.~~

3.1.5 NONRADIOACTIVE WASTE SYSTEMS

Nonradioactive waste is produced from plant maintenance and cleaning processes. Most of these wastes associated with plant operations are from secondary system chemistry control blowdown, condensate regeneration system spent resins and wastewaters, filter backwashes, sludges and other wastes removed from equipment during maintenance, floor and yard drains, and plant site stormwater runoff. Chemical and biocide wastes are produced from pH, scaling, and corrosion controls implemented for various closed-cycle cooling water systems. Water treatment chemical residuals also result from processes to clean and control fouling of the main steam condensers and associated water conduits. Waste liquids are typically combined with cooling water discharges in accordance with the National Pollutant Discharge Elimination System (NPDES) Permit.

Nonradioactive gaseous effluents result from combustion of diesel fuel-oil during maintenance, testing, and operation of the DCPP emergency diesel generators (EDGs). Additionally, a fuel-oil fired auxiliary boiler unit is available to provide steam to heat the plant in the unlikely event of an extended dual Unit outage involving cold shutdown of both Units. The auxiliary boiler is not operated for routine maintenance or testing purposes. Discharge of regulated pollutants from fossil fuel combustion equipment is minimized by use of high grade ultra-low sulfur fuel, and limiting fuel usage and hours of operation in accordance with the San Luis Obispo County Air Pollution Control District

(APCD) requirements. Additionally, emissions equipment operating permits incorporate standards that support local air quality goals.

3.1.6 MAINTENANCE, INSPECTION, AND REFUELING ACTIVITIES

Various programs and activities currently exist at DCPP to maintain, inspect, test, and monitor the performance of plant equipment. These programs and activities include, but are not limited, to those implemented to:

- meet the requirements of 10 CFR 50, Appendix B (Quality Assurance), Appendix R (Fire Protection), and Appendices G and H, Reactor Vessel Materials;
- meet the requirements of 10 CFR 50.55a, ASME Code, Section XI, Inservice Inspection and Testing Requirements;
- meet the requirements of 10 CFR 50.65, the maintenance rule, including the structures monitoring program; and
- maintain water chemistry in accordance with EPRI guidelines.

Additional programs include those implemented to meet DCPP Technical Specifications surveillance requirements, those implemented in response to NRC generic communications, and various periodic maintenance, testing, and inspection procedures. Certain program activities are performed during the operation of the Unit. Others are performed during scheduled refueling outages.

3.1.7 POWER TRANSMISSION LINES

The Final Environmental Statement (FES) (Reference 2) identifies three single-circuit 500 kV and one double-circuit 230 kV transmission lines that were built to supply offsite power to DCPP and to connect DCPP to the electric grid. One double-circuit 230 kV line was connected to an existing Morro Bay-Mesa line 10.25 miles from DCPP with an 80-ft right-of-way width. One single-circuit 500 kV line was connected to the Gates Substation in Fresno County 79 miles from DCPP with a 350-ft right-of-way width. Lastly, two single-circuit 500 kV lines were connected to the Midway Substation in Kern County 84 miles from DCPP with a combined right-of-way width of 400 ft. While originally built specifically to supply offsite power to DCPP and to connect DCPP to the electric grid, these transmission lines are now a critical part of PG&E's high voltage transmission system, providing other services in addition to those related to DCPP. *These transmission lines would remain energized regardless of a license renewal decision.*

Subsequent to the publication of the FES, no additional transmission lines have been built to connect DCPP to the electric grid. Thus, *in accordance with the 1996 GEIS,* the

transmission lines of interest are those specified in the FES. Figure 3.1-6 is a map of the transmission systems of interest.

