3.1 AIR QUALITY

3.1.1 Climate and Meteorology

The project area is located in southwestern San Diego County. In general, San Diego County has a subtropical climate with large-scale wind and temperature regimes controlled by the proximity of the Pacific Ocean and the seasonal migration of the Pacific high-pressure system. As a result, summers are cool and winters warm in comparison to other locations. Temperatures below freezing occur on an infrequent basis, as do temperatures over 100°F. Extremes in temperature become more pronounced as distance inland from the ocean increases.

Wind flows are predominantly westerly and the average wind direction during the months of February through October is from the west-northwest. During November through January, the average wind flow is from the northeast. Wind speeds over the project region average from five to eight miles per hour. Based on data from the National Climatic Data Center (NCDC, 1993), the maximum wind gusts occur in winter and have speeds of approximately 45 miles per hour.

Temperatures in the project area range from an average of 57 degrees in December and January to 72 degrees in August. Relative humidity at Miramar Air Station, which is approximately 20 miles northwest of the OMGP, averages 58 percent during daytime and 74 percent during the nighttime. Conditions further inland at the project area are expected to be somewhat less humid. Precipitation in the vicinity of Miramar averages approximately 10.6 inches per year, with most of the precipitation occurring during winter.

3.1.2 Existing Air Quality

Ambient air quality data are collected at several locations in San Diego County, including the Otay Mesa/Paseo International border crossing and the Chula Vista monitoring station. As the closest available monitoring station, the Chula Vista monitoring station data have been selected to represent background conditions.

The Chula Vista station data show violations of the state PM_{10} standards for both the annual and 24-hour averaging periods. State standards for annual and 24-hour averaging periods are 30 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively. Windblown soils are expected to be a major contributor to these exceedances. The Chula Vista data indicate compliance with the state and federal standards for SO_2, CO, and NO_2, and federal PM_{10} standards. $PM_{2.5}$ has not been addressed

here as there are no existing state or federal $PM_{2.5}$ standards. The EPA is currently in the process of developing a standard to address $PM_{2.5}$ emissions.

3.2 GEOLOGY, SOILS, AND SEISMICITY

3.2.1 Physiography and Geology

The project area is located in the south central portion of the Peninsular Ranges Physiographic Province. The Peninsular Ranges, which extend from the Los Angeles Basin southward nearly 800 miles (1300 km) well beyond the international border, are one of the largest geologic units in western North America (Norris and Webb, 1990).

Segment A-B of the electrical transmission line corridor lies between the northeast corner of the proposed Otay Mesa Generating Plant site and the existing Miguel-Tijuana 230 kV line that just skirts the site. The segment is approximately 0.1-mile long and crosses the rocky lower slope of the adjacent San Ysidro Mountains.

The existing transmission line route starts at an elevation of approximately 700 feet (200 m) and crosses terrain consisting of mesas dissected by steep-sided canyons. According to the DOE Final EIS/EIR (USDOE, 1980), the route is in an area where "several rugged mountain ranges dominate...[and]...include San Miguel Mountain, Jamul Mountains, and San Ysidro Mountains, with maximum elevations of 2,565, 3,738, and 3,572 feet, respectively. The valley of the Sweetwater River lies to the north of San Miguel Mountain, while three tributaries of the Otay River drain the major part of the eastern mountainous sector...(Abbott and Victoria, 1977)."

The major canyon crossings are described below:

Milepost 1.0 to 1.2: At the transmission line crossing, O'Neal Canyon has about 300 feet (90 m) of relief between about elevation 400 feet (120 m) and 700 feet (200 m). O'Neal Canyon drains toward the north into Otay Valley.

Milepost 2.2 to 3.2: At the transmission line crossing, Otay Valley has about 240 feet (70 m) of relief between about elevation 500 feet (150 m) and 260 feet (80 m). Otay Valley drains toward the west into San Diego Bay.

Milepost 5.7 to 6.1: At the transmission line crossing, Poggi Canyon has about 300 feet (30 m) of relief between about elevation 560 feet (150 m) and 260 feet (80 m). Otay Valley drains toward the west into San Diego Bay.

Milepost 6.4 to 7.0: At the transmission line crossing, Telegraph Canyon has about 100 feet (30 m) of relief between about elevation 600 feet (180 m) and 500 feet (150 m). Telegraph Canyon drains southwest into Otay Valley.

Milepost 7.7 to 8.0: At the transmission line crossing, Proctor Valley has about 150 feet (45 m) of relief between elevation 650 feet (195 m) and 500 feet (150 m). Proctor Valley drains northwest into Sweetwater Reservoir.

The stratigraphy beneath the electric transmission route, from oldest to youngest, consists of pre-Cenozoic basement complex, an unnamed fanglomerate subunit of the Sweetwater Formation, the Oligocene Otay Formation, the Pleistocene Lindavista Formation and Quaternary terrace, valley fill and bay fill.

3.2.2 Geologic Hazards

As the most recent data available, Kennedy and Tan (1977), the most recent data available, show that there are no folds or faults mapped along the transmission line route.

The nearest faults are part of the La Nacion fault zone, more than about 2 miles (3 km) to the west of the transmission line route. Simons (1977) noted that La Nacion fault zone was active during the Pleistocene and possibly could have been active within Holocene time.

The USDOE has previously concluded in the Final EIS/EIR (1980) that no active faults are known to pass through the study area. The Otay Valley fault is an inferred fault that has been hypothesized to occur in the alluvium beneath Otay Valley.

The closest Alquist-Priolo earthquake fault zone to the transmission corridor is that of the Rose Canyon fault which is located about 10 miles to the west.

No known active (Holocene) or potentially active (Quaternary) faults cross the transmission line corridor (Jennings, 1994). The potential for significant ground shaking due to earthquakes exists. However, the hazard from ground rupture is negligible.

Landsliding is a potential hazard along portions of the route as itemized in Table 3.2-1. Areas underlain by the Mission Valley and Otay Formations are particularly susceptible to landsliding due to the relatively high content of expansive clays (USDOE, 1980).

The groundwater level is more than 80 feet below the proposed bottom of tower structure foundations at the plant switchyard and at the loop-in point on the Miguel-Tijuana line, thus, the potential for liquefaction is considered extremely remote.

TABLE 3.2-1

GEOLOGICAL AND HYDROLOGICAL CHARACTERISTICS ALONG 230 KV LINE TO BE RECONDUCTORED

	Geological and Hydrological Characteristics			
Milepost along 230 kV Line	**Geologic Unit and Setting[1]**	**Possible Geologic Hazards[2]**	**Probable Depth to Ground Water (feet)[3]**	**Estimated Depth to Bedrock (feet)[4]**
MP 0.0 to 0.05	Jsp; some boulders	3-1	>50	<10
MP 0.65 to 0.9	To	3-1	>50	>50
MP 0.9 to 1.0	Tfg	3-2	>10-50	>10-50
MP 1.0 to 1.2	Jsp; some boulders			
MP 1.2 to 2.2	Tfg	3-1	>50	>50
MP 2.2 to 2.4	Tfg	4-1	>50	>50
MP 2.4 to 2.85	Qal	2	10-50	>50
MP 2.85 to 3.0	Qt	3-1	>50	>50
MP 3.0 to 3.5	Tfg	3-1	>50	>50
MP 3.5 to 3.7	Qal	2	10-50	>50
MP 3.7 to 4.2	Tfg	3-1	>50	>50
MP 4.2 to 7.7	To	3-1	>50	>50
MP 7.7 to 7.8	Kgrd	3-1		
MP 7.8 to 9.15	To	3-1	>50	>50

TABLE 3.2-1

(Continued)

Notes:

(1) Geologic Unit & Setting: Geologic units from Weber, Jr., (1963) Kennedy and Tan (1977) and WCC and Bechtel (1978) and Setting from evaluations for 1999 AFC (OMGC, 1999) from aerial photographs (Flown 4/7/97) and ground survey.

Qal Valley and artificial fill; Quaternary consisting of alluvium filling valleys in the Otay River Valley and Johnson Canyon in the area of the plant switchyard site and several other canyons along the 230 kV electric transmission line linear and reworked soil cover for agricultural and urban purposes.

Ql Lindavista Formation as defined by Kennedy and Tan (1977); Pleistocene; a veneer over San Diego Formation and Otay Formation in areas west of plant switchyard site; interbedded sandstone and conglomerate cemented by hematite (Kennedy and Tan, 1977) which locally is very cemented (WCC and Bechtel, 1978); thin residual soil cover that typically contains expansive soil (WCC and Bechtel, 1978).

Tsd San Diego Formation as defined by Cleveland (1960) and Kennedy and Tan (1977) and used by WCC and Bechtel (1978); Pliocene is soft and poorly cemented, fine- to medium-grained sandstone that has scattered zones that are cemented and widely scattered conglomerate; thin to moderate soil cover (WCC and Bechtel, 1978).

To Including Sweetwater and Otay Formations as defined by Kennedy and Tan (1977); the principal member in the area of the plant switchyard site and 230 kV line is the Otay Formation (To), which is mainly a poorly indurated, massive sandstone with minor claystone; bentonite mapped in this unit on Otay Mesa by Cleveland (1960); moderate to thick residual cover (WCC and Bechtel, 1978).

Tfg Unnamed Eocene fanglomerate as defined by Kennedy and Tan (1977), subsequently correlated with the Sweetwater Formation (Kuper, 1977) metavolcanic boulders cemented by a matrix of bentonite; fills buried basement complex canyons; thin residual cover.

Tp Poway Group as used in WCC and Bechtel (1978), including the Mission Valley Formation located to the west of the switchyard area and area of 230 kV line, which predominately consists of medium-grained sandstone that characteristically is soft and friable; thin to moderate residual soil cover (WCC and Bechtel, 1978).

Kgrd Basement Complex consisting of Cretaceous granitic rock; typically has thin residual soil cover.

Jsp Basement Complex mainly consisting of upper Jurassic Santiago Peak metavolcanic rock; typically has thin residual soil cover.

(2) Possible Geologic Hazards: Faulting evaluation for this report and landslide potential based on Tan (1995).

1 Least susceptible to landsliding; typically includes areas with slopes less than 5 degrees.

2 Marginally susceptible to landsliding; typically includes bottoms of broad valleys and broad, elevated Pleistocene terrace deposits where slopes are 5 to 15 degrees.

3-1 Generally susceptible to landsliding where slopes are near or at stability limits due to a combination of weak materials and slopes exceeding 15 degrees.; most areas do not contain mapped landslides.

3-2 Generally susceptible to landsliding where slopes generally with heights exceeding 250 feet and slopes exceeding 25 degrees; debris flows and rock falls possible that could impact adjacent areas.

4-1 Most susceptible to landsliding where slopes are considered naturally unstable that does not have mapped landslides but contains but contains material from formations such as the Otay Formation where expansive clays have been mapped.

4-2 Most susceptible to landsliding where landslides have been mapped and nearby areas are unstable.

TABLE 3.2-1

(Continued)

(3) Probable Ground Water Conditions:

>50 Ground Water greater than about 50 feet (15 m) below ground surface.
10-50 Ground Water between about 10 and 50 feet (3 and 15 m) below ground surface.
<10 Ground Water within 10 feet (3 m) of ground surface.

(4) Estimated Depth to Bedrock: Estimates based on drilling at plant switchyard site or general observations in the field or in the case of shallow rock from aerial photographs taken 4/7/97; where no specific evidence is available the depths given in ranges between 10 and 50 feet (3 and 15 m) or where some specific information such as drilling, the estimate is given outside this range.

80 or >80	Bedrock either at a specific depth based on drilling or in some bracketed by drilling data at plant switchyard site.
50-80	Bedrock greater than about 50 feet (15 m) below ground surface.
10-50	Bedrock between about 10 and 50 feet (3 and 15 m) below ground surface.
<10	Bedrock within 10 feet (3 m) of ground surface.

Another potential hazard is seiches which are seismically-induced waves in enclosed water bodies such as Lower Otay Reservoir which is upstream of the transmission line at about MP 3.0.

