

4.9 BIOLOGICAL RESOURCES

This section describes the existing biological resources for the project site, the potential impacts resulting from development of the landfill and ancillary facilities, and mitigation measures proposed to minimize significant impacts. This section is summarized from the biological technical report prepared by HELIX Environmental Planning, Inc. (HELIX 2002) that is provided in Appendix L. This section also incorporates the findings from the Year 2000 biological surveys for threatened and endangered species and a 2002 focused plant survey (see Appendix L). The Draft Wetland Mitigation Plan and Habitat Enhancement Plan (HELIX, June 2000) is also provided in Appendix L.

4.9.1 EXISTING SETTING

The 1,783-acre landfill site¹ consists of undeveloped land and land currently and formerly disturbed by agricultural and dairy operations. Currently, the western Verboom Dairy is active, and the eastern Lucio Dairy is inactive. The site is crossed by the floodplain of the San Luis Rey River, which extends from its headwaters near Mount Palomar to the Pacific Ocean. The majority of the active dairy operation is situated adjacent to the northern edge of the river where fenced corrals, feeding facilities and several homesteads are situated. South of the river, there are open fields containing grazing cows and a homestead for the dairy operator. A wooden bridge formerly connecting the two sides of the dairy operations was washed out in 1995 by storm flows. An unpaved, low-flow crossing of the river exists adjacent to the damaged bridge structure. East-west trending SR 76 approximately bisects the site from the southwest to the northeast.

Approximately 207 acres of the project area, predominantly within the river floodplain, have been disturbed by the previous and on-going dairy and homestead activities. The remainder of the site, including the upper elevations of the site, Gregory Canyon and the slopes of Gregory Mountain, contains native and non-native vegetation communities. The landfill site is surrounded by agricultural land and rural residences to the south, southwest, and northwest (Section 4.1, Land Use). Undeveloped land occurs to the north and east. The Hanson sand and gravel operation occurs in the San Luis Rey River to the northeast. As part of the 1997 survey and mapping by HELIX, it was observed that habitat in the San Luis Rey River had reestablished itself since the heavy floods of 1995, and a portion of the landfill site north of Highway 76 burned since the 1995 surveys.

4.9.1.1 Vegetation Communities

A total of eight native vegetation communities occur on the landfill site, along with two unvegetated habitats, four non-native communities, and developed land (Table 4.9-1 and Exhibits 4.9-1a and 4.9-1b). Native vegetation communities include coastal sage scrub, coastal sage scrub/chaparral, chaparral (including some with rock outcrops), native perennial grassland, coast live oak woodland, cottonwood-willow riparian forest, mule fat scrub, and southern willow scrub. Unvegetated habitats include open channel (a natural condition) and ponds, whereas

¹ The site includes 13 acres of land owned by San Diego Gas and Electric (SDG&E), which is part of the existing transmission corridor that runs through the property. With the inclusion of this 13 acres, the total site area is 1,783 acres.

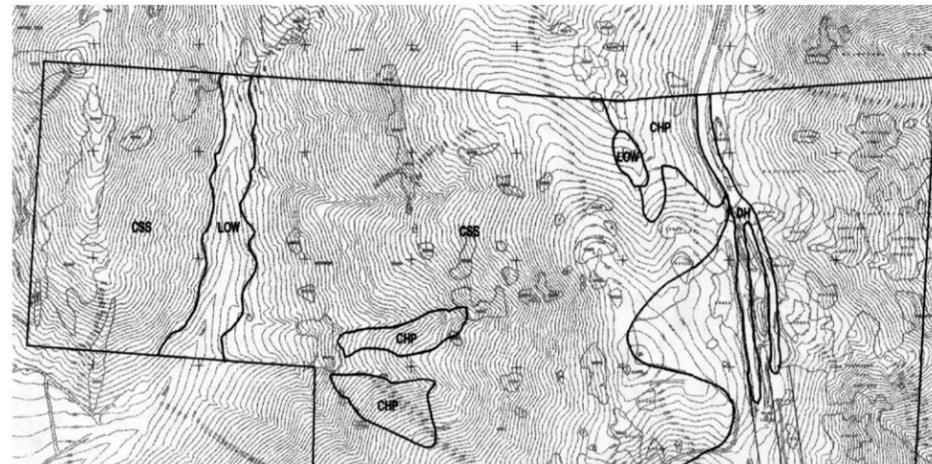
**TABLE 4.9-1
VEGETATION COMMUNITY ACREAGE FOR
THE GREGORY CANYON LANDFILL SITE**

VEGETATION COMMUNITY	ACREAGE TOTAL
Native Vegetation Communities	
Coastal sage scrub ^a	897.6
Coastal sage scrub/chaparral	73.9
Chaparral	430.5
Native perennial grassland	0.4
Coast live oak woodland	63.9
Cottonwood-willow riparian forest ^b	27.0
Mule fat scrub	1.4
Southern willow scrub ^b	33.7
Subtotal	1,528.4
Unvegetated Habitats	
Open channel	12.5
Ponds	0.4
Subtotal	12.9
Non-Native Vegetation Communities And Developed Land	
Annual grassland	34.5
Disturbed habitat	34.0
Agricultural land	78.7
Agricultural land/developed	88.3
Developed	6.2
Subtotal	241.7
TOTAL	1,783.0 ^c
^a Includes disturbed and burned associations. ^b Includes disturbed associations. ^c The site is 1,770 acres as surveyed. Thirteen acres within the site are owned by SDG&E. These 13 acres are included in the biological analysis since the land will be incorporated into the site. Source: HELIX Environmental, 1999	

non-native vegetation communities include annual grassland, disturbed habitat, agricultural land, and agricultural land/developed. These communities/habitats are briefly described below.

Coastal Sage Scrub

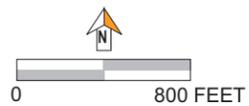
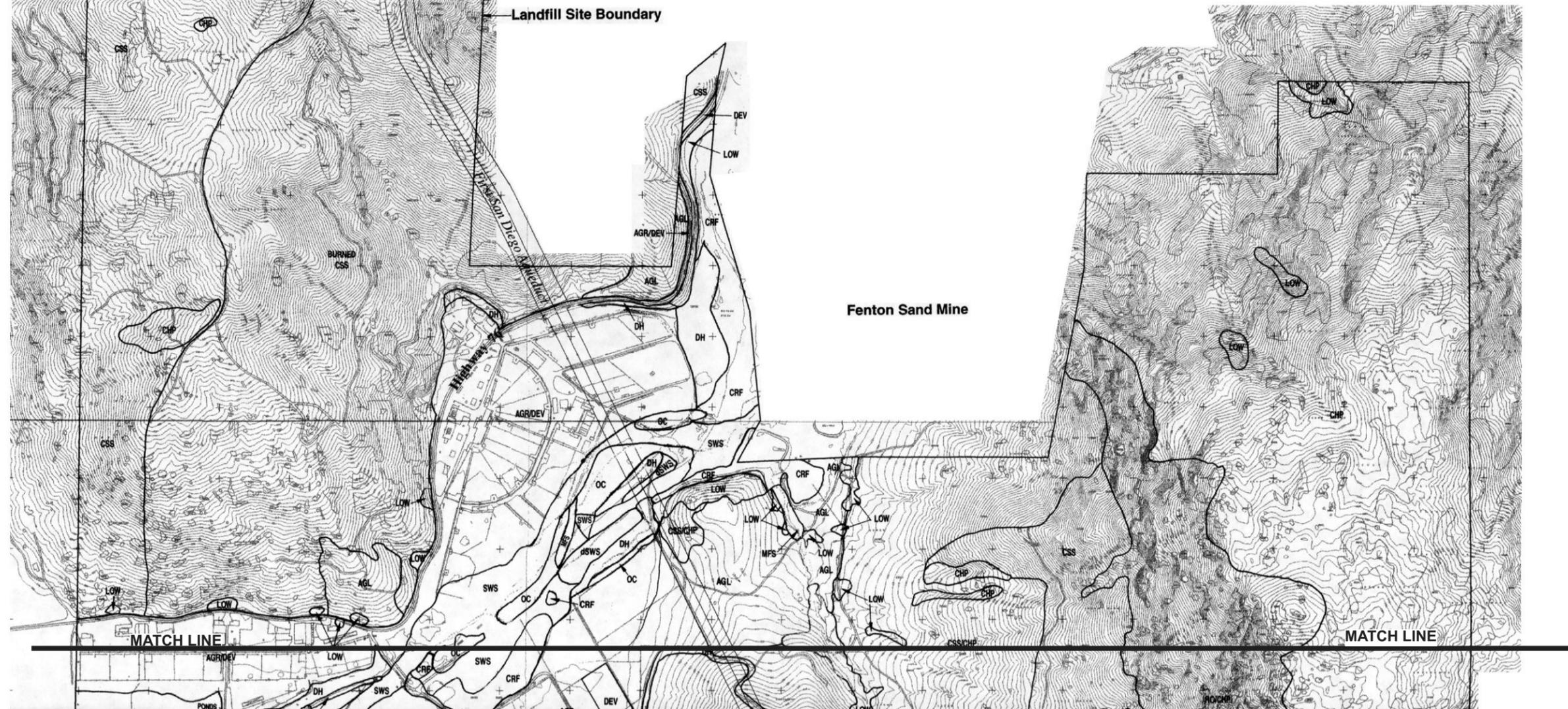
Coastal sage scrub occurs throughout the project area and is characterized by a variety of soft, low, aromatic, drought-deciduous shrubs such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and red bush monkey-flower (*Mimulus aurantiacus*) with scattered evergreen shrubs such as laurel sumac (*Malosma laurina*). In the project area this community supports small inclusions of native grassland dominated by purple needlegrass (*Nassella pulchra*). Annual species occur between the grass tussocks, including blue-eyed grass (*Sisyrinchium bellum*), soft chess (*Bromus hordeaceus*), and virgate cudweed aster (*Corethrogyne filaginifolia* var. *virgata*). A total of 897.6 acres of coastal sage scrub occurs on the landfill site (1.9 acres of which are disturbed and 226.4 acres of which have burned since 1995).



VEGETATION TYPES

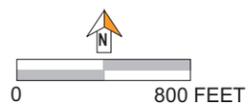
CSS	Coastal Sage Scrub	AGR	Agricultural Land
CHP	Chaparral	DH	Disturbed Habitat
RO/CHP	Rock Outcrop/Chaparral	DEV	Developed Land
LOW	Coast Live Oak Woodland	PGL	Native Perennial Grassland
CRF	Cottonwood-willow Riparian Forest	SWS	Southern Willow Scrub
OC	Open Channel	MFS	Mulefat Scrub
AGL	Annual (Non-native Grassland)		

Note: Lowercase "d" in front of a vegetation type indicates that it is disturbed.



Sources: Helix Environmental, Revised 7/24/00

This page left intentionally blank.



Sources: Helix Environmental, Revised 7/24/00

Exhibit 4.9-1b
Vegetation Communities/
Habitat

This page left intentionally blank.

Coastal Sage Scrub/Chaparral

Areas of scrub habitat that could not be easily classified as either coastal sage scrub or chaparral because they supported a heterogeneous mix of species from each association were placed in this category. This habitat type occurs on the lower west-facing slope of Gregory Canyon and on a hill just south of the San Luis Rey River west of the canyon. A total of 73.9 acres of coastal sage scrub/chaparral occurs on the landfill site.

Chaparral

Chaparral is a drought- and fire-adapted community of broad-leaved, evergreen shrubs that frequently form dense, often impenetrable stands. This association develops primarily on mesic north-facing slopes and in canyon bottoms and is characterized by crown- or stump-sprouting shrubs that regenerate following burns or other major disturbances. Chaparral occurs primarily along the high slopes east of Gregory Canyon, where it is dominated by chamise (*Adenostoma fasciculatum*) with lesser amounts of mission manzanita (*Xylococcus bicolor*) and holly-leaf redberry (*Rhamnus ilicifolia*). A small amount of chaparral also occurs on the western slope of the canyon. The high slopes of Gregory Mountain (including the west-facing slopes of the canyon) also support massive rock outcrops among patches of chaparral vegetation. This mixture of rocks and vegetation has special value to wildlife. A total of 430.5 acres of chaparral occurs on the landfill site.

Native Perennial Grassland

Native grassland is characterized by a dense herbaceous cover of perennial, tussock-forming grass species such as foothill stipa (*Nassella lepida*) and purple needlegrass (*Nassella pulchra*). Native and introduced annuals occur between the grasses, often exceeding them in cover (Holland 1986). In addition to *Nassella*, indicator species present include brome grasses (*Bromus* spp.), blue-eyed grass, blue dicks (*Dichelostemma capitatum*), shooting star (*Dodecatheon clevelandii*), and purple owl's clover (*Castilleja exserta*), among others. Native grassland occurs at the ridgetop near and within the footprint for Borrow/Stockpile Area B. A total of 0.4 acre of native perennial grassland occurs on the landfill site.

Coast Live Oak Woodland

Coast live oaks (*Quercus agrifolia*) provide moderate canopy cover along the bottom of Gregory Canyon. The understory is dominated by poison oak (*Toxicodendron diversilobum*), among other species, and is accompanied by a high diversity of herbaceous and shrubby species. Other trees occurring less frequently in Gregory Canyon include Engelmann oak (*Quercus engelmannii*). The coast live oak woodland on the slope east of the Verboom residence also includes Fremont cottonwood (*Populus fremontii*). Coast live oak woodland occurs throughout the main drainage of Gregory Canyon and its associated tributaries and as stands on the upper slopes of the canyon. Other stands of oak woodland outside the landfill footprint are situated in a minor canyon west of Gregory Canyon, on a slope in the southeastern portion of the landfill site, on a steep slope overlooking the San Luis Rey River Valley, and abutting SR 76. A total of 63.9 acres of coast live oak woodland occurs on the landfill site.

Cottonwood-Willow Riparian Forest

This association is a dense, structurally diverse, riparian habitat dominated by black willow (*Salix gooddingii*) and arroyo willow (*Salix lasiolepis*) with smaller amounts of Fremont

cottonwood and western sycamore. The understory consists of mule fat (*Baccharis salicifolia*), and sandbar willow (*Salix exigua*). It occurs along the edges of the San Luis Rey River. A total of 27.0 acres of cottonwood-willow riparian forest occurs on the landfill site (1.3 acres of which are disturbed).

Mule Fat Scrub

Mule fat scrub is a shrubby, riparian community dominated by mule fat. Mule fat scrub occurs along intermittent streams with a fairly coarse substrate and moderately deep water table (Holland 1986). Understory vegetation is often composed of non-native, weedy species or is lacking altogether. Mule fat scrub occurs in small stands along the drainage channel at the northern end of Gregory Canyon. A total of 1.4 acres of mule fat scrub occurs on the landfill site.

Southern Willow Scrub

Southern willow scrub is a winter-deciduous riparian community dominated by willows (*Salix* spp.), with most stands being too dense to allow much understory development. This association occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during floods (Holland 1986). Dominant willow species include arroyo willow and red willow (*Salix laevigata*). Other species associated with this community include black willow, mule fat, Fremont cottonwood, and western ragweed (*Ambrosia psilostachya*). Southern willow scrub occurs along the San Luis Rey River and the drainage channel at the northern end of Gregory Canyon. A total of 33.7 acres of southern willow scrub occurs on the landfill site (2.9 acres of the habitat is disturbed).

Open Channel

Open channel refers to areas of the sandy, sparsely vegetated, active floodplain of the San Luis Rey River. Although most of these areas lack vegetation, portions of the San Luis Rey River floodplain supports riparian plant species in an early successional state. A total of 12.5 acres of open channel occurs on the landfill site.