In 2014, PG&E submitted an updated Environmental Report. The updated Environmental Report discussions regarding transmission lines were not updated. In accordance with the revised GEIS (NUREG-1437, Revision 1, Reference 8), since the transmission lines discussed in the FES would remain energized regardless of a license renewal decision, the transmission lines that connect the DCPP switchyard to the regional transmission system are no longer in the scope of the license renewal environmental review. These transmission lines are now a critical part of PG&E's high voltage transmission system, providing other services in addition to those related to DCPP. The only transmission lines remaining in the scope of the license renewal environmental review are those from the DCPP power block to the DCPP switchyard. Therefore, any discussions regarding the DCPP transmission lines that connect the DCPP switchyard to the transmission system are provided for historical purposes and are not updated.

In total, for the specific purpose of connecting DCPP to the transmission system, PG&E has approximately 170 miles of corridor that occupy approximately 7,500 acres. The corridors pass primarily through foothills and rolling land. In addition, there are parcels of land that are agricultural and forest land. The areas are mostly remote. All lines, except the Morro Bay-Mesa feeder line, cross Highway 101.

The transmission lines were designed in the late 1960s and constructed in the early 1970s, in accordance with the State of California's Rules for Overhead Electric Line Construction (General Order 95, Reference 5) and industry guidance that were current when the lines were built. Ongoing surveillance and maintenance of the transmission facilities ensure continued conformance to design standards. These maintenance practices are described in Section 2.4 and Section 4.13.

3.2 REFURBISHMENT ACTIVITIES

NRC

"The report must contain a description of...the applicant's plans to modify the facility or its administrative control procedures...This report must describe in detail the modifications directly affecting the environment or affecting plant effluents that affect the environment..." 10 CFR 51.53(c)(2)

"...The incremental aging management activities carried out to allow operation of a nuclear power plant beyond the original 40-year license term will be from one of two broad categories... (2) major refurbishment or replacement actions, which usually occur fairly infrequently and possibly only once in the life of the plant for any given item." (NRC 1996) ("SMITTR" is defined in NRC 1996 as surveillance, monitoring, inspections, testing, trending, and recordkeeping.)

PG&E has addressed potential refurbishment activities in this environmental report in accordance with NRC regulations and complementary information in the NRC *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) for license renewal (Reference 3). NRC requirements for the renewal of operating licenses for nuclear power plants include the preparation of an integrated plant assessment (IPA) (10 CFR 54.21). The IPA must identify and list systems, structures, and components subject to an aging management review. Items that are subject to aging and might require refurbishment include, for example, the reactor vessel, piping, supports, and pump casings (see 10 CFR 54.21 for details), as well as those that are not subject to periodic replacement.

NRC regulations for implementing the National Environmental Policy Act require license renewal phase environmental reports to describe in detail and assess the environmental impacts of any major refurbishment activities such as planned major modifications to systems, structures, and components or plant effluents [10 CFR 51.53(c)(2)]. Resource categories to be evaluated for impacts of refurbishment include terrestrial resources, threatened or endangered species, air quality, housing, public utilities and water supply, education, land use, transportation, and historic and archaeological resources.

GEIS Table B.2 lists license renewal refurbishment activities that NRC anticipated utilities might undertake. In identifying these activities, the GEIS intended to encompass actions that typically take place only once, if at all, in the life of a nuclear plant. The GEIS analysis assumed that a utility would undertake these activities solely for the purpose of extending plant operations beyond 40 years, and would undertake them during the refurbishment period. The GEIS indicates that many plants will have undertaken various refurbishment activities to support the current license period, but that some plants might undertake such tasks only to support extended plant operations.

The DCPP IPA conducted by PG&E under 10 CFR 54 (included as part of the license renewal application) and the DCPP Plant Betterment Study (Reference 7) have not identified the need to undertake any major refurbishment or replacement actions to maintain the functionality of important systems, structures, or components during the DCPP license renewal period. Although routine plant operational and maintenance activities will be performed during the license renewal period, these activities are not refurbishments as described in Sections 2.4 and 3.1 of the GEIS and will be managed in accordance with appropriate DCPP programs and procedures. These items are typical of those that occur during major refueling outages and the environmental impacts are enveloped by the Final Environmental Statement. Accordingly, PG&E has determined that license renewal regulations in 10 CFR 51.53(c)(3)(ii) do not require PG&E to assess the impact of refurbishment on plant and animal habitats, estimated vehicle emissions, housing availability, land use, public schools, or highway traffic on local highways. (See 10 CFR 51.53(c)(3)(ii)(E), (F), (I), (J), respectively.)