3.2.3 Mineral Resources

Extractable resources occurring within the project region include clay (particularly bentonite), sand, gravel, crushed stone, dimensioning stone, dolomite, salt, magnesium chloride and pyrophyllite. However, by the late 1950s sand, gravel and crushed stone constituted about 94 percent of the total value of the mineral output of the county (Weber, Jr., 1963). Bentonite clay deposits were identified near the Lower Otay Dam and near Alta Road, but in 1960 both deposits were judged not to be of commercial grade or quantity (Cleveland, 1960).

3.2.4 Soil Erosion and Sedimentation

The terrain crossed by the electric transmission line route consists of dissected terrace underlain by rock and soil of the Otay Formation of the Rosarito Beach Formation. The Otay Formation consists of massive sandstone and claystone. Locally, the sandstone is moderately well-cemented. The regional climate is semiarid and significant runoff only occurs during short term, high intensity storms when erosion and sedimentation are typically confined to existing incised drainages and canyons. The headward growth or sedimentation of existing gullies or the formation of new gullies only occurs infrequently during intense rainfall or prolonged rainfall events.

There are five major soil associations that occur in the study area. The five units are the Exchequer-San Miguel and the Friant-Escondido associations, which are sandy loam soils of the eastern mountainous sections; the Diablo-Altamont association, which are clay soils associated with the mesas on the north and south of the Otay River Valley and the Redding-Olivehain and Huerhuero-Stockpin associations, which are gravely and cobbly loams in the vicinity of the Lower Otay Reservoir and the well-drained to gravely clay loams in the areas of Otay Mesa, respectively (USDOE, 1980).

Seventeen different soil mapping units have been identified along the existing 9.15-mile-long 230 kV transmission line (OMGC, 1999). The surface textures of these soils are generally clays, loams and cobbly loams.

For the soils along this route, the potential for water erosion ranges from moderate (e.g., Diablo clay and Olivenhain Cobbly Loam) to high (e.g., Huerhuero loam), and the potential for wind erosion is primarily low (e.g., Diablo, Olivenhain, and Huerhuero series). In

general, the potential for water and wind erosion is primarily low to moderate for the majority of the soils traversed by the transmission line route.

3.3 WATER RESOURCES/FLOODPLAINS

3.3.1 Water Resources

The majority of the project area lies within the Otay Hydrologic Unit in the Otay Valley Hydrologic Area (California Regional Water Quality Control Board [CRWQCB], San Diego Region, 1994). Regional surface water and groundwater flows are generally from east to west.

Annual precipitation is approximately 11 inches per year and the evaporation rate is approximately 53 inches per year (California Department of Water Resources, 1979) which results in minimal groundwater recharge in the project area. The beneficial use designations for groundwater in the project area are municipal and domestic supply, agricultural supply, and industrial service supply (CRWQCB, 1994). However, groundwater from these formations is not used for domestic supplies, irrigation, stock watering or other uses, largely because the quality of existing groundwater in the area is poor. The depth to groundwater in the project region is generally greater than 50 feet.

The portion of the existing Miguel-Tijuana 230 kV transmission line (Route 1) to be reconductored is approximately 9.05 miles long and extends from an interconnect point east of the Otay Mesa plant site to the existing Miguel Substation. Nine stream and drainage crossings occur along the existing 230 kV transmission line route and are listed in Table 3.3-1. These streams and drainages are ephemeral and are shown on Figure 2-2. Most of the study area drains to the south end of San Diego Bay through the Otay River. Runoff from the northern end of the route enters San Diego Bay via Telegraph Canyon and the Sweetwater River.

Surface water bodies in the project region include Lower Otay Reservoir which is located east of the route (MP 3.0) and Sweetwater Reservoir which is located northwest of the Miguel substation (see Figure 3.3-1).

3.3.2 Floodplains

The existing 230 kV line to be reconductored crosses (via spanning) the floodplains of several ephemeral drainages, the most notable of which are listed in Table 3.3-1

TABLE 3.3-1

STREAM OR DRAINAGE COURSE CROSSINGS FOR PORTION OF 230 KV TRANSMISSION LINE TO BE RECONDUCTORED

Stream/Drainage Name	Approximate 230 kV Line Milepost of Crossing[1]
Unnamed drainage near Kuebler Ranch	0.8[2]
O'Neal Canyon	1.1
Otay River	2.6[3]
Salt Creek	3.5[3]
Unnamed tributary of Salt Creek	3.9[2]
Poggi Canyon	6.0
Telegraph Canyon	6.6[3]
Unnamed tributary drainage to Proctor Canyon	7.3[2]
Proctor Valley	7.9

[1] Refer to Figure 2-2 for location of Route (230 kV) and mileposts/drainage course crossing points.

[2] These drainages are minor crossings.

[3] These drainages are designated 100-year floodplains in the crossing locations (see Figure 3.3-1).

A review of available Federal Emergency Management Agency (FEMA) Flood Insurance Route Maps indicate that the existing 230 kV line to be reconductored traverses designated 100-year floodplains in the following areas: Otay River Valley, Salt Creek, and Telegraph Canyon (refer to Figure 3.3-1).

3.4 VEGETATION

The existing transmission line route to be reconductored traverses a variety of land uses, landforms and biological habitats, especially along the southern section of the line. The existing line crosses the lower northwest slopes and alluvial fans of Otay Mountain, the broad river basin of Otay Valley, and extends through the low hills, flats and drainages of Salt Creek Canyon. The plant communities in these areas are mostly successional in nature, and the majority of them have been recently disturbed by the Otay Mountain fire of 1996. They are recovering habitats that, previous to the fire, included coastal scrubs, chaparrals, native grasslands, claypans, and vernal pools. Riparian habitats also occur along this section of the transmission line, and are associated with O'Neal Canyon, the Otay River Valley, and Salt Creek.

North of Salt Creek, the existing transmission line extends northwest through a large area of exotic weeds and cultivated grasses on the rolling agricultural lands of the Otay Ranch. The ranch currently includes leases for cattle grazing. The line then veers north through the uplands that are in the watershed for Poggi and Telegraph canyons. The transmission line corridor is mostly surrounded by urban development in this area. The remaining open spaces include non-native grasslands, occasional shrubs, and landscaping. The line continues north of Proctor Valley Road over a mesa southwest of San Miguel Mountain that is dominated by a single species of exotic grass (purple falsebrome: *Brachypodium distachyon*) that was apparently seeded after an old burn, and includes overlying covers of native grasses and coastal scrubs. The line then turns northwest into the lower Sweetwater River drainage, through sparse scrub and grassland to the Miguel Substation.

Vegetation habitats and sensitive species locations were identified along the transmission line corridor based on existing regional vegetation mapping, aerial photographs and satellite imagery, combined with focused site specific field surveys and mapping in 1997-1999. Vegetation types identified along the existing transmission line route to be reconductored are listed by milepost in Table 3.4-1. Sensitive plant species that have been detected along the transmission route are listed in Table 3.4-2.

The existing Tijuana-Miguel 230 kV transmission line traverses a variety of vegetation types including Diegan coastal sage scrub, nonnative grassland, agricultural land, disturbed habitat, urban/developed land and other areas. Existing access roads to the transmission towers and

TABLE 3.4-1

VEGETATION TYPES IDENTIFIED ALONG TRANSMISSION LINE ROUTE[1]

Route	From (feet)	From (milepost)	To (feet)	To (milepost)	Vegetation Type
1	0.0	0.0	3,179.9	0.6	Non-Native Grassland
1	3,179.9	0.6	3,465.8	0.7	Disturbed Habitat
1	3,465.8	0.7	3,645.6	0.7	Urban/Developed
1	3,645.6	0.7	3,864.8	0.7	Disturbed Habitat
1	3,864.8	0.7	4,008.1	0.8	Valley Needlegrass Grassland
1	4,008.1	0.8	4,010.3	0.8	Disturbed Habitat
1	4,010.3	0.8	5,002.9	0.9	Diegan Coastal Sage Scrub
1	5,002.9	0.9	5,044.7	1.0	Cismontane Alkali Marsh
1	5,044.7	1.0	5,280.0	1.0	Diegan Coastal Sage Scrub
1	5,280.0	1.0	5,294.8	1.0	Diegan Coastal Sage Scrub
1	5,294.8	1.0	5,602.9	1.1	Non-Native Grassland
1	5,602.9	1.1	5,672.5	1.1	Urban/Developed
1	5,672.5	1.1	5,814.6	1.1	Southern Mixed Chaparral
1	5,814.6	1.1	5,937.2	1.1	Maritime Succulent Scrub
1	5,937.2	1.1	6,146.5	1.2	Southern Mixed Chaparral
1	6,146.5	1.2	7,951.2	1.5	Disturbed Habitat
1	7,951.2	1.5	8,283.3	1.6	Diegan Coastal Sage Scrub
1	8,283.3	1.6	8,381.3	1.6	Disturbed Habitat
1	8,381.3	1.6	8,439.9	1.6	Urban/Developed
1	8,439.9	1.6	8,467.5	1.6	Diegan Coastal Sage Scrub
1	8,467.5	1.6	8,974.8	1.7	Native Grassland
1	8,974.8	1.7	9,095.6	1.7	Freshwater Marsh
1	9,095.6	1.7	10,560.0	2.0	Diegan Coastal Sage Scrub
1	10,560.0	2.0	10,890.6	2.1	Diegan Coastal Sage Scrub
1	10,890.6	2.1	11,652.7	2.2	Non-Native Grassland
1	11,652.7	2.2	11,990.5	2.3	Native Grassland
1	11,990.5	2.3	12,193.6	2.3	Diegan Coastal Sage Scrub
1	12,193.6	2.3	12,353.6	2.3	Coastal Sage-Chaparral Scrub
1	12,353.6	2.3	12,563.9	2.4	Southern Riparian Scrub
1	12,563.9	2.4	12,817.4	2.4	Coastal and Valley Freshwater Marsh
1	12,817.4	2.4	13,375.7	2.5	Riparian and Bottomland Habitat
1	13,375.7	2.5	13,474.7	2.6	Tamarisk Scrub
1	13,474.7	2.6	13,567.3	2.6	Riparian and Bottomland Habitat
1	13,567.3	2.6	13,854.1	2.6	Non-Vegetated Channel, Floodway, Lakeshore Frin
1	13,854.1	2.6	13,963.5	2.6	Riparian and Bottomland Habitat
1	13,963.5	2.6	14,078.8	2.7	Non-Vegetated Channel, Floodway, Lakeshore Frin
1	14,078.8	2.7	14,159.1	2.7	Riparian and Bottomland Habitat
1	14,159.1	2.7	14,346.9	2.7	Non-Native Grassland

TABLE 3.4-1

(Continued)