Ponds

Ponds are areas of open water that usually lack emergent vegetation, although the shallow margins may support freshwater marsh vegetation. These areas are associated with the dairies and are surrounded by disturbed habitat. A total of 0.4 acre of ponds occurs on the landfill site.

Annual Grassland

Where the native vegetation has been severely or repeatedly degraded by grazing, agriculture, fire or other perturbation, the native vegetation often becomes annual (non-native) grassland. In these situations, non-native grasses and weeds dominate the vegetation community, and there are few to none of the early successional elements of the former community. Dominant plants in annual grassland include slender wild oat (*Avena barbata*), brome grasses, and fascicled tarweed (*Hemizonia fasciculata*). A total of 34.5 acres of annual grassland occurs on the landfill site.

Disturbed Habitat

This category includes unpaved roads and areas that have been brushed, graded, or landscaped. These places either support weedy, non-native vegetation, ornamental vegetation, or lack

vegetation. on the landfill site. A total of 34.0 acres of disturbed habitat occurs on the landfill site.

Agricultural Land

Agricultural land refers to those areas supporting active agricultural cultivation or cattle grazing. A total of 78.7 acres of agricultural land occurs on the landfill site.

Agricultural Land/Developed

The dairies on the landfill site were mapped as a combination of agricultural land and developed land and occupy 88.3 acres.

Developed Land

Developed land is defined as any area that supports permanent man-made structures or human activities that inhibit the succession of native plant communities or the invasion of non-native species. Areas mapped as developed land include paved roads, houses and yards. A total of 6.2 acres of developed land occurs on the landfill site.

4.9.1.2 Areas Subject to ACOE and CDFG Jurisdiction

Jurisdictional Waters of the U.S. are regulated by the ACOE, and streambeds with associated vegetation are regulated by the CDFG. Table 4.9-2 presents the jurisdictional acreage delineated on the landfill site.²

TABLE 4.9-2
JURISDICTIONAL AREAS DELINEATED ON THE GREGORY CANYON LANDFILL SITE

RESOURCE	ACOE		CDFG
	WETLANDS (ACRES)	NON-WETLAND WATERS OF THE U.S. (ACRES)	JURISDICTIONAL AREAS (ACRES)
Southern Willow Scrub	1.97	--	2.05
Southern Willow Scrub—disturbed	--	--	2.33
Mule Fat Scrub	0.38	--	0.38
Coast Live Oak Woodland	--	--	5.9
Open Channel	--	4.25	4.25
Streambed	--	0.70	0.32
Total	2.35	4.95	15.23
Note: Based on the habitats present on site, the total amount of potential jurisdictional area on the landfill property is approximately 75 acres; however, the area delineated only covers the original impact footprint, which was subsequently reduced as noted in Table 4.9-5.			
Source: HELIX Environmental Planning, Inc., 2002			

4.9.1.3 Plant Species

Two-hundred sixty-nine plant species were observed on the landfill site by Pacific Southwest Biological Services (PSBS) in 1991. Ten additional species were observed by HELIX in May 1998 for a total of 279 species.

² The ACOE may not have jurisdictional authority over the landfill footprint in light of the recent decision by the 9th Circuit in *Resource Investments v. U.S. Army Corps of Engineers*, 151 F.3d 1162 (9th Cir, 1998). The ACOE would have authority over the proposed access road and bridge construction.

4.9.1.4 Animal Species

One hundred thirteen animal species were observed on the landfill site between 1990 and 1995 (Butler Roach Group 1990; PSBS 1991; Michael Brandman Associates [MBA] 1992; Ogden 1993; Dudek 1995). Forty-three additional species were observed by HELIX in spring 1998 for a total of 156 species.

4.9.1.5 Regional Landscape Association

The landfill site is part of a mosaic of interconnected blocks of natural habitats and agricultural lands in northern San Diego County. This mosaic allows for wildlife movement across the regional landscape, for example, from Valley Center to the Agua Tibia wilderness and from the mountains to the Pacific Ocean. More specifically, the landfill site provides a variety of habitat types, both upland and riparian, and allows for only somewhat constrained movement in all directions across the site. The dairies, residences, and SR 76 are the existing constraints to movement on site. Other potential constraints to wildlife movement on to and off of the site are from the surrounding land uses. The landfill site is surrounded by agricultural land and rural residences to the south, southwest, and northwest. The Hanson sand and gravel operation occurs in the San Luis Rey River to the north adjacent to the landfill site. Undeveloped land occurs only to the east, and north of SR 76.

4.9.1.6 Sensitive Biological Resources

Sensitive resources are those defined as: (1) habitat areas or vegetation communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; and (2) species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened populations.

Sensitive Vegetation Communities

The following vegetation communities observed on the landfill site are sensitive: coastal sage scrub, coastal sage scrub/chaparral, native perennial grassland, coast live oak woodland, cottonwood/willow riparian forest, southern willow scrub, and mule fat scrub. Open channel and ponds are sensitive because they are in the San Luis Rey River floodplain. Also, the open channels and ponds are regulated by federal and state agencies.

Sensitive Plant Species Observed

No plant species considered threatened or endangered by the USFWS or CDFG were observed on the landfill site. Three species recognized as sensitive by the California Native Plant Society (Skinner and Pavlik 1994) were detected on the landfill site: Engelmann oak, Rainbow manzanita (*Arctostaphylos rainbowensis*), and prostrate spineflower (*Chorizanthe procumbens*). The three regionally sensitive plant species identified on the landfill site are shown on Exhibits 4.9-1a and 4.9-1b and are described below in Table 4.9-3. Only one individual Rainbow manzanita was observed on the property, and that was in 1991. This species was not found during subsequent surveys in May 1998 and February 2002. Therefore, it is presumed to be absent from the landfill property.

**TABLE 4.9-3
SENSITIVE PLANT AND ANIMAL SPECIES OBSERVED**

SPECIES	STATUS	HABITAT	STATUS ON SITE
Plant Species			
Rainbow manzanita	CNPS List 1 B R-E-D 3-3-3	Chaparral between about 600 and 1,800 feet above mean seal level (MSL).	One individual was reported growing in dense chaparral on the landfill site (PSBS 1991). This species was not found during subsequent surveys in May 1998 and February 2002 and is presumed to be absent from the site.
Engelmann oak	CNPS List 4 R-E-D 1-2-2	Generally occurs on mesas and open slopes in foothill and coastal areas below about 2600 feet above MSL.	Engelmann oaks occur in limited numbers interspersed among the more common coast live oak. Approximately 10 Engelmann oaks occur at the southern end of Gregory Canyon along the main drainage channel. Approximately 200 feet north of this patch were three more Engelmann oaks. A total of 25 Engelmann oaks was observed in the landfill footprint in a 1991 oak tree inventory by PSBS (1991).
Prostrate spineflower	CNPS List 4 R-E-D 1-2-2	Gabbroic clay or granitic soils in chaparral and coastal scrub.	Several hundred prostrate spineflowers were detected on a ridgeline in the southwestern portion of the project area (PSBS 1991). In 1998, approximately 550 plants were identified on site.
Animal Species			
Arroyo southwestern toad	USFWS—FE CDFG—CSC	Shallow pools and open sand and gravel flood terraces of medium- to large-sized intermittent or perennial streams that are flooded on a fairly regular basis. Also breed in smaller streams, deep canyons, and utilize upland habitats as juveniles, subadults, and adults (USFWS 1999).	In 1995 surveys, numerous tadpoles and newly emerged toadlets were observed along the San Luis Rey River and its banks in the study area (Dudek 1995). Male toads were also heard calling from the river in and adjacent to the project site in 1993 and 1995. Dudek biologists estimated approximately 25 male toads calling in the segment of the San Luis Rey River between Pala and I-15 in a single night, including a breeding population in the Fenton sand mine bordering the site to the east and a male calling from the river at the current low-flow crossing on the landfill site. According to Sweet (1992), the toads have a sex ratio of approximately 1:1, and only about half of the males would be expected to call on any given night. The population along this segment of the river would be considered a major population on a range-wide level. In 1998, three calling, juvenile male toads were observed along the San Luis Rey River on the landfill site, two of which occurred at the site of the proposed landfill access road bridge. In 2000, HELIX observed from 3 to 9 toads on 5 different nights. Due to variations in body size, at least some toads observed on one night, for example, were different from those observed on another night. The majority of the toads were observed along the SDCWA aqueduct road south of the San Luis Rey River and on a dirt road through grassland west of the aqueduct

4.9 BIOLOGICAL RESOURCES

SPECIES	STATUS	HABITAT	STATUS ON SITE
			road and south of the river (Appendix L).
Southwestern pond turtle	USFWS—FSC CDFG—CSC	Variety of wetland habitats including freshwater marshes, creeks, ponds, and reservoirs. Adequate basking sites, deep water retreats, and egg laying areas are important components of habitat.	The southwestern pond turtle was observed along the San Luis Rey River adjacent to the project site.
San Diego horned lizard	USFWS—FC CDFG—CSC	Frequents a variety of habitats from sage scrub and chaparral to coniferous and broadleaf woodlands. Habitat requirements include open areas for sunning, bushes for cover, and fine loose soil for rapid burial.	San Diego horned lizards were observed at several locations on the landfill site during spring surveys (MBA 1992; Dudek 1995; HELIX 1998). This species is likely to occur throughout the more open scrub and chaparral habitats in the project area.
Coronado Island skink	USFWS—FSC CDFG—CSC	Open areas, sparse brush, and oak woodlands, usually under rocks, leaf litter, logs, debris, or in the shallow burrows it digs (Zeiner et al. 1988).	One skink was observed on the landfill site in 1989 (Butler Roach Group 1990). Mapping data not provided. This species is likely to occur in moderate numbers in the riparian and scrub habitats in the project area.
Orange-throated whiptail	USFWS—FSC CDFG—CSC	Prefers sage scrub that covers about 50 percent of the ground without dense grasses in between. Orange-throated whiptails also inhabit dense to extremely open stands of sage, as well as chamise chaparral and floodplain areas.	Orange-throated whiptails were relatively common throughout the landfill site in most of upland habitats. It is also likely to occur in riparian and oak woodland habitats in the project area.
Coastal western whiptail	USFWS—FSC CDFG—CSC	Associated with openings in dense vegetation such as chaparral and sage scrub, especially in and around sandy washes and streambeds (Stebbins 1985).	Coastal western whiptails were observed at several locations and are probably common residents of much of the upland habitats in the project area.
Coastal rosy boa	Regionally Sensitive	Dry, rocky brushlands and arid habitats, usually near intermittent streams but does not require permanent water.	A rosy boa was observed in the west-central portion of the landfill site south of Highway 76 (Dudek 1995). This species is likely to occur in moderate numbers throughout the naturally vegetated habitats in the project area.
Coast patch-nosed snake	USFWS—FSC CDFG—CSC	Coastal sage scrub, chaparral, riparian, grasslands, and agricultural fields (Zeiner et al. 1988). It prefers open habitats with friable or sandy soils, burrowing rodents for food, and enough cover to escape being preyed upon.	A coast patch-nosed snake was observed during 1991 surveys (PSBS 1991). Mapping data not provided. This species is likely to occur in any of the undeveloped habitats in the project area.

SPECIES	STATUS	HABITAT	STATUS ON SITE
Northern red-diamond rattlesnake	USFWS—FSC CDFG—CSC	Chaparral, coastal sage scrub, along creek banks, and in rock outcrops or piles of debris with a supply of burrowing rodents for prey.	The red diamond rattlesnake is fairly common on the site and likely occurs throughout the scrub and riparian habitats.
Snowy egret	CDFG—Special Animal (rookery site)	Bays, estuaries, and lagoons along the coast, and ponds and lakes inland to Lake Henshaw.	A snowy egret was detected during 1991 surveys. Mapping data not provided. This species is expected to forage in wetland habitats but is not expected to nest in the project area.
Green heron	Everett—Declining	Riparian woodlands and the edges of brackish marshes, freshwater lakes, and ponds.	Green herons were observed roosting in riparian habitat on the landfill site and passing through the site while flying along the San Luis Rey River. Mapping data not provided. This species has low potential to breed in riparian habitat along the river in the project area.
Great blue heron	CDFG—Special Animal (rookery site)	Fresh and saltwater emergent wetlands and estuaries. Less common along rivers, in croplands, pastures, and foothill ponds (Zeiner et al. 1990).	The great blue heron was observed foraging in the Fenton sand pit area immediately adjacent to the eastern landfill site boundary. It is not likely to breed on or near the project area.
Black-crowned night heron	CDFG—Special Animal (rookery site) Everett—Sensitive	Fresh and saline emergent wetlands. Nests and roosts in trees with dense foliage or in dense emergent wetlands.	A black-crowned night heron was detected at the landfill site during 1991 surveys (PSBS 1991). Mapping data not provided. This species is unlikely to nest in the project area, although it may occasionally forage in wetland habitat or roost in the streamside trees.
White-faced ibis	Regionally Sensitive CDFG—CSC	Freshwater lagoons, rivers, lakes, wet agricultural fields, and occasionally salt marshes.	A white-faced ibis was observed at the landfill site in the San Luis Rey River. This species is not likely to breed in the project area given its limited breeding distribution.
Double-crested cormorant	CDFG—CSC (rookery site)	Seacoasts, bays, rivers, and lakes. Nests on coastal seacliffs.	Double-crested cormorants were observed foraging and roosting at the Fenton sand pit area immediately adjacent to the eastern landfill site boundary.
White-tailed kite	CDFG—Special Animal (nesting)	Nests in riparian or oak woodland adjacent to grassland or open fields where it hunts rodents.	Several pair of white-tailed kites were observed foraging and roosting on the landfill site. It is likely that they nest in the project area as well.
Northern harrier	CDFG—CSC (nesting) Everett—Declining	Harriers breed in marshes and grasslands and forage in grasslands, agricultural fields, wetlands, and open coastal sage scrub.	The northern harrier was observed foraging at several locations on the landfill site.
Sharp-shinned hawk	CDFG—CSC (nesting)	A variety of habitats and requires a certain amount of dense cover, but this can be localized and scattered through relatively open country.	This species was observed foraging on the landfill site and is likely a regular visitor during the winter season. Mapping data not provided.

4.9 BIOLOGICAL RESOURCES

SPECIES	STATUS	HABITAT	STATUS ON SITE
Cooper's hawk	CDFG—CSC (nesting)	Nests primarily in oak woodlands but occasionally in willows or eucalyptus (<i>Eucalyptus</i> spp.).	The Cooper's hawk was observed nesting near the San Luis Rey River channel in 1993 and was frequently detected on the landfill site between 1989 and 1995.
Red-shouldered hawk	Blue List 1972-1986 (Tate 1986)	Open woodlands, grasslands and agricultural fields. Prefers mature eucalyptus stands, oak woodlands, and riparian forests.	Red-shouldered hawks have been observed along the San Luis Rey River on the project site.
Golden eagle	USFWS—Bald Eagle Act CDFG—CSC (nesting and wintering)	Golden eagles forage in grassy and open shrubby habitats and nest primarily on cliffs, with secondary use of large trees (e.g., oaks and sycamore).	There is a golden eagle nesting territory at Gregory Mountain that has been active since at least the 1930s (Dixon 1937; Scott 1985; Dave Bittner, pers. comm. 1997). A golden eagle pair was observed in its nest and with two nestlings in spring 1998. The pair was observed soaring over the San Luis Rey River, Lucio Dairy, and grassland west of the facilities area by HELIX in 2000.
Barn owl	Migratory Bird Treaty Act	Grassland, chaparral, riparian, and other wetlands.	A barn owl was observed in 1995 at the abandoned house in the southwestern portion of the project site as well as along the San Luis Rey River on site.
Great horned owl	Migratory Bird Treaty Act	Variety of forests with meadows and other openings. Commonly feeds and breeds in riparian, conifer, chaparral, and desert habitats.	A great horned owl was observed in 1995 in the upper end of Gregory Canyon.
Western screech owl	Migratory Bird Treaty Act	Open oak, pinyon-juiper, riparian, redwood, and mixed conifer habitats.	Western screech owls were observed in six locations on site in 1995: three in Gregory Canyon and three on approximate north-facing slopes above the San Luis Rey River west of Gregory Canyon.
Short-eared owl	CDFG—CSC (nesting)	The species typically nests in well vegetated open areas including grasslands, grain fields, riparian edges, and marshes.	One short-eared owl was tentatively identified in the central drainage of Gregory Canyon in 1994. This is probably a vagrant individual as this species is usually found near the coast. There are only a few historic breeding records for the County (Unitt 1984) so this species would be unlikely to nest in the project area.
Downy woodpecker	Everett—Declining	Restricted to mature lowland riparian woodland.	Four downy woodpeckers were observed on the landfill site (PSBS 1991). There is high potential for this species to nest in the project area in some of the hollow snags present in the riparian habitats.