To maintain the functionality of important systems, structures, or components during the current operating period, ~~DCPP~~ *PG&E* completed replacement of the *DCPP* Unit 1 and 2 steam generators in 2008 and 2009*, respectively*. ~~DCPP~~ *PG&E* also replaced the *DCPP* Unit *1 reactor head in 2010 and the Unit* 2 reactor head in 2009. ~~The Unit 1 reactor head is scheduled to be replaced in 2010.~~ This replacement ~~is~~ *was*~~being~~ completed for the current operating licenses and the environmental impacts are enveloped by the Final Environmental Statement for the current DCPP Operating Licenses.

3.4 EMPLOYMENT

3.4.1 CURRENT WORKFORCE

PG&E employs approximately ~~1,350~~*1,440* employees at DCPP. This is within the range of 600 to 800 personnel per reactor Unit estimated in the GEIS (Reference 3). Over 95 percent of DCPP employees live in San Luis Obispo County, California and Santa Barbara County. The remaining employees are distributed across 10 other counties in California with numbers ranging from 1 to 7 employees per county. None of the DCPP permanent workforce lives outside of California.

DCPP is on an 18-month refueling cycle. During refueling outages, site employment increases above the permanent workforce by as many as 1,200 for approximately 40 days of temporary duty. This number of *temporary* outage workers falls within the range (200 to 900 workers per reactor Unit) reported in the GEIS for additional maintenance workers (Reference 3).

3.4.2 LICENSE RENEWAL INCREMENT

Performing license renewal activities could necessitate increasing the DCPP staff workload by some increment. The size of this increment would be a function of the schedule within which PG&E must accomplish the work and the amount of work involved. Because PG&E has determined that no refurbishment is needed (Section 3.2), the analysis of license renewal employment increment focuses on programs and activities for managing the effects of aging (Section 3.3).

The GEIS (Reference 3) assumes that NRC would renew a nuclear power plant license for a 20-year period, plus the duration remaining on the current license, and that NRC would issue the renewal approximately 10 years prior to license expiration. In other words, the renewed license would be in effect for approximately 30 years. The GEIS further assumes that the utility would initiate surveillance, monitoring, inspection, testing, trending, and recordkeeping (SMITTR) activities at the time of issuance of the new license and would conduct license renewal SMITTR activities throughout the remaining 30-year life of the plant, sometime during full-power operation (Reference 3), but mostly during normal refueling and the 5 and 10-year in-service inspection and refueling outages.

PG&E has determined that the GEIS scheduling assumptions are reasonably representative of DCPP incremental license renewal workload scheduling. Many DCPP license renewal SMITTR activities would have to be performed during outages. Although some DCPP license renewal SMITTR activities would be one-time efforts, others would be recurring periodic activities that would continue for the life of the plant.

The GEIS estimates that the most additional personnel needed to perform license renewal SMITTR activities would typically be 60 persons during the 3-month duration of a 10-year inservice inspection and refueling outage. Having established this upper

value for what would be a single event in 20 years, the GEIS uses this number as the expected number of additional permanent workers needed per Unit attributable to license renewal. GEIS Section C.3.1.2 uses this approach in order to "...provide a realistic upper bound to potential population-driven impacts..."

PG&E has identified no need for significant new aging management programs or major modifications to existing programs. PG&E anticipates that existing "surge" capabilities for routine activities, such as refueling outages, will enable PG&E to perform the increased SMITTR workload without increasing DCPP staff. Therefore, PG&E has no plans to add non-outage employees to support DCPP operations during the license renewal term. PG&E believes that increased SMITTR tasks can be performed within this schedule and employment level. Therefore, PG&E has no plans to provide additional refueling outage employees for the license renewal term.