Route	From (feet)	From (milepost)	To (feet)	To (milepost)	Vegetation Type
1	14,346.9	2.7	14,392.8	2.7	Non-Vegetated Channel, Floodway, Lakeshore Frin
1	14,392.8	2.7	14,475.6	2.7	Native Grassland
1	14,475.6	2.7	14,717.6	2.8	Maritime Succulent Scrub
1	14,717.6	2.8	15,139.0	2.9	Native Grassland
1	15,139.0	2.9	15,484.3	2.9	Non-Native Grassland
1	15,484.3	2.9	15,840.0	3.0	Diegan Coastal Sage Scrub
1	15,840.0	3.0	16,253.2	3.1	Diegan Coastal Sage Scrub
1	16,253.2	3.1	16,420.7	3.1	Maritime Succulent Scrub
1	16,420.7	3.1	16,686.3	3.2	Diegan Coastal Sage Scrub
1	16,686.3	3.2	17,255.7	3.3	Native Grassland
1	17,255.7	3.3	17,872.4	3.4	Diegan Coastal Sage Scrub
1	17,872.4	3.4	17,920.6	3.4	Alkali Meadows and Seeps
1	17,920.6	3.4	18,535.7	3.5	Diegan Coastal Sage Scrub
1	18,535.7	3.5	18,698.0	3.5	Native Grassland
1	18,698.0	3.5	19,597.4	3.7	Diegan Coastal Sage Scrub
1	19,597.4	3.7	19,823.1	3.8	Native Grassland
1	19,823.1	3.8	19,945.1	3.8	Coastal Sage-Chaparral Scrub
1	19,945.1	3.8	20,194.1	3.8	Diegan Coastal Sage Scrub
1	20,194.1	3.8	21,120.0	4.0	Non-Native Grassland
1	21,120.0	4.0	21,928.1	4.2	Non-Native Grassland
1	21,928.1	4.2	26,400.0	5.0	Extensive Agriculture
1	26,400.0	5.0	29,430.6	5.6	Extensive Agriculture
1	29,430.6	5.6	31,680.0	6.0	Non-Native Grassland
1	31,680.0	6.0	33,369.8	6.3	Non-Native Grassland
1	33,369.8	6.3	33,484.5	6.3	Extensive Agriculture
1	33,484.5	6.3	33,646.9	6.4	Mule Fat Scrub
1	33,646.9	6.4	34,600.5	6.6	Non-Native Vegetation
1	34,600.5	6.6	35,124.0	6.7	Mule Fat Scrub
1	35,124.0	6.7	35,588.9	6.7	Non-Native Vegetation
1	35,588.9	6.7	35,613.2	6.7	Southern Riparian Scrub
1	35,613.2	6.7	35,903.2	6.8	Non-Native Vegetation
1	35,903.2	6.8	35,994.3	6.8	Urban/Developed
1	35,994.3	6.8	36,570.6	6.9	Diegan Coastal Sage Scrub
1	36,570.6	6.9	36,960.0	7.0	Non-Native Grassland
1	36,960.0	7.0	38,523.9	7.3	Non-Native Grassland
1	38,523.9	7.3	39,005.5	7.4	Non-Native Vegetation
1	39,005.5	7.4	39,134.5	7.4	Urban/Developed
1	39,134.5	7.4	39,516.0	7.5	Non-Native Vegetation
1	39,516.0	7.5	39,718.5	7.5	Urban/Developed
1	39,718.5	7.5	39,881.7	7.6	Non-Native Vegetation
1	39,881.7	7.6	39,948.9	7.6	Urban/Developed
1	39,948.9	7.6	40,078.4	7.6	Non-Native Vegetation
1	40,078.4	7.6	40,152.3	7.6	Urban/Developed

TABLE 3.4-1

(Continued)

Route	From (feet)	From (milepost)	To (feet)	To (milepost)	Vegetation Type
1	40,152.3	7.6	40,901.2	7.7	Non-Native Grassland
1	40,901.2	7.7	40,996.5	7.8	Coastal Sage-Chaparral Scrub
1	40,996.5	7.8	41,369.2	7.8	Non-Native Grassland
1	41,369.2	7.8	41,953.0	7.9	Native Grassland
1	41,953.0	7.9	42,084.7	8.0	Non-Native Grassland
1	42,084.7	8.0	42,200.2	8.0	Native Grassland
1	42,200.2	8.0	42,240.0	8.0	Diegan Coastal Sage Scrub
1	42,240.0	8.0	42,691.7	8.1	Diegan Coastal Sage Scrub
1	42,691.7	8.1	43,721.9	8.3	Native Grassland
1	43,721.9	8.3	43,748.1	8.3	Diegan Coastal Sage Scrub
1	43,748.1	8.3	43,967.9	8.3	Native Grassland
1	43,967.9	8.3	44,093.3	8.4	Diegan Coastal Sage Scrub
1	44,093.3	8.4	44,160.0	8.4	Non-Native Grassland
1	44,160.0	8.4	44,222.4	8.4	Diegan Coastal Sage Scrub
1	44,222.4	8.4	44,279.7	8.4	Coastal Sage-Chaparral Scrub
1	44,279.7	8.4	46,506.8	8.8	Non-Native Grassland
1	46,506.8	8.8	46,772.3	8.9	Disturbed Habitat
1	46,772.3	8.9	46,950.8	8.9	Non-Native Grassland
1	46,950.8	8.9	47,159.5	8.9	Urban/Developed

[1] Note that the mileposts used in Section 3.4 are based on calculations from a Geographic Information System database and do not correspond exactly with mileposts expressed in other EA sections (which are based on the mileposts on Figure 2-2).

TABLE 3.4-2

SENSITIVE PLANT SPECIES DETECTED IN THE TRANSMISSION LINE STUDY AREA[1]

Species Common Name *(Scientific Name)*	Map Symbol[1]	Status[2] (Federal/State/CNPS)	Habitat	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
Ashy spike-moss *(Selaginella cinerascens)*		None/None/List 4, 1-2-1	Coastal sage scrub; flat mesas or slopes.	Detected. Locally common within Route 1.	X
Coulter's matilija poppy *(Romneya coulteri)*		None/None/List 4, 1-1-3	Coastal sage scrub; slopes and creek beds, below 1,050 m (3,445 ft).	Detected. Occurs on slopes and canyons within Route 1.	X
Little mousetail *(Myosurus minimus* ssp. *apus*		*/None/List 3, 2-3-2	Vernal pools; below 150 m (492 ft).	Detected. Historical population in J26 vernal pool group within Route 1.	X
Nuttall's scrub oak *(Quercus dumosa)*		*/None/None	Chaparral, coastal sage scrub; generally sandy soils (sandstone) near coast, below 200 m (656 ft).	Detected. Occurs as scrub oak chaparral patches within Route 1.	X
Orcutt's brodiaea *(Brodiaea orcuttii)*		*/None/List 1B, 1-3-2	Grassland and near vernal pools and streams; clay soils, below 1,500 m (4,922 ft).	Detected. Occurs in O'Neal Canyon within Route 1.	X
Otay Mesa mint *(Pogogyne nudiuscula)*		FE/CE/List 1B, 3-3-2	Vernal pools; below 150 m (492 ft).	Detected. Occurs in J26 vernal pool complex within Route 1.	X
Otay tarplant *(Hemizonia conjugens)*		FT/CE/List 1B, 3-3-2	Coastal sage scrub; clay slopes and mesas, below 100 m (328 ft).	Detected. Occurs within Route 1.	X

TABLE 3.4-2

(Continued)

Species Common Name *(Scientific Name)*	Map Symbol[1]	Status[2] (Federal/State/CNPS)	Habitat	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
Palmer's grapplinghook *(Harpagonella palmeri* var. *palmeri)*		None/None/List 2, 1-2-1	Chaparral, coastal sage scrub, grassland; open slopes and burns in clay soils, below 1000 m (3,281 ft).	Detected. Occurs on slopes within Route 1.	X
San Diego barrel cactus *(Ferocactus viridescens)*		*/None/List 2, 1-3-1	Chaparral, coastal sage scrub, grassland; dry slopes, below 1,500 m (4,922 ft).	Detected. Scattered on lower slopes and mesas within Route 1.	X
San Diego button-celery *(Eryngium aristulatum* var. *parishii)*		FE/CE/List 1B, 1-3-2	Vernal pools, grassland; 20-150 m (66-492 ft).	Detected. Occurs in vernal pool complexes within Route 1.	X
San Diego County needlegrass *(Achnatherum diegoense)*		None/None/List 2, 3-1-1	Vernal streams and clay slopes; 300-700 m (984-2,297 ft).	Detected. Occurs within Route 1.	X
San Diego goldenstar *(Muilla clevelandii)*		*/None/List 1B, 2-2-2	Chaparral, coastal sage scrub, grassland, around vernal pools; mesas and slopes, below 150 m (492 ft).	Detected. Large population found within Route 1.	X
San Diego marsh elder *(Iva hayesiana)*		*/None/List 2, 2-2-1	Moist or alkaline places, below 200 m (656 ft).	Detected. Common in drainages on Route 1.	X
San Diego sunflower *(Viguiera laciniata)*		None/None/List 2, 1-2-1	Chaparral, coastal sage scrub; open slopes, below 400 m (1,312 ft).	Detected. Locally common on south-facing slopes within Route 1.	X
Snake cholla *(Opuntia parryi* var. *serpentina)*		*/None/List 1B, 3-3-2	Chaparral, coastal sage scrub; generally found on dry slopes near the coast.	Detected. Occurs in Salt Creek Canyon within Route 1.	X

TABLE 3.4-2

(Continued)

Species Common Name *(Scientific Name)*	Map Symbol[1]	Status[2] (Federal/State/CNPS)	Habitat	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
Southwestern spiny rush *(Juncus acutus* ssp. *leopoldii)*		None/None/List 4, 1-2-2	Moist saline or alkaline places, below 900 m (2,953 ft).	Detected. Common in drainages within Route 1.	X
Tecate cypress *(Cupressus forbesii)*		*/None/List 1B, 2-2-2	Chaparral; 150-1,100 m (492-3,609 ft).	Detected. Occurs in O'Neal Canyon within Route 1.	X
Variegated dudleya *(Dudleya variegata)*		*/None/List 4, 1-2-2	Chaparral, coastal sage scrub; dry hillsides and mesas, below 300 m (984 ft).	Detected. Several populations occur within Route 1.	X
Velvet cactus *(Bergerocactus emoryi)*		None/None/List 2, 2-2-1	Cliffs or steep slopes in coastal scrub habitats along the coast; below 150 m (492 ft).	Detected. Observed in O'Neal Canyon within Route 1.	X
Western dichondra *(Dichondra occidentalis)*		*/None/List 4, 1-2-1	Chaparral, coastal sage scrub; dry sandy banks, below 300 m (984 ft); often proliferates on recently burned slopes.	Detected. Occurs on slopes and mesas within Route 1.	X

1 Source: OMGC, 1999. Refer to OMGC, 1999 for detailed vegetation mapping.

2 Status:
Federal (U.S. Fish and Wildlife Service).
FE = Endangered; FT = Threatened; PE = Proposed Endangered; PT = Proposed Threatened; * = formerly Category 2 or Category 3 candidate or proposed for federal listing with no current federal status; None = no federal status.
State (California Department of Fish and Game).
CE = Endangered; CR = Rare; None = no state status.

TABLE 3.4-2

(Continued)

CNPS Lists

List 1 = Plants of highest priority
1A = Plants presumed extinct in California
1B = Plants rare and endangered in California and elsewhere.
List 2 = Plants rare and endangered in California, but common elsewhere
List 3 = Plant about which we need more information
List 4 = Plants of limited distribution (a watch list)

CNPS R-E-D Code

R (Rarity)

1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2 = Occurrence confined to several populations or to one extended population.
3 = Occurrence limited to one or a few highly restricted populations, or present in such numbers that it is seldom reported.
? = Rarity unknown.

E (Endangerment)

1 = Not endangered.
2 = Endangered in a portion of its range.
3 = Endangered throughout its range.
? = Rarity unknown.

D (Distribution)

1 = More or less widespread outside California.
2 = Rare outside California.
3 = Endemic to California.
? = Rarity unknown.

3 Route 1 = 230 kV Transmission Line to be reconductored.

service roads/areas around the transmission towers are maintained by SDG&E and can be generally characterized as barren ground.

Although numerous occurrences of rare or sensitive plants occur within the transmission line study corridor, only a few are located in the vicinity of transmission towers or proposed pull sites where activity is required to bundle the line. The greatest concentrations of sensitive plants and vernal pools occur in or near the Otay River Valley between mileposts (MP) 1.7 and 3.7 in Diegan coastal sage scrub and maritime succulent scrub habitats. Lesser densities, but still relatively abundant concentrations of sensitive plants also occur primarily in the Diegan coastal sage scrub habitat along the transmission line from the power plant site to the Otay River Valley (MP 0.0 to 1.7).

3.5 WILDLIFE

The short 230 kV transmission line interconnect and the existing Tijuana-Miguel 230 kV transmission line to be reconductored (refer to Figure 2-2) traverse a large area of native habitats, mostly Diegan coastal sage, along the southern one-half of the line. This route includes an aerial crossing of O'Neal Canyon, which supports high-quality wildlife habitat and is an important wildlife corridor from the San Ysidro Mountains to the Otay River Valley. The topography and quality of vegetation provide opportunities for cover and useful habitat, providing enhanced qualities as a wildlife corridor.

Detected and potentially occurring sensitive wildlife species in the transmission line study area are listed in Table 3.5-1. Table 3.5-1 discusses the potential for occurrence in the transmission line study area and identifies sensitive species detected along Route 1.