SPECIES	STATUS	HABITAT	STATUS ON SITE
Southwestern willow flycatcher	USFWS—FE CDFG—CE	Occurs in dense riparian woodlands of willow, cottonwood, and other deciduous shrubs and trees. In general, the riparian habitat of this species tends to be rare, isolated, small and/or linear patches, separated by vast expanses of arid lands.	Three individuals were observed on the landfill site in 1995 (Dudek 1995). These individuals are believed to be migrants because they occurred only during the first two weeks of surveys, and no nesting was observed. This species was not observed during focused surveys in spring/summer 1998; however, two pairs of flycatchers were detected by Jeff Wells (TW Biological Services) and confirmed by Peter Beck (Ecological Ornithologist at San Diego State University) in July 1998 in the vicinity of the Highway 76/ Couser Canyon Road junction west of the landfill site. A nest was found for one of the pairs. In 2000, two calling male flycatchers were observed immediately west of the low-flow crossing on the landfill site (Appendix L).
Coastal cactus wren	Regionally Sensitive CDFG—CSC	Restricted to clumps of prickly-pear (<i>Opuntia littoralis</i> and <i>O. oricola</i>) or cholla (<i>O. proliferata</i>) growing in coastal sage scrub or along washes.	A cactus wren was observed during several site visits in the southwestern portion of the site near the abandoned house in 1998.
Blue-gray gnatcatcher	Everett—Species of Local Concern	Coastal sage scrub, chaparral, and riparian scrub. Breeds in montane chaparral and desert riparian areas.	The blue-gray gnatcatcher was detected (PSBS 1991), and could potentially breed in chaparral and riparian habitats and also use the coastal sage scrub habitats in the project area in winter. Mapping data not provided.
Coastal California gnatcatcher	USFWS—FT CDFG—CSC	Primarily coastal sage scrub.	The coastal California gnatcatcher has been observed twice on the landfill site; a single male was seen in late July 1995, north of Highway 76 and well outside the project impact area (Dudek 1995). A single male was also observed on site on one occasion in April 1998 by HELIX during protocol surveys. The single bird was observed in the footprint of Borrow/Stockpile Area B. Biologists permitted to perform gnatcatcher surveys were also on site in gnatcatcher habitat during the breeding season on another six occasions for other surveys, and no gnatcatchers were observed or detected. Previous surveys for the gnatcatcher in 1989, 1991, 1992, and 1993 (Butler Roach Group 1990; PSBS 1991; MBA 1992; Ogden unpub. data 1993) on the landfill site were negative. In 2000, gnatcatcher survey results were also negative (Appendix L). The limited sightings and the absence of nearby core populations (Mock, pers. comm. 1999) suggest the project area is of low to marginal value for gnatcatchers (Ogden 1995).
Loggerhead shrike	CDFG—CSC	Occupies a variety of habitats, occurring wherever bushes or trees are scattered on open ground.	The loggerhead shrike was recorded regularly on the landfill site and has a moderate to high potential to nest in the project area.

4.9 BIOLOGICAL RESOURCES

SPECIES	STATUS	HABITAT	STATUS ON SITE
Least Bell's vireo	USFWS—FE CDFG—CE	Inhabits riparian woodland and is most frequent in areas that combine an understory of dense, young willows or mulefat with a canopy of tall willows.	Spring surveys in 1993, and 1995 (Ogden unpub. data, Dudek 1995) have found from 3 to 4 pairs of breeding least Bell's vireo along the San Luis Rey River on the project site. In 1995, two unpaired territorial males were observed in remnant riparian woodland remaining after intensive scouring of the channel during winter and spring flooding. In 1998, four territorial male vireos were identified along the river on the landfill site. In 2000, seven territorial males were identified by HELIX along the river on the landfill site (Appendix L).
Yellow warbler	CDFG—CSC (nesting)	Mature riparian woodland.	The yellow warbler was observed along the San Luis Rey River on the landfill site.
Yellow-breasted chat	CDFG—CSC (nesting) CNPS List 4; R-E-D 1-2-2	Riparian woodland.	The yellow-breasted chat is fairly common in the project area in the riparian habitats and has been observed on the landfill site.
Blue grosbeak	Everett—Species of Local Concern	Riparian scrub and woodland edges.	The blue grosbeak was observed on the landfill site and could potentially forage throughout the riparian and open habitats.
Southern California rufous-crowned sparrow	USFWS—FSC CDFG—CSC	Coastal sage scrub and grassy or rocky slopes.	Rufous-crowned sparrows are common breeding residents at the landfill site.
Tricolored blackbird	USFWS—FSC CDFG—CSC	Forages in agricultural fields, grasslands, lakeshores, and flooded lands (Beedy et al. 1991; Zeiner et al. 1990).	A single tricolored blackbird was detected in 1991 surveys (PSBS 1991). Mapping data not provided. This species has low potential to nest in the project area; however, this species could nest off site and forage in annual grasslands on the landfill site.
San Diego black-tailed jackrabbit	USFWS—FSC CDFG—CSC	Occurs primarily in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present.	The black-tailed jackrabbit was observed at the inactive Lucio Dairy on the landfill site and likely occurs throughout similar habitats on site.

FEDERAL SPECIES DESIGNATIONS

FE = Federal listed endangered
 FT = Federal listed threatened
 PE = Federal proposed endangered
 PT = Federal proposed threatened
 C1 = Category 1 for proposed listing

STATE SPECIES DESIGNATIONS

CE = State listed endangered
 CR = State listed rare
 CT = State listed threatened
 CSC = species of special concern
 FSC = Federal Special Concern species (a "term-of-art" for former Category 2 candidates)
 RS = Regionally Sensitive[†]
 Special Animal Refers to all vertebrate and invertebrate taxa of concern to the Natural Diversity Data Base regardless of legal or protection status.
 Fully Protected May not be taken or possessed without a permit from the Fish and Game Commission or CDFG.

CALIFORNIA NATIVE PLANT SOCIETY DESIGNATIONSThe CNPS List

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

The 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.

E (Endangerment)

- 1: Not endangered.
- 2: Endangered in a portion of its range.
- 3: Endangered throughout its range.

D (Distribution)

- 1: More or less widespread outside California.
- 2: Rare outside California.
- 3: Endemic to California.

Source: *HELIX Environmental Planning, Inc. 2002*

Sensitive Animal Species Observed

Thirty-seven sensitive animal species were observed on the landfill site between 1989 and 1995 (Exhibits 4.9-2a and 4.9-2b). Two new observations of sensitive species, cactus wren (*Campylorhynchus brunneicapillus*) and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) were made by HELIX in spring 1998 for a total of 39 species.

Host plants (dot-seed plantain [*Plantago erecta*] and owl's clover [*Castilleja exserta*]) for the Quino checkerspot butterfly, a federally listed endangered species, have been observed on the landfill site (Exhibits 4.9-1a and 4.9-1b). Surveys conducted by HELIX during the 1998 flight season (March 9 through April 27) and the 2000 flight season (March 31 through May 5) (Appendix L) determined that the butterfly is not present on the landfill site.

At least three bat species (based on size differences and flight behavior) were observed foraging over the landfill site at twilight. There was no identification to species level, and focused surveys for bats were not conducted (Ogden 1995). No other sensitive mammals were observed or detected in the project area, including the Stephens' kangaroo rat for which a survey for kangaroo rat sign was conducted in December 1997 (Montgomery 1997-see Appendix D of the technical report).

The 39 species (excluding the bats described above) observed on the landfill site are described in Table 4.9-3. Of the 39 species observed on the Gregory Canyon landfill site, three of the species are federally endangered (i.e., southwestern willow flycatcher, least Bell's vireo, and southwestern arroyo toad) and one of the species is federally threatened (i.e., coastal California gnatcatcher). The vireo and flycatcher are also listed by the state as endangered.

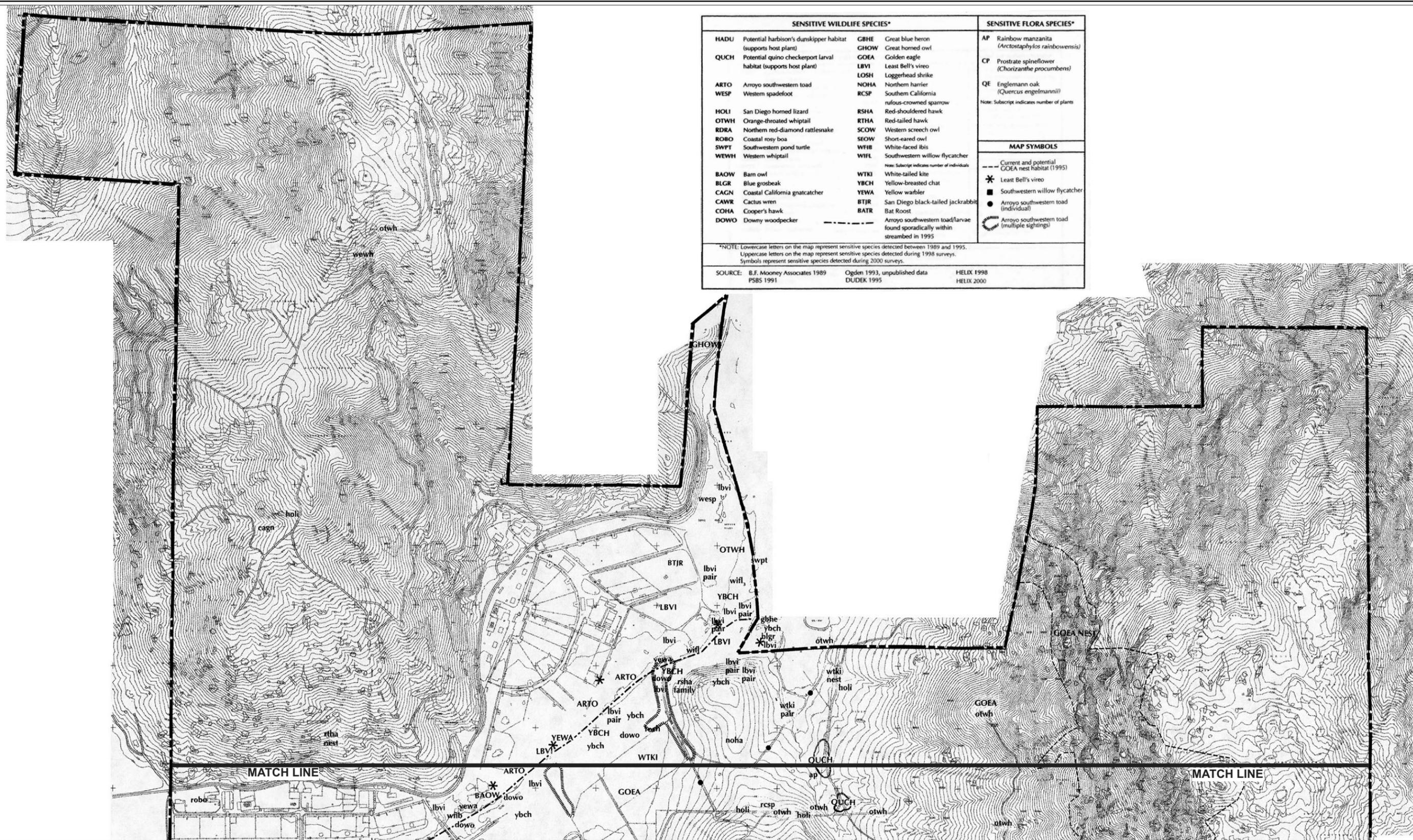
The site contains designated critical habitat for the least Bell's vireo, southwestern willow flycatcher, and coastal California gnatcatcher. The USFWS has recently proposed critical habitat for the arroyo southwestern toad that extends onto the property.

4.9.2 SIGNIFICANCE CRITERIA

The County uses the following criteria to determine whether or not a project would result in a significant impact.

Direct loss of wetlands or riparian habitat.

- Disturbance to intermittent streams when they serve for wildlife movement.
- Any direct loss of oak woodland habitat, changes in its soil moisture or grading within 50 feet of the canopy drip line for trees or habitat.
- Direct loss of any coastal sage scrub occurring on site.
- Direct loss of greater than 10 percent of native grasslands occurring on site.
- Direct loss of 20 percent of sensitive plant populations defined by the County of San Diego as rare or endangered occurring on site.

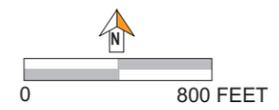


SENSITIVE WILDLIFE SPECIES*		SENSITIVE FLORA SPECIES*	
HADU	Potential harbison's dunskipper habitat (supports host plant)	GBHE	Great blue heron
QUCH	Potential quino checkerport larval habitat (supports host plant)	GHOW	Great horned owl
ARTO	Arroyo southwestern toad	GOEA	Golden eagle
WESP	Western spadefoot	LBVI	Least Bell's vireo
HOLI	San Diego horned lizard	LOSH	Loggerhead shrike
OTWH	Orange-throated whiptail	NOHA	Northern harrier
RDRA	Northern red-diamond rattlesnake	RCSP	Southern California rufous-crowned sparrow
ROBO	Coastal rosy boa	RSHA	Red-shouldered hawk
SWPT	Southwestern pond turtle	RTHA	Red-tailed hawk
WEWH	Western whiptail	SCOW	Western screech owl
BAOW	Barn owl	SEOW	Short-eared owl
BLGR	Blue grosbeak	WFIB	White-faced ibis
CAGN	Coastal California gnatcatcher	WIFL	Southwestern willow flycatcher
CAWR	Cactus wren	WTKI	White-tailed kite
COHA	Cooper's hawk	YBCH	Yellow-breasted chat
DOWO	Downy woodpecker	YEWA	Yellow warbler
		BTJR	San Diego black-tailed jackrabbit
		BATR	Bat Roost
			Arroyo southwestern toad/larvae found sporadically within streambed in 1995

MAP SYMBOLS	
---	Current and potential GOEA nest habitat (1995)
*	Least Bell's vireo
■	Southwestern willow flycatcher
●	Arroyo southwestern toad (individual)
○	Arroyo southwestern toad (multiple sightings)

*NOTE: Lowercase letters on the map represent sensitive species detected between 1989 and 1995. Uppercase letters on the map represent sensitive species detected during 1998 surveys. Symbols represent sensitive species detected during 2000 surveys.

SOURCE: B.F. Mooney Associates 1989 Ogden 1993, unpublished data HELIX 1998
 PSBS 1991 DUDEK 1995 HELIX 2000



Sources: Helix Environmental, Revised 7/24/00

Exhibit 4.9-2a
Existing Sensitive Species Map

This page left intentionally blank.