3.5 REFERENCES

1. Diablo Canyon Power Plant Units 1 & 2 Final Safety Analysis Report Update, Revision 18, Pacific Gas and Electric Company, October 2008.

2. Final Environmental Statement related to operation of Diablo Canyon Power Plant Units 1 and 2. U.S. Atomic Energy Commission. Pacific Gas and Electric Company, Docket Nos. 50-275 and 50-323. May 1973.

3. NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), Volumes 1 and 2. U.S. Nuclear Regulatory Commission. Washington, D.C. May 1996.

4. Final Environmental Impact Report: Diablo Canyon Power Plant Steam Generator Replacement Project. Prepared by Aspen Environmental Services for Pacific Gas and Electric Company. 2005.

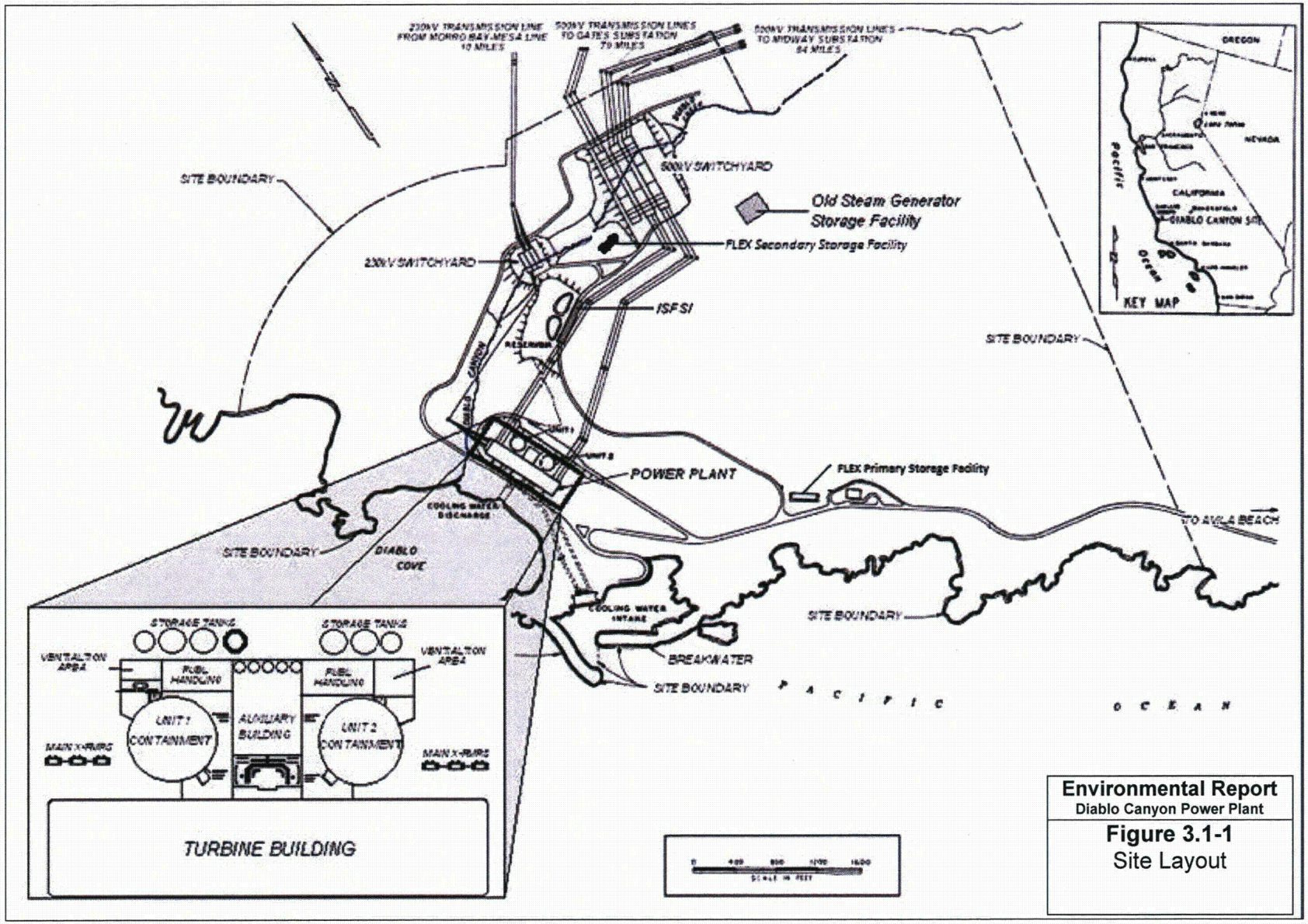
5. State of California's Rules for Overhead Electric Line Construction: General Order 95. Prescribed by the Public Utilities Commission of the State of California