A number of sensitive animal species may occur along Route 1. Coastal California gnatcatcher (*Polioptila californica californica*, Federal Threatened) and cactus wren (*Campylorhynchus brunneicapillus sandiegoense*, CDFG CSC) occur along and near the existing transmission line in the Diegan coastal sage scrub between MP 0.0 and 4.0. Least Bell's vireo (*Vireo bellii pusillus*: Federal and State Endangered) are associated with riparian scrub habitat in the Otay River Valley and occur near the existing transmission line, within the study area. California gnatcatcher are also associated with the Diegan coastal sage scrub at the northern end of this route. Raptors such as Cooper's Hawk (*Accipiter cooperii*) and Northern Harrier have been either historically or more recently been observed foraging in the area. Both species are considered species of concern by the California Department of Fish and Game. However, the historic reference to a northern harrier nesting onsite is inconsistent with present conditions. Current land management practices are not conducive to such nesting. Other sensitive animals considered species of concern by CDFG such as Belding's orangethroat whiptail (*Cnemidophorus hyperythrus beldingi*), San Diego coast horned lizard (*Phrynosoma coronat*

TABLE 3.5-1

DETECTED AND POTENTIALLY-OCCURRING SENSITIVE WILDLIFE SPECIES IN THE STUDY AREA[1]

Species Group: Common Name *(Scientific Name)*	Status[2] (Federal/State)	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
Invertebrates:			
Quino checkerspot butterfly *(Euphydryas editha quino)*	FE/None	Potentially occurring around vernal pools and other areas supporting the host plant, dot-seed plantain. 1999 surveys indicate little habitat to support breeding occurs within project area.	
Riverside fairy shrimp *(Streptocephalus woottoni)*	FE/None	Potentially occurring in vernal pools.	
San Diego fairy shrimp *(Branchinecta sandiegensis)*	FE/None	Potentially occurring in vernal pools.	
Amphibians and Reptiles:			
Arroyo toad (*Bufo microscaphus californicus)*	FE/CSC	Very low potential to occur in Otay River, tributary to Otay River, or O'Neal Canyon.	
Coast patchnose snake (*Salvadora hexalepis virgultea)*	None/CSC	Rare species with moderate potential to occur in native habitats and agricultural fields.	
Coronado Island skink (*Eumeces skiltonianus interparietalis)*	None/CSC	Potentially occurring throughout native and naturalized habitats in the study area, particularly in moist areas.	
Belding's orangethroat whiptail (*Cnemidophorus hyperythrus beldingi)*	None/CSC	Detected on Route 1 and likely to occur in coastal sage scrub and chaparral within other project components.	X

TABLE 3.5-1

(Continued)

Species Group: Common Name *(Scientific Name)*	Status[2] (Federal/State)	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
San Diego horned lizard (*Phrynosoma coronatum blainvillii)*	None/CSC	Potentially occurring in coastal sage scrub and chaparral.	
Silvery legless lizard (*Anniella pulchra pulchra)*	None/CSC	Potentially occurring in drainages and washes.	
Southwestern pond turtle *(Clemmys marmorata pallida)*	None/CSC	Very low potentia l to occur in Otay River and O'Neal Canyon.	
Western spadefoot (*Spea hammondii)*	None/CSC	Potentially breeds in vernal pools, temporary ponds (road pools), overwinters in grasslands and coastal sage scrub.	
Birds:			
Burrowing owl (*Athene cunicularia hypugaea)*	None/CSC	Occurs in grasslands and may occur along transmission line.	
California horned lark (*Eremophila alpestris actia*)	None/CSC	May breed in non-native grasslands along transmission line.	
Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegoense*)	None/CSC	*Detected within Route 1 in Salt Creek.	X
Coastal California gnatcatcher (*Polioptila californica californica)*	FT/CSC	Several territories within study area along the transmission line.	X
Cooper's hawk (*Accipiter cooperii)*	None/CSC	Detected foraging within Route 1.	X
Ferruginous hawk (*Buteo regalis)*	None/CSC	Detected in general area, but not near transmission line. A spring & fall migrant and occasional winter resident (non-breeding).	
Golden eagle (*Aquila chrysaetos canadensis)*	BEPA/CSC	Detected in general area but not near transmission line.	

TABLE 3.5-1

(Continued)

Species Group: Common Name *(Scientific Name)*	Status[2] (Federal/State)	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
Grasshopper sparrow (*Ammodramus savannarum perpallidus*)	None/CSC	Breeds in native and non-native grasslands.	
Least Bell's vireo (*Vireo bellii pusillus*)	FE/CE	*Detected within Route 1 in Otay River Valley.	X
Loggerhead shrike (*Lanius ludovicianus*)	None/CSC	Detected in general area but not near transmission line.	
Long-eared Owl (*Asio otus*)	None/CSC	Detected in general area but not near transmission line.	
Long-billed curlew (*Numenius americanus*)	None/CSC	Detected near plant site/switchyard.	
Northern harrier (*Circus cyaneus)*	None/CSC	Detected foraging in the general area but not near transmission line.	
Prairie falcon (*Falco mexicanus*)	None/CSC	Winter resident. Hunts over grasslands and open scrub and chaparral habitats. Expected to occur in small numbers.	
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	None/CSS	Relatively common resident of rocky slopes associated with sage scrub and light chaparral habitats.	
Short-eared owl (*Asio flammeus*)	None/CSC	Winter resident along coast. Very low potential to occur in grasslands and marshy areas (similar habitat to Northern Harrier).	
Tri-colored blackbird (*Agelaius tricolor)*	None/CSC	Detected at plant site/switchyard and along transmission line in fallow agricultural field areas.	X
Vaux's swift (*Chaetura vauxi*)	None/CSC	Fall and Spring migrant throughout coastal S.D. County. Detected throughout the area during migration.	

TABLE 3.5-1

(Continued)

Species Group: Common Name *(Scientific Name)*	Status[2] (Federal/State)	Potential for Occurrence[3]	Detected Near Existing SDG&E 230 kV Transmission Line (Route 1)
White-tailed kite (*Elanus peucurus)*	None/CSC	Detected foraging in the general study area and several active nests found within study area, but not near transmission line.	
***Nomenclature follows AOU Checklist: Subspecies designation from Unit 1984.**			
Mammals:			
San Diego woodrat (*Neotoma lepida intermedia*)	None/CSC	Expected species in rocky areas associated with sage scrub and light chaparral habitats.	
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	None/CSC	Occurs in the general area east of the plant site/switchyard.	X
San Diego pocket mouse (*Chaetodipas fallax fallax*)	None/CSC	Expected species in several areas along the transmission line. Primarily associated with sage scrub and light chaparral habitats.	
Southern grasshopper mouse (*Onychomys torridus ramona*)	None/CSC	Very rare resident of grasslands and sparse sage scrub habitats.	

[1] Source: OMGC, 1999.

[2] Status:
Federal (U.S. Fish and Wildlife Service).
FE = Endangered; FT = Threatened; BEPA = Bald Eagle Protection Act; None = no federal status.
State (California Department of Fish and Game).
CE = Endangered; CSC = California Species of Special Concern; None = no state status.

[3] Route 1 = 230 kV Transmission Line.

***** From Surveys Performed by Ogden Environmental, Inc., 1999.

blainvillii), San Diego pocket mouse (*Chaetodipus fallax*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), and the San Diego woodrat (*Neotoma fuscipes intermedia*) are also expected to occur throughout this area, especially in the remaining areas of natural habitats.

3.6 AQUATIC ECOLOGY/WETLANDS

The existing transmission line route to be reconductored traverses several areas that contain riparian habitat and/or wetland areas. These areas are typically associated with area drainage crossings (see Table 3.3-1 and Figure 2-2) which are all spanned by the existing transmission line. The identified areas are:

- Cismontane alkali marsh (O'Neal Canyon)
- Freshwater marsh
- Southern riparian scrub; coastal and freshwater marsh (Otay River Valley)
- Riparian and bottomland habitat (Otay River Valley)
- Tamarisk scrub; riparian and bottomland habitat (Otay River Valley)
- Alkali meadows and seeps (Salt Creek)
- Southern riparian scrub (Telegraph Canyon).

Refer to Tables 3.4-1, 3.4-2, and 3.5-1 for more information on vegetation types and sensitive species habitats identified along the transmission route.

3.7 LAND USE AND RECREATION

3.7.1 Land Use

The existing Miguel-Tijuana 230 kV line travels in a northwesterly direction approximately 9.15 miles to the Miguel substation. The majority of the route is over undeveloped land. The exceptions include the metal fabricating shop at approximately MP 0.7; the Richard J. Donovan Correctional Facility at approximately MP 1.5; the George F. Bailey Correctional Facility at approximately MP 1.6, the Eastlake Greens Community at approximately MP 5.0; the Eastlake High School at approximately MP 5.8; and Eastlake Village Center, Telegraph Canyon Estates, Eastlake I, and Salt Creek I, between approximately MP 5.0 and MP 7.8. Refer to Figure 2-1 for the general location of these facilities.

3.7.1.1 Existing and Proposed Land Uses

Existing land uses along Route 1 include undeveloped, government, residential, industrial, commercial and education. Current land use designations are shown on Figure 3.7-1.

Existing transmission lines within the Route 1 study area include the 230 kV line that runs north to the Miguel substation and south to the Mexican border, the 69 kV line from near MP 2.0 to MP 9.15, and the 138 kV and 500 kV lines that join the 230 kV line at the Miguel substation at MP 9.15. The general locations of these other transmission lines are shown on Figure 3.7-1.

Route 1 crosses the City of San Diego Otay Pipeline at approximately MP 3.0. The crossing is within the City of San Diego right of way.

Route 1 traverses the Otay Ranch Project, a proposed development of about 50,700 residences and other uses forming an approximately 23,100-acre new town, located about 3.5 miles east of downtown Chula Vista in the southwestern portion of the County. The "New Town Plan" (aka Village Concept) (City of Chula Vista, 1993) proposes a mix of residential neighborhoods utilizing a village concept, commercial centers, research oriented industrial uses, a civic center, art centers, resort facilities, recreational parks, a town center, and a university site. Natural open space would be conveyed into a permanent reserve. The New Town Plan would be developed in phases over a 30-50 year period and result in a total population of about 150,000 persons. Route 1 traverses through the eastern portion of the proposed new town (designated as Impact Sensitive and Residential by the County of San Diego), along the existing 230 kV transmission line corridor from approximately MP 2.0 to MP 4.8.

3.7.1.2 Sensitive Land Uses

Eastlake High School and Eastlake Community Park are located at approximately MP 5.8. The existing transmission line route crosses the proposed Otay River Valley Regional Park at approximately MP 0.75 to 1.0. Four rural residences are located within 0.25-mile west and north of the Miguel Substation at MP 9.15. There are no other identified sensitive land uses (i.e., educational, religious, cultural, historic, or health care facilities) present along the 0.5-mile-wide land use study corridor assessed for Route 1.

3.7.1.3 Land Use Designations

There are no zoning districts within San Diego County. Zoning is designated on a parcel-by-parcel basis. Land use designations are indicative of the underlying zoning designations.

Planned land use designations as specified in the General Plan along Route 1 include Industrial, Residential, Rural, Public/Semi-Public, Impact Sensitive, Agricultural, Commercial, and Open Space, as shown on Figure 3.7-2. Figure 3.7-2 shows planned land use designations within 0.25 mile on both sides of the transmission line route (i.e., study area).

3.7.2 Agriculture and Prime Farmland

Historically, areas along portions of the existing transmission line route (e.g., MP 4-6) were used for irrigated and non-irrigated crop production, including tomatoes, cucumbers, bell peppers, and lima beans, as well as dry farming of grain crops. Currently, there is no irrigated agriculture or dry farming occurring along the existing transmission route. The County Department of Agriculture/Weights and Measures theorizes that the fallow agricultural land in the vicinity of the transmission line will most likely remain uncultivated (Brandon, 1999). Active dry farming was still occurring in 1999 east of the transmission route study area in the vicinity of the northwestern shore of Lower Otay Lake.

Based on a review of Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance for San Diego County (CDC, 1995), several sections of the transmission line qualify as candidate Prime Farmland (less than 0.1 mile), and Farmland of Statewide Importance (approximately 2.4 miles) (CDC, 1995; OMGC, 1999). Since none of the areas traversed by the existing transmission line have been used for irrigated agricultural production in the last 5 years, these candidate soils do not actually qualify as prime or statewide importance farmlands.