This page left intentionally blank.

Further, CEQA Guidelines, Section 15382 define “significant effect on the environment” as a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, water, flora, fauna, etc.” The finding of significance is based on certain criteria outlined in the CEQA Guidelines, evaluation of technical data (e.g., species data and sensitivity status), and professional judgment and experience. It is important to note that the significance of an activity may vary with the setting.

In addition, to the above criteria, a significant impact was identified if the project would:

- adversely affect a state or federal listed species or its habitat;
- reduce the number of unique or rare species which would affect the species’ long-term viability;
- permanently disturb wildlife movement or disrupt its use for an extended period;
- impact sensitive habitat which is regionally limited; and/or
- conflict with long-term regional or subregional conservation goals.
- result in noise levels greater than 60 dB(A) L_{eq} at the outside perimeter of gnatcatcher habitat if it would affect gnatcatcher breeding, and at any point within least Bell’s vireo and southwestern willow flycatcher habitat during the breeding season.

4.9.3 POTENTIAL IMPACTS

The following section describes potential direct and indirect impacts associated with the Gregory Canyon Landfill project caused by construction, operation, and closure of the proposed project.

4.9.3.1 Direct/Indirect Impacts

Sensitive Vegetation Communities

The following sensitive resources would be significantly impacted by the landfill project: 178.8 acres (20 percent) of coastal sage scrub, 44.1 acres (60 percent) of coastal sage scrub/chaparral, 27.0 acres (42 percent) of coast live oak woodland, 0.2 acre (50 percent) of native perennial grassland, 2.4 acres (6 percent) of southern willow scrub, 0.2 acre (14 percent) of mule fat scrub, and 0.2 acre (2 percent) of open channel (Table 4.9-4 and Exhibits 4.9-3a and 4.9-3b).

Direct significant impacts to sensitive vegetation communities from San Diego Gas and Electric access road improvements are currently estimated at 0.5 acre as listed in Table 4.9-4. The vegetation community affected would be coastal sage scrub.

Non-Sensitive Vegetation Communities and Developed Land

Implementation of the landfill project would result in the direct loss of 26.6 acres (6 percent) of chaparral and 15.6 acres (45 percent) of annual grassland. Chaparral and annual grassland are relatively abundant and widely distributed at both local and regional scales. In addition, neither of these vegetation communities is under immediate threat from development, is considered critical habitat for federally- or state-listed species, nor receives agency protection. Therefore, impacts to these communities would be adverse but not significant.

In addition, the following non-sensitive vegetation communities and developed land would be directly impacted by the landfill project: disturbed habitat and agricultural land. These lands contribute very little to the biological diversity of the region and receive no agency protection. Therefore, direct and indirect impacts to these lands would be less than significant.

This page left intentionally blank

**TABLE 4.9-4
VEGETATION COMMUNITY IMPACTS ON THE GREGORY CANYON LANDFILL SITE**

VEGETATION COMMUNITY	TOTAL ACREAGE ON SITE	ACCESS ROAD AND BRIDGE	HAUL ROAD ^c	BORROW/ STOCKPILE AREA A	BORROW/ STOCKPILE AREA B	LANDFILL AREA AND SITE FACILITIES ^d	GAS MONITORING PROBES AND GROUNDWATER MONITORING WELLS	SDG&E TOWER/ LINE RELOCATION ACCESS ROAD IMPROVEMENT	TOTAL ACREAGE IMPACTED	TOTAL ACREAGE PRESERVED IN DEDICATED OPEN SPACE ^{e, f}
Coastal sage scrub ^a	897.6	0.0	0.02	15.6	62.4	99.7	0.61	0.5	178.8	621.5
Coastal sage scrub/chaparral	73.9	0.0	0.0	0.0	0.0	44.0	0.1	0.0	44.1	29.8
Chaparral ^b	430.5	0.0	0.0	0.0	0.0	26.6	0.0	0.0	26.6	404.1
Native perennial grassland	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
Coast live oak woodland	63.9	0.0	0.0	0.1	1.4	25.5	0.0	0.0	27.0	30.0
Cottonwood-willow riparian forest ^a	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.0
Mule fat scrub	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
Southern willow scrub ^a	33.7	2.4	0.0	0.0	0.0	0.0	0.0	0.0	2.4	30.9
Open channel	12.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	11.3
Ponds	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Annual grassland	34.5	1.4	0.1	0.0	0.0	14.1	0.005	0.0	15.6	8.4
Disturbed habitat	34.0	1.0	0.0	0.0	0.5	0.4	0.0	0.0	1.9	19.1
Agricultural land	78.7	1.4	0.7	6.7	0.0	0.0	0.02	0.0	8.8	63.4
Agricultural land/ developed	88.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0	2.5	71.3
Developed	6.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	6.1
Total	1,783.0	8.9	0.9	22.4	64.5	210.3	0.74	0.5	308.2	1324.3

^a Includes disturbed and/or burned associations.

^b Includes rock outcrop/chaparral.

^c Reflects new grading to create haul road with turnouts along existing dirt road.

^d Incorporates disturbances caused by development of the landfill footprint (including fire clearance), facilities area, SDG&E tower pads, and gabion containment structures.

^e Additional acreage (approximately 50.6 acres) occurs on site that would not be impacted by the landfill project or be contained in easements for the SDCWA and Caltrans but that would not be dedicated in open space because it would be comprised biologically by the surrounding developed lands (identified as Other Areas on Exhibit 3-9). This acreage is made up of coastal sage scrub, coast live oak woodland, native perennial grassland, disturbed habitat, and agricultural land. These areas generally are located west of Borrow/Stockpile Area A, between the SDCWA easement and the landfill footprint, and between the easement for Pipelines 1 and 2 and the future Pipeline 6. These Other Areas combined with existing utility easements on site encompass 150.5 total acres of the site as noted in Exhibit 3-9.

^f The final amount of dedicated open space will be determined after the extent of SR 76 right-of-way dedication is determined in consultation with Caltrans.

Source: HELIX Environmental Planning, Inc. 2002

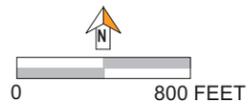
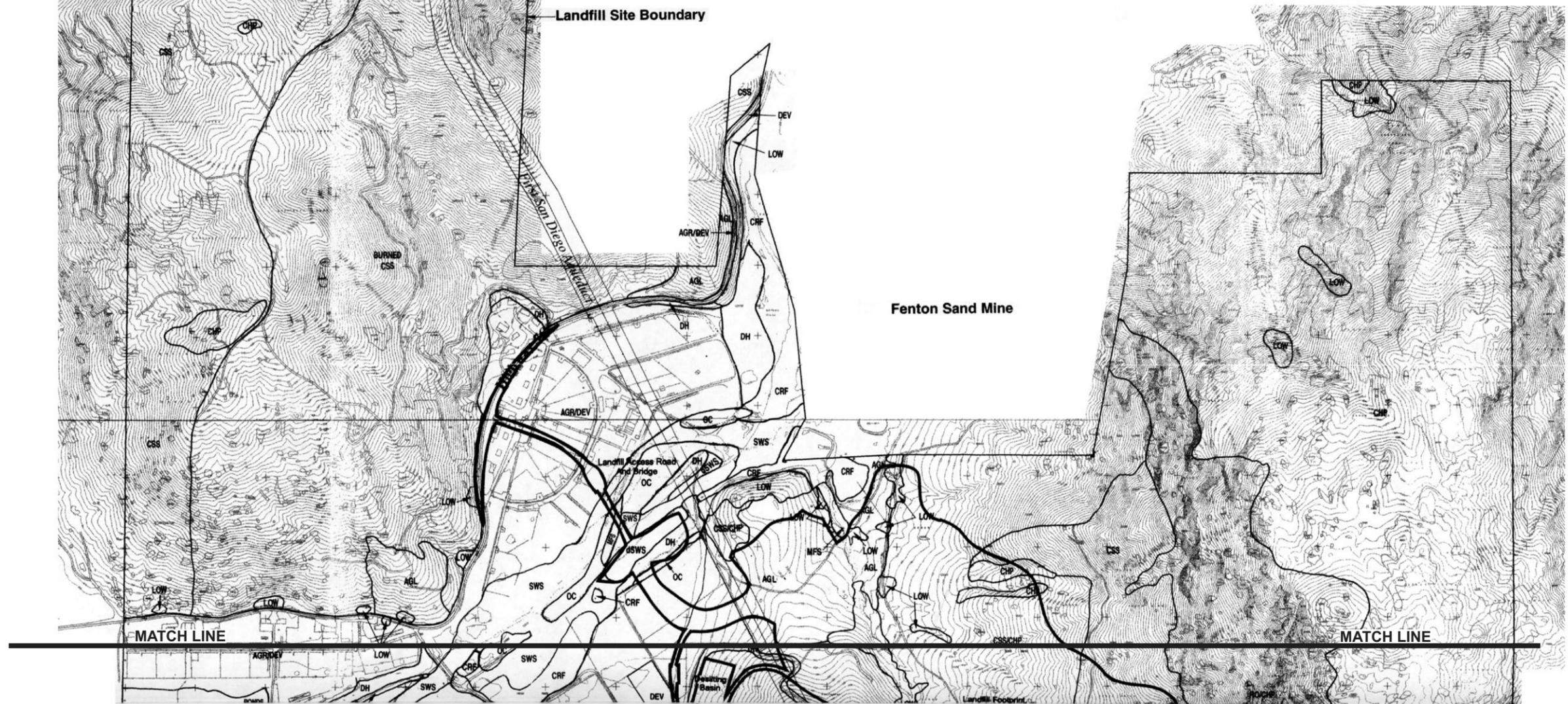
This page intentionally left blank.



VEGETATION TYPES

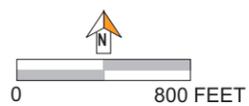
CSS	Coastal Sage Scrub	AGR	Agricultural Land
CHP	Chaparral	DH	Disturbed Habitat
RO/CHP	Rock Outcrop/Chaparral	DEV	Developed Land
LOW	Coast Live Oak Woodland	PGL	Native Perennial Grassland
CRF	Cottonwood-willow Riparian Forest	SWS	Southern Willow Scrub
OC	Open Channel	MFS	Mulefat Scrub
AGL	Annual (Non-native Grassland)		

Note: Lowercase "d" in front of a vegetation type indicates that it is disturbed.



Sources: Helix Environmental, Revised 7/24/00

This page left intentionally blank.



Sources: Helix Environmental, Revised 7/24/00

Exhibit 4.9-3b
Vegetation Map/Impacts

This page left intentionally blank.

Areas Subject to ACOE and CDFG Jurisdiction

The landfill project would have direct impacts to ACOE wetlands and non-vegetated Waters of the U.S. and CDFG jurisdictional areas. The impacts from the landfill project would be caused by a small portion of the landfill footprint and the landfill access road bridge. Some landfill project impacts would be temporary (from channel excavation associated with bridge construction), and some would be permanent (from the landfill footprint and bridge pilings). These impacts are described in Table 4.9-5. These impacts overlap with significant vegetation community impacts for which mitigation is proposed.

**TABLE 4.9-5
POTENTIAL IMPACTS TO JURISDICTIONAL AREAS*
FOR THE GREGORY CANYON LANDFILL**

TYPE OF IMPACT	ACOE WETLANDS (ACRES)	ACOE NON-WETLAND WATERS OF THE U.S. (ACRES)	CDFG JURISDICTION (ACRES)
Permanent landfill footprint	None	0.47 (unvegetated WUS)	To be provided (LOW) and 0.27 (Streambed)
Permanent facilities area	None	None	None
Permanent borrow/stockpile areas	None	0.13 (unvegetated WUS)	To be provided (LOW) and 0.1 (Streambed)
Permanent bridge pilings	0.004 (SWS)	0.001 (OC)	0.005 (total of ACOE impacts)
Temporary bridge construction (excavation only, no fill)	0.43 (0.23 SWS, 0.20 MFS)	1.65 (1.42 SWS, 0.23 OC)	3.78 (total of ACOE impacts plus 1.0 acre DH and 0.70 acre SWS)
Total	0.434	2.251	To be provided
*MFS = mule fat scrub; SWS = southern willow scrub (includes disturbed); LOW = coast live oak woodland; WUS = Waters of the U.S.; OC = open channel; DH = disturbed habitat.			
<i>Source: HELIX Environmental Planning, Inc. 2002</i>			

All impacts to jurisdictional areas are regulated under Section 404 of the Federal Clean Water Act and Section 1603 of the California Fish and Game Code. The applicant has submitted permit applications to both the USACOE and CDFG to authorize impacts to these jurisdictional areas. Meetings and coordination with the resource agencies is on-going on the topics of wetland permits and endangered species issues.

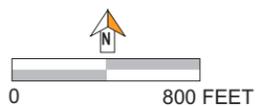
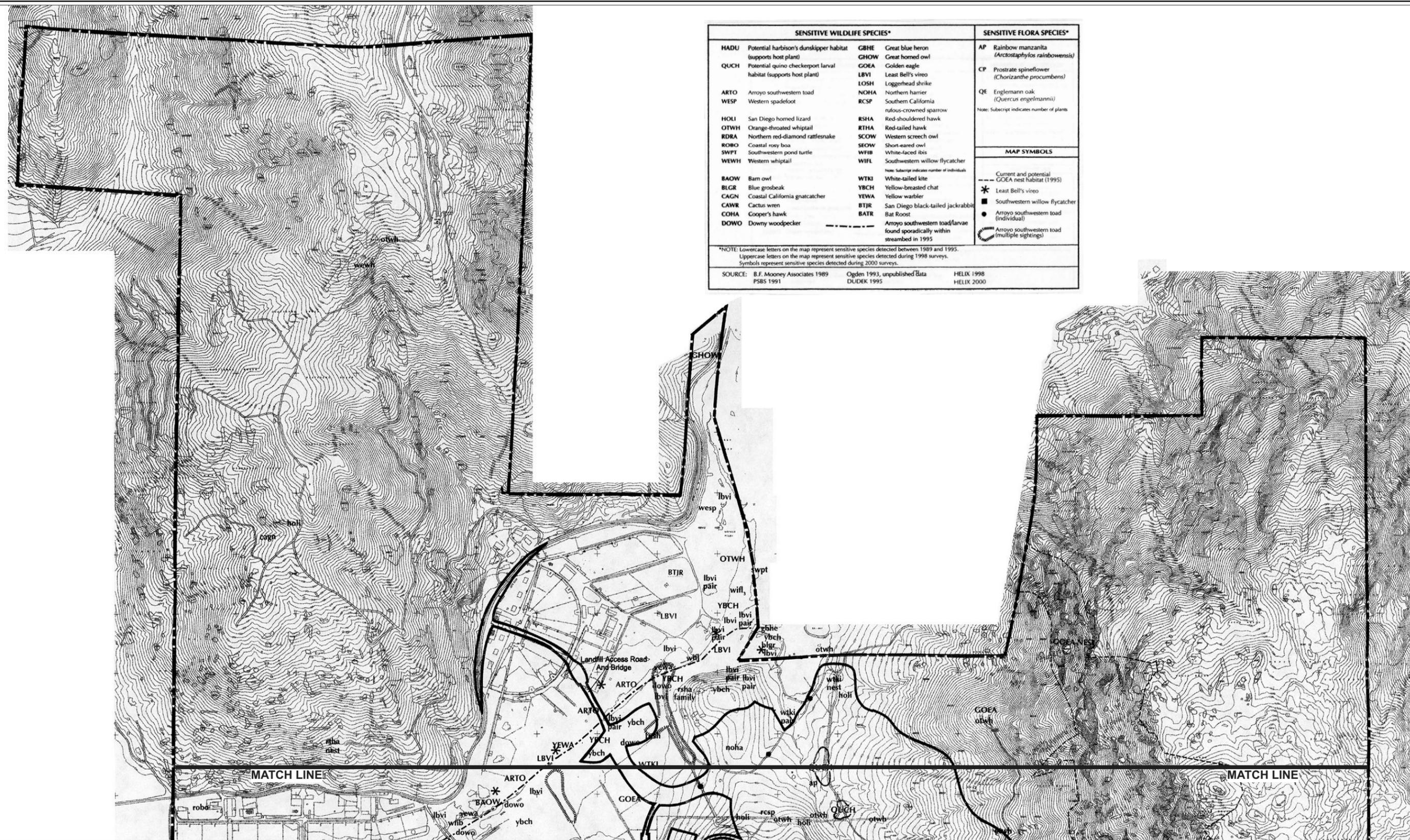
Plant Species

Locations of sensitive plant species in relation to the project features are shown on Exhibits 4.9-4a and 4.9-4b. The approximate number of individuals is used for assessing the overall magnitude of an impact rather than for describing the precise population size.