6. Regulatory Guide 1.21: Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-water-cooled Nuclear Power Plants, U.S. Nuclear Regulatory Commission. Washington, D.C., December 1971.

7. Plant Betterment Study. Pacific Gas and Electric Company. Revision 0. September 2009.

8. *NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), U.S. Nuclear Regulatory Commission, Revision 1, Washington, DC, June 2013.*

9. *NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), U.S. Nuclear Regulatory Commission, Revision 1, Washington, DC, June 2013.*



Environmental Report
Diablo Canyon Power Plant

Figure 3.1-1
Site Layout

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND MITIGATING ACTIONS

NRC

"The report must contain a consideration of alternatives for reducing adverse impacts...for all Category 2 license renewal issues...." 10 CFR 51.53(c)(3)(iii)

"...The environmental report shall include an analysis that considers...the environmental effects of the proposed action...and alternatives available for reducing or avoiding adverse environmental effects...." 10 CFR 51.45(c) as adopted by 10 CFR 51.53(c)(2) and 10 CFR 51.53(c)(3)(iii)

The environmental report shall discuss "The impact of the proposed action on the environment. Impacts shall be discussed in proportion to their significance;" 10 CFR 51.45(b)(1) as adopted by 10 CFR 51.53(c)(2)

"...The information submitted...should not be confined to information supporting the proposed action but should also include adverse information." 10 CFR 51.45(e) as adopted by 10 CFR 51.53(c)(2)

4.0.1 DISCUSSION OF 1996 GEIS LICENSE RENEWAL CATEGORIES

Chapter 4 presents an assessment of the environmental consequences and potential mitigating actions associated with the renewal of the Diablo Canyon Power Plant (DCPP) operating license. The NRC has prepared a *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) (Reference 18), which identifies and analyzes 92 environmental issues that the NRC considers to be associated with nuclear power plant license renewal. In its analysis, the NRC designated each of the 92 issues as Category 1, Category 2, or NA (not applicable) and required plant-specific analysis of only the Category 2 issues.

The NRC designated an issue as Category 1 if, based on the result of its analysis, the following criteria were met:

- the environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristic,

- a single significance level (i.e., small, moderate, or large) has been assigned to the impacts that would occur at any plant, regardless of which plant is being evaluated (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal), and

- mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely to be not sufficiently beneficial to warrant implementation.

Absent new and significant information (Chapter 5), the NRC rules do not require analyses of Category 1 issues because the NRC resolved them using generic findings presented in 10 CFR 51, Appendix B, Table B-1. An applicant may reference the generic findings or GEIS analyses for Category 1 issues.

If the NRC analysis concluded that one or more of the Category 1 criteria could not be met, the issue was assigned as Category 2. The NRC requires plant-specific analyses for Category 2 issues. The NRC designated 2 issues as "NA" (Issues 60 and 92), signifying that the categorization and impact definitions do not apply to these issues. Attachment A of this report lists the 92 issues and identifies the environmental report section that addresses each issue and, where appropriate, references supporting analyses in the GEIS.