3.7.3 Recreation

As discussed in Section 3.7.1, the existing transmission line route traverses the proposed Otay River Valley Regional Park at approximately MP 0.75-1.0. Additionally, the existing transmission line comes within about 0.5 mile of Lower Otay Reservoir at about MP 3.0 (see Figure 3.7-1). Lower Otay Reservoir is a popular reservoir for recreational fishing and boating activities. Lower Otay Camping Area near the base of the dam is not currently open for use. The existing transmission line also comes near Eastlake Community Park at about MP 5.8. The existing transmission line does not actually traverse any current, designated recreational areas.

3.8 VISUAL RESOURCES

The 230 kV plant switchyard connections to the existing 230 kV Miguel-Tijuana transmission line will require incorporation of two double-circuit steel lattice, deadend structures in the existing SDG&E line, with 230 kV conductor spans to the plant switchyard

pull-off structures. The design of the new double-circuit steel lattice structures is shown on Figure 2-5; they will be approximately 120 feet high.

The proposed project will require reconductoring of the existing Miguel-Tijuana 230 kV transmission line. No modifications to the tower structures are planned. The only visible modification, besides the addition of 6 conductors (i.e., 12 total), is to replace the six existing conductor-insulator connections with yoke plates that will carry the bundled lines and keep them separated by 18 inches. These yoke plates are triangular, 6 inches high, with a base 22 - 23 inches wide. The conductors will be approximately 1.1 inches in diameter and will have a non-specular finish to reduce reflectivity to match the weathered finish of the existing conductors.

Construction activities associated with bundling of the transmission line will occur primarily at the tower locations, and a limited number of pull sites at major angle points. Significant grading will not occur, nor will new access roads be created. Vegetation at disturbed areas is expected to recover in one season. The construction period for the entire transmission line modification will be three to four months and activity at any one site will be several days. Therefore, the visual impacts of construction activities, as well as residual impacts at the pull sites and towers, will be temporary, lasting less than one year, and will be insignificant. They are not considered further in this analysis.

The plant switchyard is located in the northeast corner of the proposed Otay Mesa Generating Plant site. The proposed 0.1-mile long interconnection between the switchyard and the existing Miguel-Tijuana 230 kV line to the east and the switchyard site itself is located on the northeast corner of Otay Mesa where low, gently rolling hills prevail. The San Ysidro Mountains are located to the east. The switchyard and short, 0.1-mile interconnection are located in an undeveloped area dominated by non-native grasslands, which were formerly used for agricultural production. The switchyard and new electrical interconnection lines to the existing Miguel-Tijuana line will be industrial in appearance and not congruous with the surrounding rural landscape. However, the switchyard and interconnection will not be readily visible from sensitive viewing locations and will be blocked from views to the west by the Otay Mesa Generating Plant.

The existing Miguel-Tijuana line can be divided into two major sections: 6.4 miles crossing undeveloped lands; and 2.8 miles passing through, or alongside, a mix of planned residential and existing industrial development, starting at MP 5.1 at the south end of Eastlake Greens subdivision (Figure 3.8-1), and continuing to MP 7.9 at the northwest end of the Eastlake subdivision. The general location of the Eastlake Greens area (photos shown on Figure 3.8-1) is shown on Figure 2-1.

Of the 6.4 miles of alignment crossing undeveloped lands, 2.7 miles crosses the Otay River Parcel of the Otay Ranch, an area recently annexed by the City of Chula Vista and slated for residential development. The route passes through 0.6 miles of the Specific Plan Area (SPA) within this parcel (approximately MP 4.2 to MP 4.8), and is less than 2,400 feet east of a 1.3-mile stretch of the eastern boundary of the SPA (about MP 2.9 to MP 4.2). According to the Otay Subregional Plan (San Diego County, 1983, amended 1994), development on the Otay River Parcel primarily will be residential, with a density of dwelling units ranging from 3.67 to 4.25 per acre where the existing transmission line route passes next to, or crosses, the currently delineated limits of residential development. This is a standard urban subdivision density of about one-quarter-acre per dwelling unit. The existing transmission line to be reconductored is in the foreground of views from existing urban residences as well as those to be built in the future. Views from urban subdivisions are considered to be sensitive.

Based on review of aerial photographs, there are approximately 100 homes within 300 feet of the existing SDG&E 230 kV Miguel-Tijuana transmission line in the Eastlake Greens, Eastlake Shores, and Salt Creek neighborhoods. Of the estimated 100 homes, approximately half are adjacent (within 100 feet) of the SDG&E transmission line right of way.

The locations of the key viewing positions used in this visual analysis are presented on Map 3.8-1. The existing transmission line crosses three major roads: Otay Lakes Road (Figure 3.8-2), Eastlake Drive (Figure 3.8-3) and East H Street. Views from stretches of roads serving as the primary access to urban residential areas are typically considered highly sensitive. Such views are also highly sensitive because these roads have been designated in the Land Use Element of the city's General Plan as scenic highways (Chula Vista, 1989, Section 8.1, Designated Scenic Roadways). The number of persons using these scenic corridors are estimated using average daily traffic values. The average daily traffic values (Donnelly, 1999) for these three scenic roadways are: 28,300 (1999) for Otay Lakes Road (between Eastlake Parkway and Saint Claire Drive); 14,810 (1995) for Eastlake Drive (between proposed SR-125 and Lakeshore Drive); and 5,294 (1999) for East H Street (between proposed SR-125 and Mount Miguel Road). The existing transmission line to be reconductored is in the foreground of views from the current and future residential areas and related roads.

The recreation areas in proximity to the existing line are Chula Vista Community Park, 0.2 mile northeast of MP 6.2; Lower Otay Lake Park, the south end of Lower Otay Reservoir, and the Otay County Open Space Preserve, all 0.5 - 1.0 mile north or northeast of the route at MP 2.7. The transmission line is not noticeable from the Chula Vista Community Park due to buildings and landscaping. Views of the transmission line from the Otay Lake surface and Wueste Road, a road along the west side of the lake serving as primary access to the boat launch facilities and the park, would not be possible; hills 50 to 100 feet higher than the lake surface and roadway intervene. A campground exists within the park, but extensive

eucalyptus plantings obstruct views of the transmission line from the interior of that campground. However, from the periphery of the campground, views of the transmission line are available where it passes along the east edge of the Otay River Valley and the Otay River Parcel of the Otay Ranch. Nonetheless, as noted, views from the Lower Otay Lake Park are not currently relevant to this assessment inasmuch as the Park has been closed since September 30, 1991. Finally, the Open Space Preserve is 1.0 mile from the transmission line, too distant for the addition of the additional conductors to the existing Miguel-Tijuana 230 kV transmission line towers to be discerned.

The existing transmission line also crosses an area planned for recreation use in the future, the Otay River Valley Regional Park. Two planned trail corridors noted in Section 5.13.2.2.1 pass under the existing 230 kV transmission line at about MP 0.7 (Johnson Canyon trail) and MP 1.1 (O'Neal Canyon trail). Views from the planned park and the trails would be sensitive. The existing transmission line to be reconductored is in the foreground of views from the planned park and trails.

3.9 CULTURAL AND PALEONTOLOGICAL RESOURCES

3.9.1 Cultural Resources

3.9.1.1 Introduction

Cultural resources include archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native Americans and other ethnic groups.

The cultural resources analysis, which follows, reports efforts to determine whether cultural resources exist in areas which could be adversely affected by the project. The significance of any resources, which could potentially be affected, is assessed.

All cultural resources work for this project was carried out under the direct supervision of archaeologists and historians (as appropriate) who meet the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (National Park Service, 1983) and is consistent with the procedures for compliance with Section 15064.5 of the California Environmental Quality Act (CEQA) and/or Section 106 of the National Historic Preservation Act (NHPA), set forth in 36 CFR 800.

Cultural resources work protocols were prepared in consultation with the cultural resources staff of the California Energy Commission (CEC). All work was performed to standards comparable to Bureau of Land Management (BLM) Class 1 (literature review) and Class 3 (complete intensive survey) standards.

Criteria used are those of eligibility for the National Register of Historic Places (NRHP), identified at 36 CFR 60.4. Consideration was also given to significance with respect to the provisions for those cultural resources considered a historical resource under Section 15064.5 of CEQA; unique archaeological resources with respect to CEQA, as described under PRC 21083.2; and the criteria regarding resource eligibility to the California Register of Historic Resources (CRHR).

For the purposes of this evaluation, all recorded resources which have not previously been evaluated under NRHP or CEQA/CRHR criteria, with the exception of isolate artifacts and isolate features which appear to lack integrity or data potential, are addressed as if they were eligible for the NRHP/CRHR. It is proposed, as an element of project design, that all recorded resources be completely avoided. However if it appears that avoidance of any resource through project design will not be possible, the significance of that resource will be formally evaluated vis a vis the criteria of the NRHP and/or Section 15064.5 of CEQA (or PRC 21083.2 for unique archaeological resources) and the CRHR. If the site is found to be significant, a data recovery program, or other appropriate mitigative effort, will be undertaken.

The project area is rich in cultural resource sites, most of which have not been formally evaluated for significance/importance. There are 19 archaeological sites along the existing 230 kV transmission line corridor, plus 6 archaeological sites on or near the transmission line pull sites. If avoidance is not possible, the significance of resources will be formally evaluated vis-a-vis the criteria of the NRHP and/or Section 15064.5 of CEQA (or PRC 21083.2 for unique archaeological resources) and the CRHR. If the site is found to be significant, a data recovery program, or other appropriate mitigative effort, will be undertaken in consultation with the CEC.

The project area is rich in cultural resource sites. There are 20 archaeological sites along or near the existing 230 kV transmission line corridor, which includes five archaeological sites on or near the transmission line pull sites and/or the 0.1-mile transmission line tie-in. The reconductoring program would avoid all sites, with the exception of five sites that appear to occur within the projected footprint (area of potential effect [APE]) of a pull site location that would be used as part of the reconductoring program on the existing transmission line, or the 0.1 mile transmission line tie-in from the switchyard to the existing transmission line. The five sites potentially affected by use of the pull sites or 0.1 mile tie-in are CA-SDI-7212, -10297, -10298, -12909, and –14225. Each of these sites was subjected to a testing program. The testing program was conducted in accordance with the Otay Mesa Generating Project (OMGP) Cultural Resources Test Plan (Gallegos & Associates, 1999), which was reviewed and approved by the California Energy Commission. Site significance was evaluated vis-a-vis the criteria of the NRHP and/or Section 15064.5 of CEQA (or PRC 21083.2 for unique

archaeological resources) and the CRHR. The testing program was completed by September 2000 and the results were reported in a final report, "Cultural Resources Test Results of the Otay Mesa Generating Project" (Gallegos & Associates, October 2000). Completion of the archaeological testing program resulted in the conclusion that each of the sites was not significant (CA-SDI-10297 does appear to contain a significant component, but it does not occur with the APE of the project elements described above).

Natural History. The landform for the cultural resources study area includes the mesa top and several large canyons that include Johnson Canyon, O'Neil Canyon, Otay River Valley, and Proctor Valley Project facilities, including the plant switchyard site and the short interconnection to the existing Miguel-Tijuana line are situated on Otay Mesa.

Introduced grasses and agricultural lands cover much of the cultural resources study area. Native vegetation, generally located adjacent to and within canyons, includes coastal sage scrub and freshwater habitats. Large portions of the cultural resources study area have been disturbed in the past by agricultural activities. Disturbance, in addition to plowed fields, includes construction of paved and dirt roads, homes, business complexes, and vegetation clearing by the border patrol. Other disturbances in the study area include prisons and residential developments along both sides of portions of the existing transmission line north of the proposed plant switchyard site.

Prehistory. The body of current research of prehistoric occupation in San Diego County recognizes the existence of at least two major cultural traditions, discussed here as Early Period (Archaic) and Late Period, based upon general economic trends and material culture. Within San Diego County, the Archaic generally includes the period from 9000 to 1300 years ago, while the Late Period includes from 1300 years ago to Spanish contact. The Historic Period covers the time from Spanish contact to present.

The Early Period (Archaic), for this discussion, includes the San Dieguito and La Jolla complexes, which are poorly defined, as are the interrelationship between contemporaneous inland, desert, and coastal assemblages (Gallegos, 1987). Initially believed to represent big game hunters, the San Dieguito are better typified as a hunting-and-gathering society. These people had a relatively diverse and non-specialized economy in which relatively mobile bands accessed and used a wide range of plant, animal, and lithic resources.