Rainbow manzanita

One individual shrub was encountered in dense chaparral in the northwestern portion of the landfill footprint (PSBS 1991). However, this species was not observed during subsequent surveys of the landfill property in May 1998 and February 2002, and it is presumed to be absent from the site. Therefore, there would be no impacts to the species from the landfill project.

This page left intentionally blank



Sources: Helix Environmental, Revised 7/24/00

Exhibit 4.9-4a
Sensitive Species Impacts

This page left intentionally blank.

This page left intentionally blank.

Engelmann oak

Several stands of Engelmann oak occur on the landfill site within coast live oak woodland. A total of 25 Engelmann oaks would be directly impacted as a result of the project (Ogden 1995). Since 100 percent of the population would be impacted and the species is considered rare by the County, this impact would be significant.

Prostrate spineflower

A population of several hundred plants was mapped on a ridgeline on the landfill site in 1995. Three additional populations (approximately 550 individuals) were found in 1998, and it is possible that additional populations occur on site in areas that were not readily accessible. Based on the known populations on site, it appears that approximately 50 percent of the population on site would be impacted. This species occurs in sandy openings in chaparral and sage scrub and regularly occupies recently disturbed areas such as dirt road shoulders or lightly brushed chaparral (Reiser 1994). According to Reiser (1994), "prostrate spineflower is stable and apparently wide ranging in the 'back country.'" It has been found, for example, in Poway, east of Sandia Creek, in Alpine and Fallbrook, near Pala, north of Jamul Butte, at Whale Peak, in Pamo Valley, and as far north as Winchester in Riverside County (Reiser 1994). As a CNPS List 4 species, the County does not consider it a rare or endangered species warranting mitigation under CEQA. The reduction in the number of this species on site would not likely affect the species' long-term viability due to its wide ranging distribution, its ability to occupy disturbed sites, and its low sensitivity status within the County. Since it is not rare or endangered, project impacts to the prostrate spineflower would be less than significant.

Animal Species

Locations of sensitive animal species observed in relation to the landfill project features are shown on Exhibits 4.9-4a and 4.9-4b. Potentially occurring animal species that are state or federally listed and could be impacted by the landfill project are presented below. Some of these potentially occurring species could be significantly indirectly impacted, however, by noise, for example.

Arroyo Southwestern Toad

Direct impacts potentially resulting in direct loss of individual arroyo toads and/or arroyo toad habitat could occur in association with construction of the landfill and related facilities; and construction of the access road/bridge. In Spring 2000, three toads were observed in these areas; one in the access road, one in the facilities area, and one in the 1.8-acre desiltation basin. In addition, short-term use of the existing low-flow crossing and on-site haul road; use of the two borrow/stockpile areas; traffic on the access road; and increased traffic on SR 76 could result in direct loss of individual toads. The potential impacts listed above could affect all age classes of toads from the larval stage to breeding adult and would be significant.

Direct impacts resulting in the loss of approximately 3.1 acres of toad riparian breeding habitat would occur from construction of the bridge. Only 0.005 acre of this would be permanent impact due to bridge pilings. These impacts would be significant.

Direct significant impacts resulting in the loss of approximately 306 acres of potential toad upland habitat would occur from construction of the landfill and related facilities, construction of the upland portions of the access road, new grading for the on-site haul road, use of the two borrow/stockpile areas, habitat disturbance from the landfill gas and groundwater monitoring wells, and access road improvements for the San Diego Gas and Electric tower/line relocation.

These upland habitat impacts were calculated assuming that any upland habitat disturbance within 2.0 kilometers of the river channel on site would be significant. However, it should be noted that toads commonly travel up to 0.5 kilometer from the stream and that the distance toads travel from breeding sites depends on topography and the extent of suitable habitat (USFWS 1999). Suitable upland habitats must contain substantial areas of fine sand for burrowing (USFWS 1999c). If only impacts to upland areas within 2.0 kilometers of the river channel that contain fine sand (consisting of Tujunga sand [TuB], Visalia sand loams [VaA and VaB] and Fallbrook sandy loam [FaD2] as depicted in Figure 4.2-4) are considered, the potential loss of toad upland habitat used for burrowing would be reduced to approximately 32 acres. The majority of this acreage would occur primarily in grassland, agricultural, and oak woodland habitats where the access road, facilities area, desilting basins, and parts of Borrow/Stockpile Area A are located. Approximately 243 acres of sandy upland habitat acreage would remain undeveloped within 2.0 kilometers of the river channel.

Traffic on the access road, haul road to Borrow/Stockpile Area A and the low-flow crossing (used only during initial construction) could cause new (access road) and increased (haul road and low-flow crossing) roadkill. The potential loss of individual toads from roadkill would be significant.

In addition, direct loss of individual toads could occur in association with proposed landfill project mitigation measures to create, restore and/or enhance riparian habitats and riparian/upland transition habitats on the landfill site. However, such restoration activities would positively affect the San Luis Rey River and the species that depend on it, including the arroyo toad. The USFWS (1999c) has indicated in the Final Recovery Plan for the arroyo toad species that short-term negative effects to individual toads from such activities may be offset by the long-term positive effects of implementing a habitat enhancement program. Simply removing grazing within toad habitat (such as is part of initial landfill project construction) has been associated with dramatic recovery of an arroyo toad population (USFWS 1999c). The USFWS (1999c) has identified the elimination of grazing within arroyo toad habitat as a recovery task for the species. Therefore, although significant impacts to the arroyo toad could occur from habitat creation and restoration activities, the overall benefit to the species would outweigh the potential loss of individual toads and would mitigate the potential impacts to a level of insignificance.

Water quality in the San Luis Rey River is a potential long-term issue for the landfill project that could indirectly affect the arroyo southwestern toad. However, during initial landfill construction, the cattle and manure associated with the Verboom Dairy would be removed, greatly improving the water quality of the river. In addition, the landfill has been designed to inhibit the formation of leachate by eliminating groundwater intrusion of the refuse prism and using surface water control features and practices to minimize the infiltration of precipitation that could enter the prism and become leachate.

The landfill would include a subdrain system beneath the composite landfill liner to divert groundwater away from the liner by gravity flow to the mouth of Gregory Canyon. It also would include a leachate collection and removal system on top of the composite liner to collect and convey any generated leachate by gravity flow into double-walled collection tanks located at the facilities area. Surface water drainage facilities would also be installed to divert and convey storm water flows and precipitation in a controlled manner to minimize erosion and to inhibit potential infiltration of this water into the refuse disposal area. The effectiveness of all of these project features would be regularly examined with subdrain system monitoring, groundwater monitoring, surface water monitoring, and leachate monitoring. The project's potential effects on water quality are described in more detail in Section 4.3, Hydrogeology, and Section 4.4,

Surface Hydrology. With all of these systems in place, potential impacts to water quality in the San Luis Rey River and to the arroyo toad would be less than significant.

Night lighting would be limited to that used for security purposes at the facilities area and would be low impact, focused, and shielded. Night lighting would not be used along the access road or bridge. Therefore, potential indirect impacts to the toad from night lighting would be less than significant.

Another potential indirect impact to the arroyo southwestern toad would be the attraction of nuisance animal species to the landfill that could increase rates of toad predation and decrease the toad population. However, impacts from the potential attraction of most nuisance species would be less than significant with implementation of the project's vector control plan and placement of daily cover. Impacts from some species could occur, however, from the riprap associated with the access road bridge, as this riprap could harbor predators of the arroyo toad (USFWS 1999c). This impact would potentially be significant.

The Argentine ant (*Linepithema humile*, previously known as *Iridomyrmex humilis*) could be brought to the landfill site via the incoming waste stream. While Argentine ants are known to reduce native ant populations (Ward 1987; Human and Gordon 1996), and native ants are a food source of amphibians, it is not known if these ants are a direct threat to the arroyo southwestern toad (USFWS 1999c). Argentine ants are generally found in riparian areas and areas near permanently flowing water (Ward 1987; Holway 1995), both of which are already present on the landfill site. It is likely that Argentine ants have been introduced to and spread downstream of the site by past floods of the San Luis Rey River. Therefore, the landfill operation would not result in the first introduction of this species to the site. Since Argentine ants do not thrive in dry areas, this species would remain in relatively close proximity to the river and would not spread into xeric upland habitats on site. Since sources of permanently flowing water would not occur from the project, impacts from the Argentine ant due to the project would be less than significant.

Upland Reptiles

Seven sensitive reptiles are known to occur on the landfill site and could be impacted by the project. The sensitive species are San Diego horned lizard, Coronado Island skink, orange-throated whiptail, coastal western whiptail, coastal rosy boa, coast patch-nosed snake, and northern red diamond rattlesnake. Although seven sensitive reptile species are known to occur on the landfill site, impacts from the project would be adverse but not significant because the project would only impact approximately 17 percent of the landfill site and a minimum of 1,313 acres of the site would be preserved up front in dedicated open space, and there are still relatively large tracts of land in the region that support viable populations of these sensitive reptiles.

Golden Eagle

The Gregory Mountain golden eagle pair currently forages over the entire San Luis Rey River valley, the hill slopes north of SR 76, the area west of Gregory Mountain, and Gregory Mountain itself where brush is not too dense (Bittner 1998 and pers. comm. 1997). In other words, the eagles forage in areas where there is enough room between shrubs to allow for their seven-foot wingspan when they swoop down and grab prey. The project would directly impact golden eagle foraging habitats where the access road and bridge and facilities area would be constructed and where the 3.7-acre desilting basin would occur. The other project features occur in brush that is likely too dense. Project impacts to these foraging areas total approximately 29 acres. The rest of the foraging habitat on site (approximately 600 acres, not including the dense brush between

the two borrow/stockpile areas and dense brush on Gregory Mountain) would be preserved in dedicated open space. In addition, the Verboom and Lucio dairies would be removed by the project, likely providing additional potential foraging area. That is, during initial construction the dairy buildings, residences, cattle, and manure would be removed. Therefore, impacts to golden eagle foraging habitats would be less than significant due to the limited amount of impact (approximately 29 acres), and the increase in potential foraging habitat on site from dairy removal.

Relocation of three of the SDG&E transmission towers and lines would result in the movement of these features from their current locations. The eagle pair uses at least the northernmost transmission tower for perching and is familiar with the line locations as they currently exist. The project would replace and not move that tower. Since the three relocated towers and associated lines would parallel the same topography after relocations as they do currently, and would only be shifted upslope, potential indirect impacts to the eagles from injuries (broken legs/wings) or death (by electrocution) by flying into the lines would not be anticipated, and potential indirect impacts to the eagles from the tower and line relocation would be less than significant. However, if the northernmost transmission tower is replaced during the critical breeding period of the golden eagle (December through May), this would be a significant impact because this tower is used for copulation as well as perching.

Golden eagles are highly susceptible to nest site disturbances caused by human activity and are less likely to be disturbed by changes in ambient noise levels (Bittner, pers. comm. 1998). The project would preserve the current and historic nest sites on Gregory Mountain in dedicated open space. Although human activity would increase in the golden eagle territory with the project, the golden eagles of Gregory Mountain have not abandoned the territory despite heavy equipment activity and territory disturbance, including noise, from the adjacent Fenton sand mine. In addition, other current, on-going territory disturbances include activities associated with the SDCWA aqueduct easement and SDG&E easement (including below the northernmost transmission tower, an important eagle perching and copulation site), various farming establishments, rural residences, and off-highway vehicle travel in the San Luis Rey River valley. Therefore, it is possible that the Gregory Mountain golden eagle pair could adapt to the landfill and its associated activities if they are introduced slowly (Bittner 1998).

The northeastern edge of the landfill would be 600 feet in elevation below the 1998 cliff nest and approximately 1,340 linear feet away from the cliff nest. In addition, installation of gabion containment structures if needed would occur at distances of approximately 1,800 and 2,200 linear feet southeast and 1,000 feet upslope of the eagle pair's cliff nest. Installation of the structures would involve the use of a helicopter to bring rock material up to a crew that would wire the gabions in place over a period of 20 to 25 days. Installation of the structures would occur during the non-breeding season of the eagle. The distances stated above are less than the recommended 2,000-foot buffer for nest sites, but the Fenton sand mine is a similar distance from the nest (approximately 1,600 feet) and has been operating there for at least nine years (the eagle pair has successfully reproduced during each of those nine years [Bittner 1998]). Disturbance (for example, foot traffic or equipment activity) in an area where the eagles are not used to encountering it could cause abandonment of a nest site or could cause an adult incubating eggs or nestlings to leave the nest, at least temporarily. The eggs or nestlings could be preyed upon by other animals or could succumb to the elements. Abandonment of the golden eagle nest site and territory, should it occur due to the landfill project, would be a significant impact. The eagles could not move to another location if the nest site is abandoned because no other suitable territories exist (Bittner 1998).

Other Raptors

The project would directly impact raptor foraging and nesting habitat. Raptor foraging areas include most habitats on the landfill site, except for perhaps developed area. Impacted potential nesting habitat would be primarily coast live oak woodland. Diurnal raptors known to occur which could be adversely impacted by construction and operation of the landfill include the northern harrier (*Circus cyaneus*), white-tailed kite, Cooper's hawk, red-shouldered hawk (*Buteo lineatus*), sharp-shinned hawk (*Accipiter striatus*), and red-tailed hawk (*Buteo jamaicensis*). Nocturnal raptors such as the barn owl (*Tyto alba*), western screech owl (*Otus kennicottii*), and great-horned owl (*Bubo virginianus*) could also occur in the project impact areas. Project-related impacts to raptors as a group and at the species level would be adverse but not significant because the project preserves approximately 73 percent of the breeding/foraging habitats on the landfill site, the breeding habitat in the project area is not considered essential to these species, and the surrounding off-site lands offer additional habitat for these species.

Relocation of the SDG&E transmission towers and lines would result in the movement of these features from their current locations. Since the towers and lines would parallel the same topography that they do currently and would only be shifted upslope, potential indirect impacts to raptors from injuries (broken legs/wings) or death (by electrocution) by flying into the lines would not be anticipated. Therefore, the potential indirect impacts to raptors from the tower and line relocation would be less than significant.

A red-tailed hawk nest occurs on the southernmost San Diego Gas and Electric transmission tower to be moved by the project. Movement of this tower while the nest is active (likely between December and May) would not be allowed under the Migratory Bird Treaty Act. Likewise, removal of any raptor nest while it is active would not be allowed under the act and is considered a significant impact.