Category 1 License Renewal Issues

NRC

"The environmental report for the operating license renewal stage is not required to contain analyses of the environmental impacts of the license renewal issues identified as Category 1 issues in Appendix B to subpart A of this part." 10 CFR 51.53(c)(3)(i)

"...[A]bsent new and significant information, the analysis for certain impacts codified by this rulemaking need only be incorporated by reference in an applicant's environmental report for license renewal...." (NRC 1996)

Pacific Gas and Electric Company (PG&E) has determined that, of the 69 Category 1 issues, 10 do not apply to DCPP because they apply to design or operational features that do not exist at the facility. In addition, because PG&E does not plan to conduct any major refurbishment activities, the NRC findings for the 7 Category 1 issues that pertain only to refurbishment do not apply to this application. PG&E has reviewed the NRC Category 1 findings and has identified no new and significant information that would make the NRC findings inapplicable to DCPP. Therefore, PG&E adopts by reference the NRC findings for these Category 1 issues.

Category 2 License Renewal Issues

NRC

"The environmental report must contain analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term, for those issues identified as Category 2 issues in Appendix B to subpart A of this part...." 10 CFR 51.53(c)(3)(ii)

"The report must contain a consideration of alternatives for reducing adverse impacts, as required by § 51.45(c), for all Category 2 license renewal issues...." 10 CFR 51.53(c)(3)(iii)

The NRC designated 21 issues as Category 2. Sections 4.1 through 4.20 address each of these issues (Section 4.17 addresses 2 issues), beginning with a statement of the issue. As is the case with Category 1 issues, 6 Category 2 issues apply to operational features that DCPP does not have. In addition, 8 Category 2 issues apply only to refurbishment activities or to scenarios involving additional employment for managing plant aging. PG&E does not plan any refurbishment or additional employment. If an issue does not apply to DCPP, the section explains the basis for inapplicability.

For the 7 Category 2 issues that PG&E has determined to be applicable to DCPP, analyses are provided. These analyses include conclusions regarding the significance of the impacts relative to the renewal of the operating license for DCPP and, when applicable, discuss potential mitigative alternatives. PG&E has identified the significance of the impacts associated with each issue as either Small, Moderate, or Large, consistent with the criteria that the NRC established in 10 CFR 51, Appendix B, Table B-1, Footnote 3 as follows:

SMALL - Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are considered small.

MODERATE - Environmental effects are sufficient to alter noticeably, but not to destabilize, any important attribute of the resource.

LARGE - Environmental effects are clearly noticeable and are sufficient to destabilize any important attributes of the resource.

In accordance with National Environmental Policy Act practice, PG&E considered ongoing and potential additional mitigation in proportion to the significance of the impact

to be addressed (i.e., impacts that are small receive less mitigative consideration than impacts that are large).

"NA" License Renewal Issues
The NRC determined that its categorization and impact-finding definitions did not apply to two issues (Issues 60 and 92); however, PG&E included these issues in Attachment A. Applicants currently do not need to submit information on chronic effects from electromagnetic fields (10 CFR 51, Appendix B, Table B-1, Footnote 5). For environmental justice, the NRC does not require information from applicants, but noted that it will be addressed in individual license renewal reviews (10 CFR 51, Appendix B, Table B-1, Footnote 6). PG&E has included minority and low-income demographic information in Section 2.6.2.

4.0.2 DISCUSSION OF UPDATED GEIS LICENSE RENEWAL CATEGORIES

As described in Section 1.2, on June 20, 2013, the NRC published a final rule (78 FR § 37282) revising its environmental protection regulation, 10 CFR 51, and the associated GEIS. The final rule identified 78 environmental impact issues, of which 19 require plant-specific analysis. The final rule consolidated similar Category 1 and 2 issues, changed some Category 2 issues into Category 1 issues, and consolidated some of those issues with existing Category 1 issues. The final rule also added new Category 1 and 2 issues. Since new issues were not included in the 1996 GEIS, they were not addressed in the original DCPP Environmental Report for License Renewal.