The origin of coastal populations and subsequent interaction between the coastal population and Great Basin/desert groups is a subject of some debate (SDCAS, 1987). Whatever their origin, the first occupants immediately exploited the coastal and inland resources of plants, animals, shellfish, and fish (Moriarty, 1967; Kaldenberg, 1982; Gallegos, 1991).

Archaic sites from 9000 to 1300 years ago within San Diego County include coastal habitation sites, inland hunting and milling camps, and lithic quarry sites. Material cultural assemblages during this long period are remarkably similar in many respects. These deposits may well represent a process of relative terrestrial economic stability and presumably slow cultural change. Though various culture traits developed or disappeared during the long span of 9000 to 1300 years ago, there is a clear pattern of cultural continuity during this period.

The Otay Mesa region is unique in the county given the extensive, but not intensive, lithic scatters that cover the mesa top, interspersed with habitation sites, and quarries located on mountain slopes. This patterning reflects the presence of Santiago Peak volcanic material across the mesa as cobbles and tabular deposits from local mountains and mesa tops. This material was highly valued by Native Americans who used both cobbles and mountain quarry sources of this fine-grained metavolcanic material for tools.

Questions remain in regard to prehistoric occupation and use of the Otay Mesa area. Site patterning in the Otay Mesa area suggests that lithic resource acquisition was a primary prehistoric activity. The identification of habitation sites also indicates that the area was used by prehistoric populations as a base camp area from which a wide range of activities occurred. Radiocarbon dating of Otay Mesa habitation sites identifies prehistoric occupation from 7600 years ago to the nineteenth century.

Late Period/Ethnohistory. The cultural resources study area falls within the Kumeyaay/Diegueño territory (Kroeber, 1925). The language of the group, Diegueño, is classified as part of the Yuman language family. Three dialects (Ipai, Kumeyaay, and Tipai) of this language are still spoken (Shipek, 1978). This family is often considered to be part of the Hokam stock. According to Luomala (1978:592), the territory of the Tipai, the southern Kumeyaay group, extended south to include parts of Mexico and the southern mountains. The area included oceanfront, bays and estuaries, foothills, and mountains, and a wide range of environmental zones for exploitation.

During the Late Period, a material culture pattern similar to that of historic Native Americans first becomes apparent in the archaeological record. The economic pattern during this period appears to be one of more intensive and efficient exploitation of local resources.

The project area falls within the region occupied by the Kumeyaay, or Diegueño Native Americans. The numerous Late Period sites within San Diego County identify human activity for many centuries. As a result of contact with Spanish, Mexican, and American settlers, Native American populations were decimated by resettlement and disease. Presently, Native Americans are found throughout San Diego County, especially within the 17 San Diego County reservations.

History. The history of San Diego County reflects economic, political, and social characteristics associated with Spanish, Mexican, and American political rule. The Spanish Period (1769-1821) represents the earliest period of settlement with establishment of a presidio, missions, and mission outposts, along with the subsequent introduction of animals, agricultural products, and building methods. The Mexican Period (1821-1848) of rule is historically linked with grants of land, commonly referred to as ranchos, which were originally considered territory of the indigent population. The American Period (1848 to present) began when Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo in 1848.

An influx of people to California in the latter half of the nineteenth century was the result of various factors, including free public lands resulting from invalidated land grants after 1851, the discovery of gold in 1848, conclusion of the Civil War in 1865, and availability of land through passage of such laws as the 1862 Homestead Act and timber-culture laws.

In rural San Diego County the population did not expand noticeably until after 1870. Settlement of Otay Mesa began in the 1870s.

Otay Mesa is similar to a number of other rural settlements in San Diego County that began in the 1870s and 1880s and endured beyond the turn-of-the-century. These settlements were comprised of farming families that shared a similar environmental setting and were united socially, economically, and politically within a common school district. Van Wormer (1986) refers to such communities as agrarian school district communities.

Dry farming was employed on the mesa because of the lack of a reliable water source for irrigation purposes. Although as many as 28 families lived on Otay Mesa by 1900, the population gradually decreased because of periodic droughts, unsuccessful attempts to secure water for irrigation, and the effects of the Great Depression in the 1930s. By the late 1930s, only four or five of the pioneering families remained on Otay Mesa. As the early residents moved out and sold their property, the land on Otay Mesa continued to be used for agricultural purposes particularly for the production of row crops. In recent years the development of business parks has increased and much of the farmland lies fallow. Limited evidence is visible on the landscape to reveal the former presence of this rural community. The only visual reminders of a former agricultural settlement include sparse remnants of olive and eucalyptus trees, agricultural fields, few buildings, building foundations, and surface artifacts.

Native American Consultation. Prior to the beginning of fieldwork (for the Otay Mesa Generating Project), Ms. Debbie Pilas-Treadway, of the California Native American Heritage Commission (NAHC) was contacted for a list of local Native American contacts for the project area and identification of any sacred lands within the proposed project area that were

identified in the NAHC's Sacred Lands File. A record search of the sacred lands file of the NAHC failed to indicate the presence of Native American cultural resources in the immediate project area.

Letters describing the project and a map of the proposed plant site and transmission line locations were sent by certified mail to 15 groups or individuals identified by the NAHC. As of February 1999, four responses had been received (three by telephone, the other by mail). Comments focused on the nature of the project, when Native American input would be appropriate, and the conditions for potential Native American Monitoring.

A second mailing was sent to 17 groups or individuals identified by the NAHC on February 11, 1999 for the modified project. To date only one response has been received from this mailing. The response from that individual identified the sensitivity of the Otay region and inquired as to Native American monitoring requirements.

Cultural Resources Reconnaissance. Cultural resources reconnaissance efforts included pre-field literature review and archaeological survey.

Pre-field Records Search. A records search was conducted by Gallegos and Associates in 1997 and updated in 1999 at the South Coastal Information Center of the California Historical Resources Information System, San Diego State University, San Diego and the San Diego Museum of Man, San Diego. The record searches encompassed all previous archaeological surveys, all previously recorded archaeological sites, National Register listed and eligible properties (National Conference of State Historic Preservation Officers et al., 1988 and annual updates in the Federal Register), California Historical Landmarks (Office of Historic Preservation, 1990), Points of Historic Interest (Office of Historic Preservation, 1992), and locally listed historic properties and structures within 1 mile of the transmission line corridor. Cultural resources maps and site records on file at Gallegos and Associates, San Diego, were also consulted.

The general project area has been subjected to numerous cultural resources surveys. Key pertinent surveys include:

- CSRI 1982a, 1982b, 1983 - An archaeological survey of the Miguel-Tijuana transmission line was conducted in 1981. The transmission line was 13 miles long, with 10 miles in the United States and three within Mexico. The survey results were positive and included testing of CA-SDI-4529, CA-SDI-7197 and CA-SDI-8654. All three sites were recommended as eligible for inclusion in the National Register of Historic Places. In addition, sites CA-SDI-7197 and CA-SDI-4529 have been included in the recently nominated Bonita-Miguel Historic District. The data recovery program for CA-SDI-4529 and CA-SDI-8654 was conducted by Cultural Systems Research, Inc. (1983).

- Banks, 1980 - A cultural resources survey of five parcels of land within the Otay Ranch, proposed borrow pits. Two of the land parcels (Phases I and II) cross sections of the present project alignment. No archaeological resources were identified within Parcel I. Site SDM-W-170 was identified within Parcel II and testing of this site was recommended.

3.9.1.2 Literature and Survey Results

The previous surveys which were conducted for the existing Miguel-Tijuana 230 kV transmission line were considered adequate. The pull sites were surveyed as part of the currently proposed reconductoring project as well as the plant switchyard and the short interconnection between the switchyard and the existing Miguel-Tijuana line.

Archaeological sites identified within the project areas of potential effect are listed in Table 3.9-1.

Plant Switchyard. No archaeological sites were identified within the footprint of the plant switchyard.

Interconnection Route. The interconnection route portion of Route 1 (refer to Segment A-B on Figure 2-2) is an approximately 0.1-mile-long spur that extends northeast from the east side of the switchyard site and ties into the existing 230 kV line. This route crosses archaeological site CA-SDI-10298, a lithic scatter.

Miguel-Tijuana 230 kV Transmission Line. Twenty sites have been identified along (or near) the portion of the existing Miguel-Tijuana line to be reconductored, as listed in Table 3.9-1. Refer to the OMGC, 1999 for more information on these sites.

Miguel-Tijuana 230 kV Transmission Line – Pull Sites. Six pull sites will be required along the portion of the Miguel-Tijuana 230 kV transmission line to be reconductored. Each pull site will utilize two rectangular working areas except Pull Site #1 where four rectangular working areas will be employed to accommodate the interconnect to Route 1. Pull Site #1 is located east of the plant site and will encompass lands within the existing Miguel-Tijuana corridor as well as lands to the east of the corridor. As part of the interconnect pull site, a working area is also located within the plant site. Pull Site #2 is located northwest of the East Mesa Detention Facility and will utilize lands within the existing Miguel-Tijuana corridor. Pull Site #3 is located along the San Diego Aqueduct and northwest of Salt Creek site and will encompass lands within the existing Miguel-Tijuana corridor as well as lands to the east of the corridor. Pull Site #4 is located along an access road south of Otay Valley Road and

TABLE 3.9-1

ARCHAEOLOGICAL SITES AND ISOLATES WITHIN PROJECT AREA OF POTENTIAL EFFECT[1,2]

Site #	Site Description	N.R. Status	USGS 7.5' Quadrangle
Plant Switchyard Site			
None			
Transmission Line Route 1 (230kV)			
CA-SDI-4529	Habitation	National Register Eligible	Jamul Mtn.
CA-SDI-4735[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-4989[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-7197	Lithic Scatter/Milling Station	National Register Eligible	Jamul Mtn.
CA-SDI-7212	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-7217[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-8650[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-8651[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-8654	Habitation/Lithic Scatter	National Register Eligible	Otay Mesa
CA-SDI-8666	Lithic Scatter	Unknown/Not Determined	Jamul Mtn.
CA-SDI-10297	Habitation	Unknown/Not Determined	Otay Mesa
CA-SDI-10298	Habitation	Unknown/Not Determined	Otay Mesa
CA-SDI-10668/H	Quarry/Historic	Not Significant[2]	Otay Mesa
CA-SDI-12067	Quarry	Not Significant[2]	Jamul Mtn.
CA-SDI-12082	Lithic Scatter	Not Significant[2]	Jamul Mtn.
CA-SDI-12909	Lithic Scatter	Unknown/Not Determined	Jamul Mtn.
CA-SDI-13456[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa
CA-SDI-14222[1]	Lithic Scatter	Unknown/Not Determined	0tay Mesa
CA-SDI-14224[1]	Lithic Scatter	Unknown/Not Determined	Otay Mesa

TABLE 3.9-1

(Continued)

Site #	Site Description	N.R. Status	USGS 7.5' Quadrangle
Transmission Line Route 1 (230 kV)/Pull Site #1			
CA-SDI-10297	Habitation	Unknown/Not Determined	Otay Mesa
CA-SDI-10298	Habitation	Unknown/Not Determined	Otay Mesa
Transmission Line Route 1 (230 kV)/Pull Site #2			
CA-SDI-7212	Lithic Scatter	Unknown/Not Determined	Otay Mesa
Transmission Line Route 1 (230 kV)/Pull Site #3			
CA-SDI-14225	Lithic Scatter	Unknown/Not Determined	Otay Mesa
Transmission Line Route 1 (230 kV)/Pull Site #4			
Transmission Line Route 1 (230 kV)/Pull Site #5			
CA-SDI-12909	Lithic Scatter	Unknown/Not Determined	Jamul Mtn.
Transmission Line Route 1 (230 kV)/Pull Site #6			
None			

[1] As recorded, these sites appear to be outside but immediately adjacent to transmission line corridor.

[2] Recommendation brought forward by previous consultant/researcher, and does not signify formal SHPO/Agency finding.

will encompass lands within the existing Miguel-Tijuana corridor as well as lands to the west of the corridor.