Least Bell's Vireo

The landfill project would directly impact riparian vegetation, including 2.4 acres of southern willow scrub (6 percent of the southern willow scrub on the landfill site) and 0.2 acre of mule fat scrub (14 percent of the mule fat scrub on the landfill site), that serve as breeding and foraging habitat for the least Bell's vireo. Direct impacts to vireo habitat during the breeding season would be significant.

The least Bell's vireo could be indirectly affected by potential changes in water quality and sedimentation (potentially affecting habitat quality), night lighting, fugitive dust (potentially affecting vireo prey base), and nuisance animal species. With the project design features described in the Revised EIR, most of the potential indirect impacts to the vireo would be less than significant, with the exceptions of noise and potential impacts from the brown-headed cowbird. Removal of the dairy operations as part of the project would eliminate a significant cowbird attractant and would improve the reproductive success of the least Bell's vireo and other affected avifauna on site and potentially within a 7 kilometer radius from the dairy (Rothstein et al. 1984). Therefore, the project would benefit the vireo, and potential impacts from the cowbird due to the project would be less than significant. Nonetheless, a mitigation measure is proposed that would provide funding for cowbird trapping along the San Luis Rey River on site (refer to MM 4.9-11c).

The County recommends providing a buffer between project development and vireo habitat to minimize indirect impacts from human activity and associated noise and to provide supplemental foraging opportunities for the vireo (County of San Diego 1991). A 100-foot wide buffer is recommended to minimize indirect impacts to vireo habitat. This buffer would be provided for

all landfill project features where noise or human activity could cause adverse impacts to the vireo. A buffer is not possible where the access road bridge crosses through vireo habitat, so permanent and significant noise impacts were assessed for this project feature as described below.

Elevated noise levels from construction and landfill operation could negatively affect the reproductive success of the least Bell's vireo on site. Noise levels above 60 dB(A) L_{eq} occurring during the breeding season (March 15 through September 15) may mask least Bell's vireo vocalizations and adversely affect reproductive success (County of San Diego 1991, SANDAG 1990; Ogden 1993). Noise measurements were conducted by PCR Services Corporation (2000) to determine existing noise levels on site. Based on those measurements, habitat within the San Luis Rey River is currently exposed to an L_{eq} between 47.7 dB (A) and 53.9 dB(A). Presently, the 60 dB(A) CNEL noise contour extends 180 feet from the center line of Highway 76 into a portion of the habitat near the highway. The project would create three new sources of noise: construction activities, increased traffic, and daily equipment operations.

Construction Activity Noise

Short-term construction noise would initially be produced on site during the nine- to twelve-month initial construction period for the project. The potential for significant noise impacts on vireo habitat exists during construction of the access road and bridge, use of the existing low-flow crossing, construction of the ancillary facilities, and initial excavation of Phase I of the landfill—if construction occurs during the breeding season. Two elements of construction noise are considered in this analysis, the landfill itself and the access road.

Vireo habitat (that is, southern willow scrub, mule fat scrub, and cottonwood-willow riparian forest) occur as close as 100 feet and no further than 400 feet from grading required to develop the facilities area and the first phase of the landfill. At these distances, peak construction noise (added to ambient) would range between 58.1 and 65.1 dB(A) L_{eq} in the vicinity of the landfill footprint.³ Another source of construction noise is truck traffic traveling across the San Luis Rey River at the existing low-flow crossing west of the proposed bridge. The low-flow crossing could be used until the bridge construction is complete (up to 6 months), wherein its use would be discontinued. Potential vireo habitat abuts the low-flow crossing, thus construction traffic would result in potentially significant noise impacts if its use occurs during the breeding season. After the first phase of construction, the landfill would periodically produce construction noise as each subsequent phase is implemented; however, those activities would be further from vireo habitat. Initial landfill development, including the use of the low-flow crossing, would produce short-term construction noise that would potentially exceed the 60 dB(A) L_{eq} threshold during the breeding season and result in a significant noise impact.

For the access road construction, existing habitat beneath and within 50 feet of one side of the bridge would be removed by channel excavation. No habitat would be removed on the other side of the bridge. Removal of any vireo habitat during the vireo breeding season would be a significant impact. Peak construction noise would range between 58.8 and 80 dB(A) L_{eq} at a distance of 50 feet from the equipment, depending on the type of equipment operating. Drilling associated with installation of the bridge pilings would also periodically increase peak construction levels. Because of its close proximity to vireo habitat, bridge construction activities have the potential to produce elevated noise levels during the breeding season that would have a significant impact on the least Bell's vireo. The worst-case combined noise associated with

³ These predicted levels are for location W-2 (Exhibit 4.6-1) and include rock processing.

simultaneous use of the low-flow crossing and operation of construction equipment at the access road/bridge construction site would incrementally increase short-term significant noise impacts within the adjacent riparian habitat, as discussed in Section 4.6, Noise.

Finally, implementation of the riparian habitat creation and enhancement program (required as mitigation to offset direct impacts to the vireo and other species) could significantly impact the least Bell's vireo through excessive equipment noise during the excavation phase of these measures, if installation occurs during the breeding season. Similar noise levels as anticipated during initial landfill project construction would be expected.

Increased Traffic Noise

To address traffic-generated noise impacts of landfill operations, noise modeling was conducted by PCR (2002) to identify the location of the existing 60 dB(A) L_{eq} noise contour for Highway 76 with the project traffic accounted for. PCR (1999) calculated noise for the access road across the San Luis Rey River. With the addition of project traffic to the existing highway, the distance that the existing 60 dB(A) L_{eq} noise contour would shift on site as a result of project traffic is approximately 128 feet west of the access road and 8 feet east of the access road. This project-related increase in noise impacts from Highway 76 would significantly impact 2.2 acre of vireo habitat (2.0 acre of southern willow scrub and 0.2 acre of cottonwood-willow riparian forest) on the landfill site.

Noise impacts from vehicle use of the access road and bridge would result in the 60 dB(A) L_{eq} extending out 167 feet on either side of the bridge (PCR 2002). Some of the vireo habitat would initially be impacted directly by construction (0.3 acre), and approximately 2.9 acres of vireo habitat would be significantly impacted by long-term traffic noise. Based on the above calculations, a total of approximately 4.8 acres (0.3 acre already accounted for by direct habitat removal) of vireo habitat (southern willow scrub and mule fat scrub) would be significantly impacted by traffic noise on the landfill site caused by the project.

There is the potential for vireo habitat off site, along SR 76 between I-15 and the project site, to be impacted by traffic noise levels produced by the project. Similar to the on site riparian habitat, habitat within the San Luis Rey River west of the site is designated critical habitat for the vireo and has been mapped as southern riparian forest by the County. Much of the area adjacent to SR 76 has been modified by agricultural fields and citrus groves. However, riparian habitat is situated within 50 feet of the roadway along two sections of the river (i.e., one mile east of I-15 and adjacent to the hairpin curve). Currently, the riparian habitat adjacent to the highway is exposed to noise levels greater than 60 dB(A) L_{eq} within 180 to 184 feet of the highway. In the existing plus project condition, noise levels due to project-generated traffic would expand the 60 dB(A) L_{eq} noise contour further into the riparian habitat off site (to a distance of 188 to 311 feet from the highway centerline). Please see Table 4.6-7 for the noise contour distances. Approximately 4.6 acres of potential vireo breeding habitat would be impacted off site by indirect noise impacts associated with the landfill traffic traveling between I-15 and the project site. Therefore, the project's indirect noise impact to off-site habitat would be considered a project significant impact. The project impact would be mitigated through the off-site acquisition of 4.6 acres of vireo habitat (see MM 4.9-14b).

In the future, noise levels produced by traffic along SR 76 would increase as traffic increases due to the future (cumulative) development in the area. Therefore, the project would contribute to potential indirect noise impacts to vireo breeding habitat in conjunction with other projects proposed in the project area. The cumulative impact would be fully mitigated through the preservation of high quality vireo habitat on site and the implementation of the habitat

enhancement plan to improve the San Luis Rey River watershed on site (see MM 4.9-18). The Habitat Enhancement Plan would restore or enhance areas that currently contain degraded riparian habitat or are lacking natural habitat with higher quality riparian habitat that is buffered from the highway by upland plantings. Implementation of the plan would also provide increased habitat opportunities within the river corridor for the vireo. Refer to Section 5.2.9.5 of this Final EIR for additional discussion on the Habitat Enhancement Plan.

Daily Equipment Operation Noise

In addition to vehicular noise emanating from roads, operation of the landfill would require the daily use of heavy equipment that would elevate existing noise levels on site. Landfill operation noise would be produced in areas where collection vehicles deposit refuse and landfill equipment covers the deposited refuse at the active face. At the landfill, the active face would move throughout the site, but would produce worst-case noise levels of approximately 53.6 dB(A) L_{eq} at approximately 400 feet from the equipment (Mestre-Greve 1999). The project features an 18- to 20-foot high earthen berm behind which the active face would operate. This berm would reduce daily landfill noise to acceptable levels. In addition, a 15- to 20-foot high sound wall will be constructed along the northern edge of the facilities area and the truck route east of the facilities area as part of the project design. As the active face moves south into the canyon, distance and intervening fill slopes would further attenuate noise levels. Therefore, the landfill activities during Phase 1, and all subsequent phases, of the project would have a less than significant impact on vireo habitat.

Truck traffic and activities at the facilities area would result in noise levels of approximately 57.6 dB(A) L_{eq} in the nearest habitat. The borrow/stockpile areas would also produce operational noise that would contribute to increases in nearby least Bell's vireo habitat. However, due to distance and intervening topography between Borrow/Stockpile Area B and vireo habitat, noise levels would be below 58.4 dB(A) L_{eq} . On the other hand, noise produced by equipment operating at the closest point to the habitat within Borrow/Stockpile Area A (approximately 520 feet away) would create noise levels in excess of 60 dB(A) L_{eq} in that habitat, resulting in a significant indirect impact during the vireo breeding season.

A rock crusher and tire shredder would be operated in the southwestern portion of the landfill footprint no closer than 1,500 feet to the river. Based on calculations by Mestre-Greve Associates and PCR, rock crusher or tire shredder (operated separately) noise levels would be approximately 54.2 dB(A) L_{eq} at that distance and would not cause a significant impact on breeding bird species in the river. Mitigation Measure 4.6-2 prohibits the simultaneous operation of the rock crusher and the tire shredder.

The combined effect of all operational noise sources discussed above, including the landfill activities, borrow/stockpile activities, facilities area and rock crusher or tire shredder, would result in total potential noise levels of 58.4 dB(A) L_{eq} in the vireo habitat on site. Therefore, operational noise impacts would not be considered significant. However, because predicted noise levels could approach 60 dB(A) L_{eq} , monitoring would be required to verify that noise impacts to least Bell's vireo would not occur during the breeding season.

Southwestern Willow Flycatcher

Two calling male flycatchers were observed on the landfill site near the low-flow crossing in July 2000. Because of the federally endangered status of the species, significant impacts to the species would occur due to the loss of 2.4 acres of southern willow scrub (6 percent of the southern willow scrub on the landfill site) and 0.2 acre of mule fat scrub (14 percent of the mule

fat scrub on the landfill site). As discussed above under least Bell's vireo, noise from construction of the access road bridge, use of the existing low-flow crossing, construction of the ancillary facilities, initial excavation of Phase I, implementation of the riparian habitat creation and enhancement program and increased traffic noise along SR 76 during the flycatcher breeding season (late April through mid-September) would significantly impact the species. These indirect noise impacts would be the same as those described above for the least Bell's vireo and would be fully mitigated through the implementation of MM 4.9-14b contained in this document and MM 4.9-18 in the December 1999 Revised Draft EIR. In addition, as described above for the least Bell's vireo, the southwestern willow flycatcher would be indirectly affected by potential changes in water quality and sedimentation (potentially affecting habitat quality), night lighting, fugitive dust, and nuisance animal species (see discussion under least Bell's vireo above). These impacts should not be significant for the reasons previously noted in this section.

Other Riparian Birds

Sensitive riparian bird species observed that could be impacted by noise and riparian habitat removal associated with the project include double-crested cormorant, great blue heron, snowy egret, green heron, black-crowned night heron, white-faced ibis, downy woodpecker, yellow warbler, yellow-breasted chat, blue grosbeak, and tricolored blackbird. However, all of these species are of relatively low sensitivity, and only four of these species (downy woodpecker, yellow warbler, yellow-breasted chat, and blue grosbeak) are likely to breed on site. Because of the relatively widespread distribution of these species in southern California, impacts to this group of riparian birds would, therefore, be adverse but not significant.

Coastal California Gnatcatcher

The project would directly impact coastal sage scrub, a habitat type that potentially supports the gnatcatcher; however, multiple years of focused surveys have failed to detect the species in the project impact area with one exception. One male was observed in the impact footprint area during a survey in April 1998. The species was not detected in the impact footprint area in the 1999 and 2000 surveys. The coastal sage scrub in the project area is considered of low to marginal value for gnatcatchers (Ogden 1995) based on the limited sightings and the absence of nearby core populations. Although the loss of approximately 223 acres of sage scrub and sage scrub/chaparral on the landfill site would be significant, the impacts to the coastal California gnatcatcher from the habitat loss would be less than significant. In addition, potential impacts from noise levels greater than 60 dB(A) L_{eq} at the outside perimeter of gnatcatcher habitat during its breeding season would be less than significant because of the documented absence of gnatcatchers breeding on site. Approximately 632.8 acres (70 percent) of the coastal sage scrub and approximately 29.8 acres (40 percent) of coastal sage scrub/chaparral on site would be in dedicated open space. Additional coastal sage scrub would be in open space following landfill closure.

Other Upland Birds

The project would directly impact upland sage scrub and chaparral habitats (249.5 acres or 18 percent of these habitats on site). Southern California rufous-crowned sparrow is a sensitive scrub-dwelling species that occurs in low numbers at the landfill site, and known locations of this species would be directly impacted. Loggerhead shrike uses grassland, agricultural, and disturbed habitats that would be impacted by the project (26.3 acres or 18 percent of these habitats on site). Impacts to these upland-dwelling species would be adverse but not significant

given their relatively low sensitivity, and because there are still relatively large tracts of land in the region that support viable populations of these species.

Mammals

Several species of sensitive mammals were observed on the landfill site including the San Diego black-tailed jackrabbit and at least three species of bats. The jackrabbit occurs in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover. These habitat types would be preserved in the open space on site and are relatively common in the region. Therefore, impacts to the species would be less than significant. For the bat species, the majority of large rock outcrops, including one with bat guano and urine stains, occur outside of the landfill project impact areas in dedicated open space. There is some potential for bats to roost in a portion of the woodland habitats within the landfill footprint, however. No studies were conducted to determine bat use of the woodlands on site. Impacts to potential bat roosts in the landfill footprint would be adverse but not significant because only one species, the California mastiff bat, would potentially roost there, and this species is not highly sensitive. Most of the local bat species forage over a variety of habitats, especially wetlands and water sources where flying insects are most prevalent. Because the project does not directly impact open water habitat, where many of the bats focus their foraging efforts, and large tracts of potential bat foraging habitat would remain on site, direct impacts to bat foraging habitat would be less than significant.

Regional Landscape Association

During landfill construction and operation, potential impacts to wildlife movement on site could occur from: (1) excavating/filling and partially fencing Gregory Canyon; (2) utilizing the two borrow/stockpile areas; (3) constructing the access road and a bridge across the San Luis Rey River; (4) increasing the traffic volume on Highway 76, the haul road, and low-flow crossing (both existing) on site; and (5) increasing human activity. However, as described in the biological technical report (Appendix L) and summarized herein, it has been determined that potential impacts to wildlife movement would be less than significant for the following key reasons.