The following are new Category 1 issues:

Geology and Soils
Because of DCPP's geologic setting, a new Section has been developed (Section 2.13). This includes discussion of the regional and site geology, soils, and seismic setting. According to the revised GEIS, the impact of geologic and soil conditions on plant operations and the impact of continued power plant operations and refurbishment activities on geology and soils are SMALL for all nuclear power plants and not expected to change appreciably during the license renewal term. Industry operating experience shows that any impacts to geologic and soil strata would be limited to soil disturbance from construction activities associated with routine infrastructure renovation and maintenance projects during continued plant operations. As discussed in Section 3.2, PG&E has no plans for refurbishment or other license renewal-related construction activities at DCPP. Therefore, any incremental impacts on geology and soils during the license renewal term would be SMALL.

Exposure of Terrestrial Organisms to Radionuclides
Section 3.1.3 describes the DCPP radioactive waste treatment processes to control radioactive effluent discharges to ensure that they comply with NRC regulations. Chapter 5 contains information related to the DCPP radiological environmental monitoring programs. PG&E has not identified any new and significant information related to the exposure of terrestrial organisms to radionuclides. Based on review of the

DCPP radioactive effluent and radiological environmental monitoring program reports, PG&E concludes that the impacts from radioactive effluents to terrestrial organisms would be SMALL.

Exposure of Aquatic Organisms to Radionuclides

Section 3.1.3 describes the DCPP radioactive waste treatment processes to control radioactive effluent discharges to ensure that they comply with NRC regulations. Chapter 5 contains information related to the DCPP radiological environmental monitoring programs. PG&E has not identified any new and significant information related to the exposure of aquatic organisms to radionuclides. Based on review of the DCPP radioactive effluent and radiological environmental monitoring program reports, PG&E concludes that the impacts from radioactive effluents to aquatic organisms would be SMALL.

Human Health Impact from Chemicals

DCPP maintains an inventory of industrial process chemicals and has a Hazardous Waste Facility Permit for the storage of hazardous waste on site. DCPP employees receive hazardous materials training and are trained in hazardous waste procedures, spill contingencies, waste minimization procedures, and, for applicable personnel, treatment, storage, and disposal facility training. Training is conducted in accordance with the Occupation Safety and Health Administration (OSHA) Hazard Communication Standard and 22 California Code of Regulations (CCR). PG&E developed a comprehensive Worker Health and Safety Program to ensure adherence to applicable OSHA and NRC standards. The human health impacts from chemical hazards are expected to be minimized through DCPP's use of good industrial hygiene practices as required by permits and Federal and State regulations. Therefore, chemical impacts to human health during continued plant operations would be SMALL.

Physical Occupational Hazards

DCPP has existing procedures on industrial safety that address safety standards, and minimization of risks through the use of engineering controls, design controls, administrative controls, personnel protection equipment, and safe work practices. The impacts from physical hazards to plant workers will be of small significance if workers adhere to safety standards and use protective equipment as required by Federal and State regulations. Therefore, the impacts from physical occupational hazards during continued plant operations would be SMALL.

The following are new Category 2 issues:

Radionuclides Released to Groundwater

As discussed in Chapter 5, tritium groundwater sampling was initiated at DCPP in 2003 through the Radiological Environmental Monitoring Program (REMP). Results of this monitoring program are submitted to local, State, and Federal agencies on an annual basis.

Based on the assessments and environmental staff evaluation discussed in Chapter 5, it was concluded that the potential for the communication of contaminated waters originating at the DCPP site with domestic water supplies regulated, owned, managed, or certified by State and Local governmental bodies does not exist. Therefore, impacts associated with tritium found in groundwater are determined to be SMALL.