Pull Site #5 is located southeast of the Miguel Substation Road and will encompass lands largely to the east of the existing Miguel-Tijuana corridor. Pull Site #6 is located southwest of the Miguel Substation largely in lands to the west and south of the Miguel-Tijuana corridor.

3.9.2 Paleontological Resources

3.9.2.1 Introduction

Paleontological resources are the mineralized (fossilized) remains of prehistoric plant and animal organisms, as well as the mineralized impressions (trace fossils) left as indirect evidence of the form and activity of such organisms. These resources are considered to be non-renewable resources significant to our culture under state and federal law.

This paleontological analysis also complies with the draft guidelines and significance criteria issued in 1989 by the Society for Vertebrate Paleontology (SVP), a national professional organization. These criteria outline acceptable professional practices in the conduct of paleontological resource surveys, data recovery, analysis, and curation. The paleontological resources assessment for this project was carried out by, or under the direct supervision of, Mr. David Lawler, a qualified paleontologist.

The location of project components, geologic units, and areas subjected to paleontological survey are shown on Figure 3.9-1.

The project area is located in the southwestern San Diego County region, east of the National City, Chula Vista, and Imperial Beach Metropolitan areas, west of the San Ysidro Mountains, and north of the U.S./Mexico border. The topography consists of a series of wide river valleys that are flanked by broad areas of low ridges and hills, which have been dissected by small stream drainages. The San Ysidro Mountains to the east represent a prominent, erosionally resistant landform in the region.

Surficial sedimentary units of predominantly Cenozoic age (last 63 million years) underlie the entire project area. These sediments include deposition that range from continental alluvial fan-derived sediments to subaerial floodplain to marine terrace sediments. Lithologies include bentonitic clays, sand, gravel, and silt, all of which are potentially favorable to the preservation of paleontological resources.

A majority of the rock outcrops along the San Diego County coastal plain consist of a relatively undisturbed thick sequence of Eocene (58 to 36 million years ago) to Quaternary age (last 1 million years) sedimentary units as described and mapped by Hertlein and Grant (1944), Minch (1967), Kennedy and Moore (1971), Kennedy and Tan (1977), Farrand (1977), and Demere (1983).

In addition, Kern (1977) has described the geomorphic development of the successive series of Pleistocene (Ice Age: 1 million to 10,000 years ago) marine terraces that have been subsequently dissected by the major west flowing river drainages originating in the Peninsular ranges to the east.

The Cenozoic rock formations range in facies type from conglomerates to indurated sandstones (gritstones) to unconsolidated siltstone and clays, all of which are either fossiliferous or potentially fossiliferous.

Gradual, long-term erosion has removed parts of the Tertiary and Quaternary rock formations so that these rocks and their contained fossils are now at or near the surface throughout most of the project area. These formations or parts of these formations now exist at or near the surface as rock outcrops with varying width across the project area terrain, but are obscured in most areas by soil, vegetation, or thin deposits of surficial sediment. Thus, visual detection of fossils is possible in those areas where natural erosion or man-made excavations during road, pipeline, or building site excavation or grading operations have removed this cover.

A majority of the project area is overlain by vegetation. Given this fact, the potential paleontological sensitivity of a particular site within the project has been determined from the distribution of known nearby fossil localities, exposures on non-fossiliferous rocks, and available mapping of the surface outcrops of the different rock units.

The southwestern San Diego County region contains a diverse record of geologic and biologic history, which spans more than 150 million years, dating from the Jurassic period. Under the combined influences of regional tectonic events ranging from basin subsidence to uplift of the San Ysidro Mountains and worldwide sea level changes, sediments and fossils of marine and terrestrial organisms have accumulated to produce a significant record of prehistoric life.

Much of the paleontological interest within the project area stems from the recent discoveries of fossil vertebrate faunas in the Sweetwater and Otay Formations. Identification and scientific description of both of these diverse fossil vertebrate assemblages provide the best known record of late Eocene and late Oligocene (36 to 25 million years ago) faunas in California. Preservation of riparian and other continental volcaniclastic deposits provided favorable conditions for preserving vertebrate fossil remains in these geologic units.

Paleontological Literature and Locality Records Review. Data for the following descriptions of paleontological resources within the project area were compiled from records of previous geologic and paleontological field investigations. Non-field data sources for the project area included additional published descriptions of the geology (including geologic maps), published and unpublished paleontological research papers, museum records, and interviews with individuals having first-hand knowledge of resources within the project area. Sources consulted on the general geology of the area included regional geologic maps compiled by the California Division of Mines and Geology. More specific geologic information in the form of 1:24,000 and 1:62,500 scale U.S. Geological Survey and California Division of Mines and Geology geologic maps available for the project area was also utilized. Specific technical paleontological and detailed lithologic data were derived by Mr. Lawler both from local geoscientist informants at California colleges and universities, and designated museum repositories including University of California Museum of Paleontology (UCMP), California Academy of Sciences (CAS), Los Angeles County Museum (LACM) and San Diego Museum of Natural History (SDMNH). Specimens were also inspected at these institutions, as available.

These data were then reviewed to assess the relative potential for each of these units to contain significant paleontological resources. No previously recorded paleontological localities occur within 0.5 mile of the plant switchyard site or of the centerline of the proposed 230 kV interconnection or the existing Miguel-Tijuana line.

Sensitivity Assessment. Paleontological sensitivity – that is, the potential for significant resources to be present in the vicinity of a given project element – is assessed with respect to the presence along project alignments and near project facilities of lithostratigraphic units having the potential to yield significant paleontological resources. Any evaluation of paleontological potential was based on assessment of "High," "Moderate" or "Low" paleontological sensitivity of lithologic units in the project area (refer to OMGC, 1999 for more information). Confidential site locality information has been provided to appropriate agency personnel separately.

Methodology. The paleontological assessment consisted of an evaluation of the paleontological potential within 0.5 mile on either side of the proposed transmission facilities. The focus area for potential effects was considered to be 150 feet to either side along the transmission line rights of way, and an area of 1000 feet around the plant switchyard site footprint. This study area is conservative since the actual area of project effects will be much more limited. Paleontological resources are lithologically dependent; that is, deposition and preservation of paleontological resources is tied to the lithologic unit in which they occur. If the rock types representing a depositional environment conducive to deposition and preservation of fossils are not present, then fossils will not be present. The

potential for paleontological resources to be present is described as the paleontological sensitivity of the lithologic unit. Paleontological assessment at this phase was confined to assessment of paleontological sensitivity on the basis of information provided by existing geologic maps and interviews with key personnel at the institutions visited. Additional assessment was done using paleontological and geological literature pertinent to the formations identified in the review of these sources and subsequent field surveys of the project facilities (actual areas surveyed are described below). Sources for the lithologic analysis include geologic maps covering the Otay Mountain quadrangle (Kennedy and Tan, 1977), and the Jamul Mountain Quadrangle (Farrand, 1977) which are the most recent published references.

Pre-construction field surveys were performed on May, 1997, February, 1999, and June, 1999. During this time all accessible potentially impacted rights of way for the linear power facilities (transmission line) as well as the overall power plant switchyard property were surveyed for paleontological resources (see Figure 3.9-1).

The power plant switchyard property was surveyed and samples from geotechnical drill hole spoils on the plant site were inspected for paleontological specimens (May, 1997 boring program).

The Miguel-Tijuana 230 kV transmission line survey was restricted to 300-foot-wide corridors adjacent to public right-of-way crossings in the vicinity of Telegraph Canyon and Proctor Valley Road and the 230 kV tie-in from the plant site to the existing 230 kV transmission line (segment A-B on Figure 3.9-1), The 9.05-mile-long segment (B-K) that will utilize the existing Miguel-Tijuana transmission line was previously surveyed for paleontological resources in 1980 as part of the permitting program for the line (Roeder, 1980).

There are six pull site locations proposed along the Miguel-Tijuana 230 kV transmission line survey corridor. The working areas for each pull site are generally inside the existing SDG&E easement for the Miguel-Tijuana transmission line corridor. The working areas typically required at each pull site location are expected to encompass two rectangular footprints approximately 150 feet by 300 feet. The proposed pull site locations were surveyed for paleontological resources in June, 1999.

Santiago Peak Volcanics (Jsp). The Santiago Peak Volcanics represent the oldest known geologic unit in the project area (130-150 million years). Fossil resources of any biological classification found in this rock unit would be considered significant. In particular, metasedimentary units may also yield icthyosaur (marine reptile) remains, as has been found in the correllative Late Jurassic age – Mariposa Formation and Franciscan Group of northern California.

Sweetwater Formation (Tsw). The Sweetwater Formation represents the oldest known Cenozoic sedimentary unit in the project area. Its geology has been described by Artim and Pinckney (1973) and had been previously assigned to the San Diego Formation by earlier workers (Hertlein and Grant, 1944; Kennedy and Moore, 1971).

The fossil mammal assemblage derived from the lower part of the formation includes marsupials, insectivores and rodents. The known mammalian assemblage collected from the upper part of the formation is limited to unidentified rodent material.

The Sweetwater rock unit contains scientifically significant paleontological resources represented by the above described fossil vertebrate fauna (Walsh and Demere, 1991).

Cretaceous Granodiorities (Kgrd). This unnamed intrusive igneous formation located at the northeast corner of the Route 1 area is a non-fossil-bearing unit.

Otay Formation (To). Otay Formation geology was originally described by Artim and Pinckney (1973) and had been previously assigned to the San Diego Formation by earlier workers (Hertlein and Grant, 1944; Kennedy and Moore, 1971). The formation was redefined by Walsh and Demere (1991) to include three members; a basal conglomerate member, a middle gritstone member, and an upper bentonite-rich sandstone mudstone member. The upper two units contain a Late Oligocene age (Arikareen) fossil mammal fauna).

Vertebrate fossil collections from the "gritstone member" at SDMNH localities 3566 (within the Eastlake portion of the project are) include primitive herbivores and carnivores.

The "sandstone-mudstone member" vertebrate fossil collections represent a diverse faunal assemblage which has been described by Demere (1988) and has been designated as the Eastlake local fauna. The assemblage includes a total of 24 taxa, including 18 mammals, 4 reptiles, and 2 birds. Many of the fossil specimens represent the best preserved specimens of particular taxa found to date.

The volcanoclastic rock-unit lithologies are favorable for exceptional preservation of vertebrate and microvertebrate fossil resources.

Demere (1989) compiled a paleontological sensitivity report and map for the Otay Ranch Development Project – EIR document, which in part covers portions of the southern part of this project area. Demere likewise assigned a "high" sensitivity rating to the Otay Formation on the paleontological sensitivity map document.

Unnamed Fanglomerate Unit (Tfg). The Unnamed Fanglomerate unit has been mapped and described by Kennedy and Tan (1977). This boulder-fanglomerate unit outcrops in the southern part of the project area along the north and south sides flanks of the Otay River Valley and areas south of lower Otay Reservoir. Metamorphic and igneous cobble clasts are deposited in a fine-grained matrix consisting of sandstone and bentonite.

No paleontological resources have been recovered from this unit.

The lithologic units present at the switchyard, interconnection, and along the existing Miguel-Tijuana line to be reconductored are listed in Table 3.9-2. The paleontological resources that are potentially present in the geological formations in the project are discussed below.

Quaternary Stream Terrace Deposits (Qt). Stream terrace deposits of Pleistocene age occur locally along the Otay River Valley and include unconsolidated sand and gravel derived from adjacent strata. This unit in the Bonita municipality outside the project area has yielded fragmentary remains of both large mammalian taxa including horse, camel, mastodon and/or mammoth, as well as the remains of microvertebrate taxa including rabbit, rodents, birds, snakes, lizards, and frogs (Roeder, 1980). The rock-unit lithologies would be favorable to the preservation of fossil resources such as large vertebrate and/or microvertebrate remains. The closest documented Pleistocene invertebrate fauna to the project area has been described by Demere (1981) from the metropolitan San Diego area. This formation is considered to have a moderate sensitivity for paleontological resources.

Quaternary Alluvium and Slope Wash Deposits (Qal/Qsw). Stream alluvium and slope wash deposits of Pleistocene age occur locally along the Otay River Valley and include unconsolidated sand and gravel derived from adjacent strata. This unit has yielded fragmentary remains of large mammalian taxa including horse, camel, mastodon and/or mammoth outside the project area in San Diego County, based on the review of SDMNH site records and collections. The rock-unit lithologies would be favorable to the preservation of fossil resources such as large vertebrate and/or microvertebrate remains. This formation is considered to have a moderate sensitivity for paleontological resources.