- Excavation and filling of the landfill would be phased to minimize ground disturbance and would only occur during the operational hours of the landfill.
- Native vegetative cover would be established that not only would provide habitat for wildlife but protection of water quality in the San Luis Rey River from potential erosion/sedimentation.
- Landfill perimeter fencing would allow for wildlife movement where topography is the barrier to human access during the life of the landfill and would allow for virtually unconstrained movement following closure of the landfill and replacement of the chain link fencing with three to five strand wire fencing.
- The block of habitat between the two borrow/stockpile areas would provide for riparian to upland movement opportunities for most species.
- Borrow/Stockpile Area A would only be used during initial landfill construction and then during landfill closure and would be revegetated with native species between use periods and after final landfill closure.
- Access road and bridge construction would occur during daylight hours when wildlife movement by species such as mammals is less frequent.

- The riparian habitat removed for bridge construction would be expected to recolonize quickly by the same habitats and provide cover for wildlife.
- The deck of the bridge would be 17.5 feet above the river bed allowing for wildlife movement underneath.
- Five sets of two bridge pilings separated by more than 100 feet would only place limited constraints on wildlife movement under the bridge.
- The access road and bridge would not be lighted at any time, thereby eliminating potential avoidance of the area by wildlife from night lighting.
- Traffic speed on the access road and bridge would be slow, thereby reducing potential impacts to wildlife (for example, birds potentially being struck as they fly across the bridge).
- The entire access road (including bridge) would be gated and locked barring human access during the non-operational hours of the landfill.
- Roadkill is already prevalent on SR 76 during the day, and the project's potential increase in daytime roadkill would only be incremental.
- Some traffic on SR 76 and the access road would likely occur after dark due to the project in fall and winter, but this traffic would only include a small number of trips.
- The haul road to Borrow/Stockpile Area A would only be used during the initial nine- to twelve-month construction period and at final landfill closure beginning in approximately year 25, and the low-flow crossing would only be used during initial construction (and would be removed following completion of the bridge) both during daylight hours.
- Human activity associated with construction and operation would occur primarily during daylight hours and would be concentrated on approximately 308 acres, or 17 percent, of the 1,783-acre site (assuming disturbance of all impact areas at once which would not be the case due to landfill phasing). Only low impact, focused, and shielded light would be provided at the facilities area for security.
- The project design incorporates a minimum of a 100-foot riparian buffer between the landfill operations and the river habitat, except where the access road/bridge crosses the river.

In addition to the above reasons, potential impacts to wildlife movement would be less than significant because the landfill project would preserve a minimum of 1,313 acres (of the 1,783-acre site) in dedicated open space within this regional landscape habitat mosaic during the operation of the landfill, and following closure of the landfill, the landfill footprint and borrow/stockpile areas would be revegetated with native species, and the entire 1,783-acre site would become open space.

4.9.3.2 Indirect Impacts

The following is a discussion of general indirect effects on vegetation communities and wildlife on the Gregory Canyon Landfill project site. Potential indirect impacts from project construction and operation include decreased water quality, fugitive dust emissions, introduction of non-native plant species, human activity, roadkill, attraction of nuisance animal species, habitat fragmentation/edge effects, night lighting, roadkill, and noise. However, there are several beneficial effects expected from the proposed project. Positive project effects include the preservation and restoration and/enhancement of a minimum of 1,313 acres of open space that would increase the site's value for listed and sensitive species. After the landfill closes, the entire site (1,783 acres) would be open space. Removal of the dairies would result in elimination of cattle grazing and a large source of manure that currently negatively affects water quality in

the San Luis Rey River. These beneficial effects are discussed in conjunction with each of their respective issues below.

Water Quality

Water quality in riparian areas can be adversely affected by long-term effects associated with groundwater leachate and potential surface runoff. Of particular concern is the impact to water quality in the stretches of the San Luis Rey River immediately downstream from the landfill. Decreased water quality may adversely affect vegetation, aquatic animals, and terrestrial wildlife that depend upon the vegetation and the river for water, food, and cover. The project's potential effects on water quality are described in more detail in Sections 4.3, Hydrogeology, and 4.4, Surface Hydrology, of the EIR.

The project would include activities and features to protect water quality as follows. During initial landfill construction, the cattle and manure associated with the Verboom Dairy would be removed, greatly improving the water quality of the river. In addition, the landfill has been designed to inhibit the formation of leachate by eliminating groundwater intrusion of the refuse prism and using surface water control features and practices to minimize the infiltration of precipitation that could become leachate.

The landfill would include a subdrain system beneath the composite landfill liner to divert groundwater away from the liner by gravity flow to the mouth of Gregory Canyon. It also would include a leachate collection and removal system on top of the composite liner to collect and convey any generated leachate by gravity flow into double-walled collection tanks located at the facilities area.

Surface water drainage facilities (landfill perimeter drainage channels, drainage berms, downdrains, energy dissipaters, two desilting basins and filter devices) would also be installed to divert and convey storm water flows and precipitation in a controlled manner to minimize erosion and to inhibit potential infiltration of this water into the refuse disposal area. In addition, the borrow/stockpile areas have been designed to promote lateral runoff into drainage control facilities such as downdrains and bench drains. Surface waters will also be conveyed away from the borrow/stockpile areas and discharged into existing natural drainage courses. Erosion control measures such as desilting basins, sand bags, straw matting and/or rip-rap would be utilized to reduce downstream siltation potential.

The effectiveness of all of the project features described above would be regularly examined with subdrain system monitoring, groundwater monitoring, surface water monitoring, and leachate monitoring. With all of these systems in place, potential impacts to water quality would be less than significant.

Groundwater would be used to control fugitive dust. During construction, estimated groundwater withdrawals are expected to be 150,000 to 175,000 gallons per day (gpd). Operational groundwater use is estimated to be approximately 205,000 gpd. Historical water use for the landfill site is approximately 416,000 gpd. Therefore, the project would utilize less water, and may actually improve groundwater levels in the San Luis Rey River. Therefore, groundwater withdrawals for dust control would be less than significant.

Surface water could be affected by sediment inputs during project construction and wet-weather runoff. Control of sediments resulting from construction activities would be achieved with the installation of down-slope sediment control fences (in compliance with the County's Grading Ordinance) and stormwater desilting basins. The environmental controls, such as on- and off-site drainage facilities that are part of the project would also prevent surface water

contamination. All construction areas including the landfill, borrow/stockpile areas and channel excavation could be eroded resulting in degradation of downstream riparian habitat through the input of additional sediment loads. Erosion and sedimentation could degrade the quality of riparian habitat and change the hydrology of the San Luis Rey River. However, potential impacts from erosion/sedimentation would be minimized through the implementation of project design features described in Chapter 3, Project Description, and Sections 4.3 and 4.4 of the EIR. Two desilting basins would remove sediment loads contained in runoff from the project during its operation. The larger basin, below the landfill footprint, is 3.7-acres in size and is significantly oversized for the amount of runoff expected from the landfill itself. A 1.8-acre desilting basin below the facilities area is designed for runoff from that area. Both basins are designed to drain within a few days and are not expected to contain standing water for any length of time. Therefore, potential impacts from erosion and sedimentation during project construction and operation would be less than significant.

The existence of petroleum products, hydrocarbons and sediment could result from operational vehicular activity at the project entrance, landfill equipment re-fueling, and hazardous waste storage at the ancillary facilities area and would have the potential to impact surface water quality. However, the project design would provide dry management controls of sediment (i.e., sweeping) as well as the use of absorbents for oil and gas releases. The project also includes fuel spill prevention/containment features a Hazardous Waste Exclusion Program and a storm drain inlet or outflow device from the ancillary facilities area (e.g., oil-water separators or other filtering devices required by the County stormwater discharge requirements) that would prevent impacts to surface water quality. Therefore, impacts to surface water quality from these sources would be less than significant.

By agreement with the San Luis Rey Water District, the facilities area would also maintain a reverse osmosis (RO) unit to purify groundwater in the event that it contains elevated levels of total dissolved solids (TDS) (see Section 3.5.2.3). The sources of groundwater would be from the subdrain collection system, monitoring wells and groundwater extraction wells in the event that groundwater becomes contaminated. If water were to be available from the RO unit, the treated water would be stored in a tank and used primarily for dust control on site. During rainstorms, when water would not be necessary for dust control, the water would remain in the tank. If there is an excess of treated water during a rainstorm that cannot be stored in the tank, the water could be discharged to the San Luis Rey River with the appropriate permit from the Regional Water Quality Control Board. Therefore, impacts from treated groundwater discharged on the surface would be less than significant.

Fugitive Dust

Fugitive dust produced by construction and operation-related activities could disperse onto vegetation. Effects on vegetation due to airborne dust could occur adjacent to construction or landfill activities. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This, in turn, could affect animals dependent on these plants (e.g., seed eating rodents). With implementation of the measures proposed to control fugitive dust (Chapter 3, Project Description, and Section 4.7 of the EIR), which includes water spray and/or vegetative cover, indirect impacts to plants and other biological resources from fugitive dust would be less than significant.

Non-Native Plant Species

Non-native plants could invade areas disturbed (but not paved, for example) by project activities, and these areas (such as long-term stockpiles) would be particularly well suited for establishment of non-native species. Revegetating with native species would reduce the potential impacts from the establishment of non-native plant species. Revegetation with native species is a project feature for the borrow/stockpile areas and the landfill footprint; however, revegetation is not a feature for the channel excavation associated with the bridge construction. Therefore, the potential for non-native plant species invasion would be significant for channel excavation.

Human Activity

Human activity on site could result in vegetation trampling, trail creation (removal of vegetation), and illegal dumping of lawn and garden clippings, trash or other refuse. Human presence on site during the breeding season for certain sensitive species could cause breeding birds and mammals to temporarily or permanently leave their territories to avoid construction activity or landfill operations. This could lead to reduced reproductive success and increased mortality. Potential impacts from these activities would be significant because of the edge effects these activities could create. Potential impacts from illegal dumping would be less than significant as a result of the litter control measures described in the Project Description of the EIR and implementation of mitigation measure 4.16.C5C (Proposition C).

Roadkill

An increase in traffic on SR 76 from the project could lead to additional roadkill of diurnal animals such as reptiles, and mammals such as the California ground squirrel. Since roadkill is already prevalent on SR 76 during the day, the potential increase in daytime roadkill from the incremental increase in traffic from the project would be less than significant. Additional roadkill of nocturnal animals from the project's increase in traffic on SR 76 would be minimal because of the daytime operational hours of the landfill (7:00 A.M. to 6:00 P.M.), although some traffic (for example, employees leaving the site) would likely occur after dark during fall and winter, but this impact would be less than significant due to the small number of trips that would occur.

Traffic on the access road, haul road to Borrow/Stockpile Area A (used only during the nine- to twelve-month initial construction period and for final landfill closure beginning at year 25), and the low-flow crossing (used only during initial construction) could cause new (access road) and increased (haul road and low-flow crossing) roadkill for general wildlife species. The effects of this increased vehicle activity would be less than significant on general wildlife because of the short duration of the impact (initial construction phase only). The majority of the vehicular activity would occur during daylight hours when many animals are less active, and the number of evening trips potentially occurring on site would be the same or less than the amount already occurring on site as part of the dairy operations. The roadkill effects on the arroyo toad would be considered significant and are addressed separately under the analysis for the species. Mitigation measures recommended to avoid roadkill impacts to the arroyo toad, such as the use of temporary and permanent exclusion fencing, would also benefit general wildlife species and further reduce this less-than-significant impact.

Nuisance Species

The attraction of certain species to landfills is not unique, and the Gregory Canyon landfill may attract some of these nuisance species. A body of deterrence and control methodology has been

developed from decades of landfill management experience that would be applied to this landfill project to effectively control nuisance species. The landfill operator would address nuisance species (vector control) issues on a daily basis. The first method of deterrence would be the use of daily cover, which involves the placement of soil over the active face at the end of every day (as required by Title 27 of the California Code of Regulations).

Several of the species attracted to landfills could adversely affect native species by predation of individuals and/or spread of avian botulism. Nuisance birds often attracted to landfills include gulls (*Larus* spp.), European starlings (*Sturnus vulgaris*), American crows (*Corvus brachyrhynchos*) and common ravens (*Corvus corax*). It is well known that raven populations have been increasing throughout San Diego County over the past two decades (P. Unitt, pers. comm. 1999). Both gulls and ravens are primarily scavengers and opportunistic feeders that do not routinely hunt for native species. Ravens that regularly forage at landfills are attracted by the concentrated food source and the ease of foraging. Consequently they rarely leave these sources to prey on native wildlife (Engel and Young 1992). Since gulls and starlings are attracted for the same reasons, it is reasonable to conclude that they would also prefer easy forage over actively hunting native species. Effective landfill operation, particularly frequent and deep burial (at least six inches) of the refuse has been shown to limit the numbers of ravens (FaunaWest 1989; Boarman W. and Coe S. 2000). The standard operating procedure of the application of daily cover may also limit the numbers of gulls and starlings. In addition, construction of a litter fence along the active face of the landfill would help control wind-blown trash that could provide additional sources for bird foraging. Other deterrents to nuisance birds that may be used for nuisance species control include: playback of distress vocalizations, falcon kites, owl decoys, and dispersal by humans and/or dogs. All of these deterrence methods would limit the number of nuisance avian species attracted to the landfill and, therefore, the number of species that could potentially prey upon native species. Therefore, potential impacts from predation on native species would be less than significant.

Gulls and other birds are vectors of avian botulism that is caused by the ubiquitous soil bacteria, *Clostridium botulinum*. Similarly they are vectors of *Salmonella* bacteria. There is no data indicating that massive die-offs of pelicans and waterfowl caused by botulism have any connection to foraging of avian vectors, including gulls, at landfills. Nor have published records of gulls from landfills as vectors of botulism and *Salmonella* been found. At the Salton Sea, *Clostridium botulinum* is present in the soil, the sea, and in fishes. The massive die-offs of pelicans there was caused by ingestion of infected fish (C. Bloom pers. comm. 1999). Therefore, the spread of avian botulism and *Salmonella* bacteria from potential avian vectors would be less than significant.

Nuisance species potentially attracted to landfills, in particular the brown-headed cowbird (*Molothrus ater*), could adversely affect native bird species by nest parasitism. The cowbird is a species that parasitizes the nests of least Bell's vireos, southwestern willow flycatchers, yellow-breasted chats, yellow warblers, and other birds by laying eggs in the affected species' nests. Species parasitized by cowbirds raise the larger, more aggressive, and faster growing cowbird chicks while their own progeny often die. Along with habitat destruction, the decline of the least Bell's vireo has been attributed to the brown-headed cowbird. Cowbirds have been trapped and killed since 1983 as part of state and federal management programs for the vireo.

The Verboom Dairy on the landfill site is a major attraction for brown-headed cowbirds and has been for many years. A cowbird trapping and control program has been conducted there since 1985 (Jones 1988, 1989, and 1990; Sweetwater Environmental Biologists 1993a, b, and 1994). From 1991 through 1994, one trap was used at the dairy each year, except in 1991 when two

were used. Over that four-year period, an average of 147 cowbirds was removed annually. Removal of the dairy operations as part of the project would eliminate this significant attraction to cowbirds and would improve the reproductive success of the least Bell's vireo and other affected avifauna on site and potentially within a 7 kilometer radius from the dairy (Rothstein et al. 1984). Therefore, the project would benefit these species, and potential impacts from the cowbird due to the project would be less than significant. Although the impact would not be significant, a mitigation measure (MM 4.9-11c) is provided that would provide funding for cowbird trapping along the San Luis Rey River on site for a period of five years from initial landfill operation.