Effects on Terrestrial Resources (Non-Cooling System Impacts)
With respect to terrestrial organisms, the final rule amends Table B-1 in Appendix B, Subpart A, to 10 CFR Part 51 by expanding the Category 2 issue, "Refurbishment impacts," among others, to include normal operations, refurbishment, and other supporting activities during the license renewal term. This issue remains a Category 2 issue with an impact level range of SMALL to LARGE; however, the final rule renames this issue, "Effects on terrestrial resources (non-cooling system impacts)." Section 2.4 describes the terrestrial resources on and in the vicinity of DCPP, and Section 2.5 describes protected species and habitats. As discussed in Sections 4.9 and 4.10, PG&E has no plans for refurbishment or other license renewal-related construction activities at DCPP. DCPP operations have had a small impact on terrestrial ecosystems. The impacts to terrestrial ecosystems from continued plant operations and maintenance are expected to be unchanged and SMALL.

Minority and Low-Income Populations (i.e., Environmental Justice)
Section 2.6.2 provides a discussion of minority and low-income populations within a 50-mile radius of the site. Section 4.21 evaluates the impact on environmental justice based on renewal of the DCPP operating licenses and concludes that no unique disproportionately high or adverse impacts on minority and low-income populations would occur as a result of continued plant operations. PG&E concludes impacts to minority and low-income populations would be SMALL.

Cumulative Impacts
In this section, past, present, and reasonably foreseeable future actions that take place in the vicinity of DCPP are identified and possible cumulative effects are discussed. The geographic area affected by cumulative impacts depends on the resource being impacted (Reference 20).

Past, present, and reasonably foreseeable actions may include individually minor but collectively significant actions taking place over a period of time because the SMALL impacts of minor actions, when considered in combination with the impacts of other actions, could result in MODERATE or LARGE cumulative impacts to the affected resource (Reference 20).

As indicated in Section 2.12, 12 industrial facilities within the 80-km (50-mi) radius of DCPP have National Pollutant Discharge Elimination System (NPDES) permits (Reference 23). As shown in Table 2.10-1, San Luis Obispo County is designated as a nonattainment area for the ozone National Ambient Air Quality Standards (NAAQS), a nonattainment area for the annual PM_{10} NAAQS, and an attainment area for all other NAAQS (Reference 21).

Electrical power generation sources within 80 km (50 mi) of DCPP include two natural gas power plants (9.8 MW total), four hydroelectric power plants (5.94 MW total), three solar installations (677.64 MW total), and one landfill gas installation (1.48 MW total) (Reference 22).

As discussed in Section 2.3, the groundwater source at DCPP is geologically isolated to the DCPP watershed, and is therefore not hydraulically connected to other area groundwater resources.

Threatened or endangered species, critical habitats, and cultural resources are protected by state and federal regulations. Cumulative impacts to water quality, aquatic and terrestrial resources, groundwater, threatened or endangered species or critical habitats have been small throughout the current period of DCPP operation and are expected to remain SMALL.

Cumulative impacts from releases to air or water have been small in the 80-km (50-mi) radius surrounding DCPP because the California Environmental Protection Agency (calEPA) regulates emissions and discharges through permits and are expected to remain SMALL.

Sections 2.6 through 2.9 describe the aspects of the region's socioeconomics that could be affected by renewal of the DCPP operating licenses. As discussed in Section 3.4, PG&E does not anticipate adding additional staff during the license renewal term, but the environmental report's analyses conservatively assume an additional 60 staff could be added to implement aging management programs. PG&E also evaluated the anticipated temporary workforce during refueling outages. The analyses looked at impacts to housing, public water supply, transportation, and, in the case of refurbishment, education, and determined that all impacts would be SMALL.

Radiological dose limits for protection of the public and workers have been developed by calEPA and NRC to address the cumulative impacts of acute and long-term exposure to radiation and radioactive material, regardless of the source or sources. These dose limits are codified in 10 CFR Part 20 and 40 CFR Part 190. These impacts, which previously have been SMALL, will remain SMALL through the license renewal term.