3.9.2.2 Findings

Plant Switchyard. The switchyard site is almost entirely within the Otay Formation (To) (high sensitivity). A small portion of the east portion of the switchyard site falls within the Santiago Peak Formation (Jsp). A systematic survey of the switchyard site was performed, including inspection of geotechnical drill hole samples, for the presence of paleontological materials. The survey results were negative.

TABLE 3.9-2

LITHOLOGIC UNITS AND PALEONTOLOGICAL SENSITIVITY [1]

Project Component		Geologic Unit	Paleontological Sensitivity
Start Milepost	End Milepost		
Switchyard Site		Jsp/To	Low/High
Transmission Line Route 1 (230 kV)			
0.0	0.65	Jsp	Low
0.65	0.9	To	High
0.9	1.0	Tfg	Low/Mod
1.0	1.2	Jsp	Low
1.2	2.4	Tfg	Low/Mod
2.4	2.85	Qal	Mod
2.85	3.0	Qt	Mod
3.0	3.5	Tfg	Low/Mod
3.5	3.7	Qal	Mod
3.7	4.2	Tfg	Low/Mod
4.2	7.7	To	High
7.7	7.8	Kgrd	Low
7.8	9.15	To	High
Pull Site #1			
0.05	0.05	Jsp	Low
Pull Site #2			
2.4	2.4	Tfg	Low/Mod
Pull Site #3			
4.0	4.0	Tfg	Low/Mod
Pull Site #4			
6.2	6.2	To	High
Pull Site #5			
8.4	8.4	Jsp	Low
Pull Site #6			
9.15	9.15	To	High

[1] Refer to Figure 3.9-1 for lithologic units, paleontological sensitivity, and project component locations. Pull sites are located at major angle points along transmission line as well as both ends of line to be reconductored.

Transmission Line Route. The 9.15-mile-long transmission line (including 0.1 mile of new construction and 9.05 miles to be "bundled") crosses several formations including the Otay (To), the Unnamed Cretaceous grandiorite (Kgrd), Unnamed Fanglomerates (Tfg), Quaternary Alluvium (Qal), Quaternary Stream Terrace Deposits (Qt), and Santiago Peak Volcanics (Jsp). The 9.05 miles of Route 1 transmission line corridor that already exist were surveyed for paleontological resources by Roeder and Associates (Roeder, 1980) for SDG&E prior to construction of the transmission line. No paleontological resources were discovered in any rock unit within the project corridor boundaries at that time. Subsequent fossil localities have been recorded within 0.5 mile of this facility from approximately MP 4.8 to approximately MP 7.5. Field surveys for this project were conducted by inspecting 20 feet on each side of the public right of way areas at the Eastlake Boulevard, and Proctor Valley Road Crossings. No fossil resources were observed. A short (0.1 mile) intertie will connect the existing 230 kV Miguel-Tijuana transmission line to the plant site and crosses thin deposits of Pleistocene alluvium (Qal) which overlie Santiago Peak Volcanics (Jsp). A portion of this interconnect was encompassed within a paleontological survey conducted by Roeder and Associates (see Roeder, 1980) for San Diego Gas & Electric prior to construction of the Miguel - Tijuana transmission line. No paleontological resources were discovered in any rock unit within that portion of the project corridor boundaries that encompass the Miguel-Tijuana 230 kV transmission line. Additionally, the Miguel-Tijuana 230 kV transmission line intertie was resurveyed in June 1999 and no paleontological resources were observed during that survey.

Miguel-Tijuana 230 kV Transmission Line (230 kV)/Pull Sites. Six pull site locations along the Miguel-Tijuana 230 kV transmission line were also surveyed in June 1999. No paleontological resources were observed at the pull site locations. A piece of non in situ chert was observed at pull site #5 that has the potential to yield radiolarian microfossils. Note: during the paleontologist's June 1999 field survey of the pull site locations, observations were made of an outlier crop of Santiago Peak volcanics (Jsp) at pull site #5, east of the transmission line corridor.

3.10 SOCIOECONOMICS

The construction and operation of a power project has the potential to affect the demographic and economic conditions in the region in which it is sited; i.e., by introducing a large non-local workforce into the region. The proposed project consists of an electrical switchyard, a short (0.1 mile) 230 kV transmission interconnect, and reconductoring of the existing Miguel-Tijuana 230 kV line to the Miguel substation (9.05 miles). The proposed electrical switchyard and short (0.1 mile) transmission interconnect are located on undeveloped land in unincorporated San Diego County. The 9.05 mile long portion of the existing 230 kV Miguel Tijuana line to be reconductored traverses primarily undeveloped land. Adjacent land uses include residential, commercial, industrial, and government. The transmission line route to

the Miguel Substation traverses land that was previously used to grow tomatoes, cucumbers, bell peppers, and lima beans. The historic agricultural lands are currently all fallow. The existing transmission line route passes near several prisons on the southern portion as well as several residential areas along the northern portion. The overall population density in the project area is currently low. Refer to Section 4.2.1.10 for an assessment of Environmental Justice issues.

3.11 TRANSPORATION AND NOISE

3.11.1 Transportation

San Diego County has an extensive transportation network of highways and roadways, encompassing nearly 600 miles of state highways in the San Diego region and over 7,200 miles of maintained city streets and County roads (San Diego Association of Governments, 1998). San Diego County is bordered to the north by Orange County, to the east by Imperial County, and to the south by Mexico. Primary travel routes are Interstate 5 (I-5), Interstate 805 (I-805), and Interstate 15 (I-15) for north-south destinations, and Interstate 8 (I-8) for east-west destinations. The County's economy supports commerce and industry throughout southern California, and is critically linked to effective interstate and intrastate transportation.

The following discussion of highways and local roadways in the general project area is based on the existing and proposed circulation network described in the *Final East Otay Mesa Specific Plan* (County of San Diego, 1994) and in *SANDAG Special Report: Border Area Transportation* (SANDAG, 1996). The transportation network in Otay Mesa is planned to add substantial new facilities over the next 20 years, including: completion of the widening of Otay Mesa Road by fall 1999; construction of the State Route 125 (SR-125) toll road south to a new border crossing by 2002; and extension of State Route 905 (SR-905) from I-805 to SR-125 by 2005. Construction along SR-125 would occur prior to, or concurrent with, construction of the Otay Mesa Generating Project. The SR-905 extension project would occur after construction of the power plant.

The numbers, types, and locations of highways and roadways actually constructed are subject to future revision as the East Otay Mesa community is developed.

Existing roadways are illustrated on Figures 2-1 and 2-2. Access to the proposed plant switchyard is via Otay Mesa Road and Alta Road (see Figures 2-1 and 2-2). The existing SDG&E 230 kV Miguel-Tijuana line has existing access roads and trails over its length. Additionally, the Miguel-Tijuana line traverses several roads including Telegraph Canyon Road and Proctor Valley Road – both of these roads can be utilized to access the existing transmission line where it crosses the roadways.

3.11.2 Noise

3.11.2.1 Plant Switchyard and Interconnect

The proposed Otay Mesa plant switchyard and short interconnection to the Miguel-Tijuana line are located in a remote area at the western foot of the San Ysidro Mountains in San Diego County (refer to Figures 2-1 and 2-2). To the west and south of the site are open grasslands, rolling hills and shallow canyons extending for many miles. According to the County Department of Planning and Land Use (East Otay Mesa Specific Plan, SP 93-004, 1994), this land is zoned as mixed industrial with one or two scattered commercial areas. The U.S./Mexico international border is roughly 1.5 miles south of the plant switchyard site. To the east of the site, the San Ysidro Mountains rise abruptly by more than 1,200 feet within 2 miles of the site boundary. At the present time the area is completely uninhabited and without any infrastructure within a one-mile radius of the proposed facilities.

There are only two structures of any type within a one-mile radius of the proposed plant switchyard site:

- A metal fabricating shop (R & F Metal, Inc.) and trucking business office, which was formerly the Kuebler Ranch, approximately 2,600 feet north of the switchyard

- The offices of a truck storage facility approximately 3,700 feet southwest of the switchyard.

Beyond this one mile radius there are the following:

- A group of three residences on Otay Mesa Road approximately 6,200 feet southwest of the switchyard

- The R. J. Donovan Correctional Facility (California State Prison) approximately 5,900 feet northwest of the switchyard

- The G. F. Bailey County Correctional Facility (San Diego City and County Jail) approximately 5,500 feet north of the switchyard.

Despite the remote nature of the area, it is zoned primarily mixed industrial with a commercially zoned parcel of approximately 20 acres just beyond the southwest corner of the adjacent power block facility area.

In an effort to evaluate current conditions and assess any potential noise impacts on the surrounding community, an ambient sound level study was conducted in early May, 1997. Both long-term unmanned and short-term manned measurements were taken on Friday, May 2, and Saturday, May 3, 1997. Six measurement locations were selected to acoustically characterize the general area and to determine the existing sound levels at all potentially sensitive receptors. These locations are described in Table 3.11-1.

In general, existing noise in the plant's switchyard vicinity is due almost entirely to traffic on Otay Mesa and Alta Roads. An additional common source is noise from light aircraft overflights (including air traffic from Brown Field airport to the west) and sporadic jet takeoffs at the Tijuana International Airport several miles away.

Generally, the daytime Leq, or background level, is nearly uniform at about 46 dBA over the entire area. The quietest area is around Position 2 (average L90 ≈ 38 dBA), since the majority of cars turn into or out of the state prison access road (Alta Road beyond Position 2 is not a through road and ends at the county jail). The loudest levels (average L90 ≈ 42 dBA) were measured at Position 5, which is 30 feet from Otay Mesa Road.

3.11.2.2 Existing Miguel-Tijuana Line

The reconductoring activities would not generate significant noise and construction impacts would be temporary and transient in nature. Therefore, the portion of the Miguel-Tijuana 230 kV line to be reconductored was not surveyed for ambient noise levels.

In general, the noise environment along the existing Miguel-Tijuana line is currently primarily rural, undeveloped land with the exception of the transmission corridor and associated access road. Residential areas are present on both sides of the line in the Eastlake and Telegraph Canyon areas. Additionally, the County of San Diego plans to substantially build out east Otay Mesa and there are several development projects proposed on east Otay Mesa and in the vicinity of the existing transmission line route. One of the larger projects proposed is the Otay Ranch residential development project. The noise environment in the project vicinity will be transformed to a more developed one in the future and ambient noise levels are expected to increase accordingly.

TABLE 3.11-1

AMBIENT NOISE MEASUREMENT LOCATIONS

Position Number	Location (dimensions approximate)
1	180 ft. east of Alta Road, 300 ft. south of prison access road intersection.
2	Utility pole 60 ft. east of Alta Road, 100 ft. south of entrance to R & F Metal, Inc.
3	50 ft. east of Alta Road, 1,600 ft. south of prison access road intersection.
4	150 ft. north of Otay Mesa Road; approximately 1000 ft. west of Alta Road.
5	30 ft. north of Otay Mesa Road, 200 ft. east of residences. Same distance from road as houses.
6	50 ft. north of Mexican border at southern terminus of Alta Road. Represents a group of apartments across the border.

Figure 3.3-1
FEMA 100 Year Floodplains
(8 1/2 x 11 color)

Figure 3.7-1
Current Land Use Designations
(8 1/2 x 11) (Landscape)
(3 pages long)

Figure 3.7-1
(Continued)

Figure 3.7-1
(Continued)

Map 3.8-1
Viewing Position Map

Figure 3.8-1
The existing Miguel-Tijuana 230 kV transmission line……..etc.
Color (i.e., can't go back to back) (8 1/2 x 11)

Figure 3.8-2
The current view from VP6, where the existing……..etc.
Color (i.e., can't go back to back)

Figure 3.8-3
The current view from VP7, where the existing…. .etc.
Color (i.e., can't go back to back)

Figure 3.9-1

Geologic Units, Paleontological Sensitivity and Areas Surveyed for Paleontological Resources

(3 pages – landscape)

Figure 3.9-1
(Continued)

Figure 3.9-1
(Continued)