The potential attraction of European starlings (*Sturnus vulgaris*) to the landfill could adversely affect cavity nesting avian species through nest site competition. However, European starlings are already present at the Verboom Dairy which likely provides a substantial source of the invertebrates they eat. With the removal of the dairies on site as part of the project and the application of daily cover over the landfill refuse, existing and potential food sources for the starling would be removed and the attraction to the site reduced if not eliminated. Therefore, with the landfill project, the number of European starlings would be expected to decrease with a corresponding decrease in potential for nest site competition, and potential impacts to native, cavity-nesting, avian species from the European starling would be less than significant.

The landfill could also attract rodents, both native and non-native, that could not only disrupt landfill operations but that could impact native wildlife. Rodent control would be provided as part of the project at the landfill and facilities area and would include restricting the duration of tire storage to not more than six months, using conventional snap-traps, and using an anticoagulant rodenticide. The rodenticide (Diaphacinone treated grain) is approved and sold by the County and does not transfer through the food chain. In the event that a raptor would eat a poisoned rodent it would not be killed. If needed, this rodenticide would be distributed through bait stations according to guidelines prepared by the County. Incidentally, rats and ground squirrels are typically not abundant at modern landfills because they are crushed by bulldozing and compacting of the refuse. Potential impacts from other nuisance species such as insects and other birds would be less than significant due to the project's vector control program which first deters these species through the application of daily cover and then controls such species, if necessary, with the use of professional pest control services.

The Argentine ant (*Linepithema humile*, previously known as *Iridomyrmex humilis*) could be introduced to the landfill site via the waste stream and adversely affect native species. The Argentine ant is a widespread invasive species that displaces epigeic native ants (those living above ground). Hypogeic ant species (living underground) are less affected by this species (Ward 1987; Holway 1998; Human and Gordon 1996; and Suarez et. al. 1998). While Argentine ants are known to reduce native ant populations (Ward 1987; Human and Gordon 1997) and native ants are a food source of amphibians, it is not known if these ants are a direct threat to the arroyo southwestern toad (USFWS 1999) or perhaps other species. Argentine ants thrive in riparian woodland habitat and near flowing water but do not occur in arid habitats such as grassland, oak woodland, or chaparral (Ward 1987). They are relatively small ants and subject to desiccation. In dry areas they primarily occur near permanently flowing water (Ward 1987; Holway 1995; and Human et al. 1998). In Southern California, they are most common along the disturbed edges of natural habitats and in areas predominated by exotic vegetation (Suarez et al. 1998).

Since Argentine ants are generally found in riparian areas and areas near permanently flowing water (Ward 1987 and Holway 1995), it is likely that they are already present on the Gregory

Canyon site along the San Luis Rey River. It is also likely that Argentine ants have been introduced to and spread downstream of the site by past floods of the San Luis Rey River. Therefore, it is improbable that the landfill operations would result in the first introduction of this nuisance species to site. Since Argentine ants do not thrive in dry areas, it is reasonable to assume that this species, if present, would remain in relatively close proximity to the river and would not spread into xeric upland habitats on site. Since Argentine ants likely already occur on site from past introductions, and sources of permanently flowing water would not occur from the project, impacts from the Argentine ant due to the project would be less than significant.

The project would not be expected to attract the bullfrog (*Rana catesbeiana*) (a predator of the arroyo southwestern toad, for example) which occurs upstream from the project site in open ponds. Impacts to native species from the bullfrog would be less than significant because the project would not create any ponds containing standing water that might provide suitable habitat for the bullfrog. The 3.7-acre desilting basin below the landfill footprint, is significantly oversized for the amount of runoff expected from the landfill itself. That basin has been designed to accommodate both a 100-year storm event and the catastrophic break of the SDCWA pipelines (i.e., simultaneous rupture of Pipelines 1, 2 and the future Pipeline 6). As a result of the low amount of annual rainfall at the site (around 10 inches) and the fact that much of the rainfall falling on the landfill would be absorbed by it rather than flow off of it, the desilting basin would be expected to be empty most of the year. It would contain some water after major storm events but is designed to drain within a couple of days thereafter. The 1.8-acre desilting basin below the facilities area is expected to capture a greater proportion of stormwater because of the hard surfaces and the resulting sheet flow from that area. As with the larger desilting basin it is also designed to drain within a couple of days and is not expected to contain standing water that would provide habitat for bullfrogs or a drinking water source for other potential nuisance species.

In addition, the creation of riparian habitats for project mitigation would not involve grading below the normal water table, so standing water would not be created by the project. Therefore, potential impacts from *Anopheles* mosquitoes, local vectors of malaria, would be less than significant.

Habitat Fragmentation/Edge Effects

Removal of existing native habitats on the landfill site would result in habitat fragmentation and associated edge effects. Fragmentation is the breaking up of larger, contiguous parcels of habitat into smaller, discontinuous patches. Potential edge effects from such fragmentation could include the invasion of non-native plant species in what was unfragmented, native habitat and access by predators (native and non-native) to prey that would otherwise be protected in an unfragmented parcel of habitat. These impacts would potentially be significant. (See discussion of non-native plant species above). However, the project would preserve a minimum of 1,313 acres in dedicated open space and remove the existing dairies, thereby reducing some edge effects already existing on site. Implementation of the wetland habitat creation (see MM 4.9-1b) and habitat enhancement plan (see MM 4.9-18) would further reduce edge effects within the San Luis Rey River corridor through the replacement of degraded areas with high quality riparian plantings, the removal of exotics, and the installation of terrace plantings required as part of the mitigation. The open space would be conveyed and dedicated for the long-term preservation of sensitive habitat and species. The open space would be managed by an entity other than the landfill operator such as the Pala Band of Mission Indians, a public agency, or a resource conversation group (see Mitigation Measure 4.1-2). Therefore, with the presentation and

management of the open space, fragmentation and associated edge effects from development of the landfill would be less than significant.

Night Lighting

Night lighting would be limited to that used for security purposes at the facilities area and would be low impact, focused, and shielded. No other lighting would be used, including along the access road and bridge. During fall and winter, the final application of daily cover may still be occurring after the sun has set, requiring the equipment spreading the daily cover to use headlights. These headlights would be focused on the active cell of the landfill and behind the berm. Therefore, potential impacts to sensitive species or general wildlife movement from night lighting would be less than significant.

Noise

Elevated noise levels from construction and landfill operation, from implementation of habitat creation and restoration (proposed project mitigation), as well as from traffic associated with the project on SR 76 on site and west of the site to I-15 could significantly impact sensitive animal species, particularly listed bird species.

4.9.3.3 Consistency With Natural Communities Conservation Plan

A special rule under Section 4(d) of the federal Endangered Species Act authorizes incidental take of the coastal California gnatcatcher in conjunction with an approved plan under the California Natural Communities Conservation Plan (NCCP) Program. This program was initiated under the NCCP Act of 1991 in an attempt to develop regional open space planning efforts designed to protect native plants and animals and their habitats in regional preserve systems. All coastal sage scrub within an area enrolled in the NCCP (in this case, the County) is considered occupied by the gnatcatcher. The 4(d) Rule requires the development of a mitigation plan to offset project impacts that meet certain criteria. A habitat loss permit application must be filed, and to be approved, the findings must be made based on the information obtained pursuant to Section 4.1.2 of the November 1993 NCCP Process Guidelines.

Based on those findings, the loss of 178.8 acres of coastal sage scrub and 44.1 acres of coastal sage scrub/chaparral combined with the losses of coastal sage scrub within San Diego County outside the Multiple Species Conservation Program (MSCP) as of 1999 (53.6 acres), would not exceed the 5 percent allowable loss of coastal sage scrub. The long-term conservation potential of the sage scrub habitat in the project area is intermediate and the project site does not support a core population of the coastal California gnatcatcher (five or more pairs). In addition, the habitat loss associated with the project would not preclude connectivity between areas of high habitat value. The habitat loss would not have an impact on regional biological resource planning or prevent the preparation of the subregional NCCP. In fact, the project would contribute critical habitat acreage to the County's MSCP. The loss of 222.9 acres of coastal sage scrub and coastal sage scrub/chaparral habitats would not appreciably reduce the likelihood of the survival and recovery of listed species in the wild because approximately 68 percent of these habitats on site would be preserved. In addition, the loss of coastal sage scrub and coastal sage scrub/chaparral habitat will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild because only one individual gnatcatcher was observed on one occasion in an impact area during 10 years of surveys. The proposed loss of coastal sage scrub and coastal sage scrub/chaparral would only result from the lawful approval of a Habitat Loss Permit or the completion of a Section 7 consultation with or receipt of a Section 10(a) permit from the USFWS

in accordance with the Federal Endangered Species Act. Additional detail on this rationale is provided in the biological resource technical report contained in Appendix L.

4.9.3.4 Site Closure Impacts

Upon closure of the landfill, it is anticipated that the site would be used for open space. Since the level of activity that would occur on the site is not known, human activity impacts cannot be assessed at this time. Analysis of potential biological impacts would occur during the review and approval of the closure plan.

4.9.3.5 First San Diego Aqueduct Relocation Option

This analysis assumes that the entire corridor identified for the relocation of Pipelines 1 and 2 to a 150-foot wide easement west of the current location would be temporarily impacted during construction. Revegetation would occur after construction; following construction, a 12-foot wide access road would be permanently maintained within the easement.

Based on the above assumption, approximately 17.6 acres of land would be impacted temporarily during construction, and approximately 1.0 acre of that would be permanently impacted from the access road. The vegetation communities that would be impacted include approximately 9.5 acres of coastal sage scrub, 0.8 acre of coast live oak woodland, 3.5 acres of annual grassland, 2.2 acres of disturbed habitat, and 1.6 acres of developed land. Impacts to coastal sage scrub and coast live oak woodland would be significant and require mitigation in the form of habitat preservation and/or replacement (i.e., revegetation or habitat creation). Sensitive species impacts could occur to the least Bell's vireo, arroyo southwestern toad, and southwestern willow flycatcher. Mitigation for impacts would be similar to those for construction impacts for the project. Indirect impacts to sensitive species could occur during construction due to noise and sedimentation effects. Mitigation for the habitat loss associated with this project would be similar to the habitat preservation and replacement measures required for the landfill project. With the incorporation of mitigation measures, impacts on biological resources from the relocation of a portion of the pipelines would be less than significant.

4.9.4 MITIGATION MEASURES AND PROJECT DESIGN FEATURES

The landfill project would significantly impact sensitive vegetation communities and species through habitat loss, potential loss of individuals, and indirect effects associated with landfill construction and operation activities. Mitigation ratios used below have been developed in part based on the County of San Diego MSCP Subarea Plan and public review input from the USFWS and CDFG. The mitigation measures will be finalized through consultation with the resource agencies as part of the required regulatory processes.

Proposition C

Section 5N of Proposition C contains the following general mitigation measure relative to potential biological impacts and litter control (invasive, non-native plant species):

MM 4.9.C5N: *All sensitive species and habitat impacted by the project shall be mitigated in accordance with requirements imposed by the USFWS as part of the Section 7 consultation.*

MM 4.16.C5C: *At least five (5) days each week, the Applicant shall inspect for, and clean up, all litter and illegal dumping which occurs on, or adjacent to, the landfill access road and that portion of Highway 76 between the*

intersection with Interstate 15 and the site. The clean up team shall consist of at least one truck with a minimum crew of two persons.

Project Design Features

Construction Features

- Dairy removal will occur as part of the initial construction phase, which will enhance wildlife foraging opportunities, remove a significant cowbird attractant and reduce existing edge effects adjacent to the river.
- Borrow/Stockpile Area A will only be used during the initial construction period and then during landfill closure beginning in approximately year 25 and will be revegetated with native species between use periods and after final landfill closure.
- The haul road to Borrow/Stockpile Area A will only be used during the initial nine-month construction period and at final landfill closure beginning in approximately year 25. No improvements to the internal haul road are required; the only grading would occur where turnouts are proposed on the site plan.
- The low-flow crossing will only be used during initial construction (and would be abandoned following completion of the bridge) during daylight hours.
- Access road and bridge construction will occur during daylight hours when wildlife movement by species such as mammals is less frequent.
- The bridge pilings will be drilled in place, rather than driven, to minimize construction noise.
- Riparian habitat adjacent to the proposed bridge structure will only be cleared beneath and within 50 feet of the east side of the structure.
- Diversion structure placement to avoid impacts from debris flow will not occur during the eagle breeding season.

Operational Features

- The dedication of a minimum of 1,313 acres of land for permanent open space will occur prior to operation and the open space will be managed in perpetuity for the protection of sensitive habitat and species.
- Upon final closure, the remaining undedicated portions of the landfill site will be placed in open space in perpetuity.
- Excavation and filling of the landfill will be phased to minimize ground disturbance and will only occur during the operational hours of the landfill.
- Native vegetative cover will be established on disturbed areas, including the borrow/stockpile areas and landfill footprint.
- Landfill perimeter fencing will allow for wildlife movement where topography is the barrier to human access during the life of the landfill. The chain link fencing will be replaced with three to five strand wire fencing at the time of closure of the landfill.
- The block of habitat between the two borrow/stockpile areas will be maintained to provide for riparian to upland movement opportunities for most species.

- The deck of the bridge will be 17.5 feet above the river bed allowing for wildlife movement underneath.
- The bridge support will consist of five sets of two bridge pilings separated by more than 100 feet to allow wildlife movement under the bridge.
- Reflective strips will be used on the inside structure of the bridge. No lighting will be installed on the bridge.
- Slow traffic speeds would be required on the access road and bridge to reduce potential impacts to wildlife (for example, birds potentially being struck as they fly across the bridge).
- The entire access road (including bridge) will be gated and locked to prevent human access during the non-operational hours of the landfill.
- Low impact, focused, and shielded lighting will be installed at the facilities area for security.
- A minimum of a 100-foot riparian buffer will be maintained between the landfill operations and the river habitat, except where the access road/bridge crosses the river.
- Rock crushing/processing and tire shredding will occur within the landfill footprint at least 1,500 feet from the nearest least Bell's vireo and southwestern willow flycatcher habitat.
- Vector control measures, including the use of daily cover, will be implemented to prevent nuisance species attracted to the landfill to cause predation impacts on native species. The methods for controlling or deterring nuisance species will be compatible with native species protection.
- No permanent sources of standing or flowing water will be produced on site to prevent increased amphibian predation by non-native ants and bullfrogs.
- The relocated electrical transmission lines will be parallel to the existing topography of Gregory Mountain to avoid indirect impacts on the golden eagle and other raptors.
- Litter control and removal would minimize the introduction of invasive non-native plant species caused by illegal dumping of lawn and garden clippings, trash and other refuse.
- An 18- to 20-foot berm will be constructed and maintained along the northern edge of the landfill footprint between the facilities area and the landfill footprint to reduce Phase I daily operational noise levels to sensitive habitat.

Impacts and Mitigation Measures

In addition to the mitigation measure contained in Proposition C, more specific mitigation measures have been developed to reduce potential biological impacts identified in the environmental analysis from project implementation.

General Measure

MM 4.9a: A pre-construction meeting shall take place with a qualified biologist and construction personnel. The biologist shall explain the access restrictions on site, the importance of remaining within construction zones, the sensitivity of the habitats and species on site, and shall explain the potential consequences of violating the access restrictions and impacting biological resources outside the construction zones. Any accidental impacts to sensitive habitat that occur outside the designated impact area shall be mitigated at a 3:1 ratio. A letter from the applicant's biologist

and contractor(s) verifying receipt of biological information shall be provided to the County Department of Environmental Health prior to commencement of construction.

Vegetation Communities

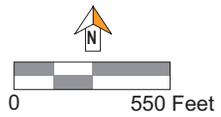
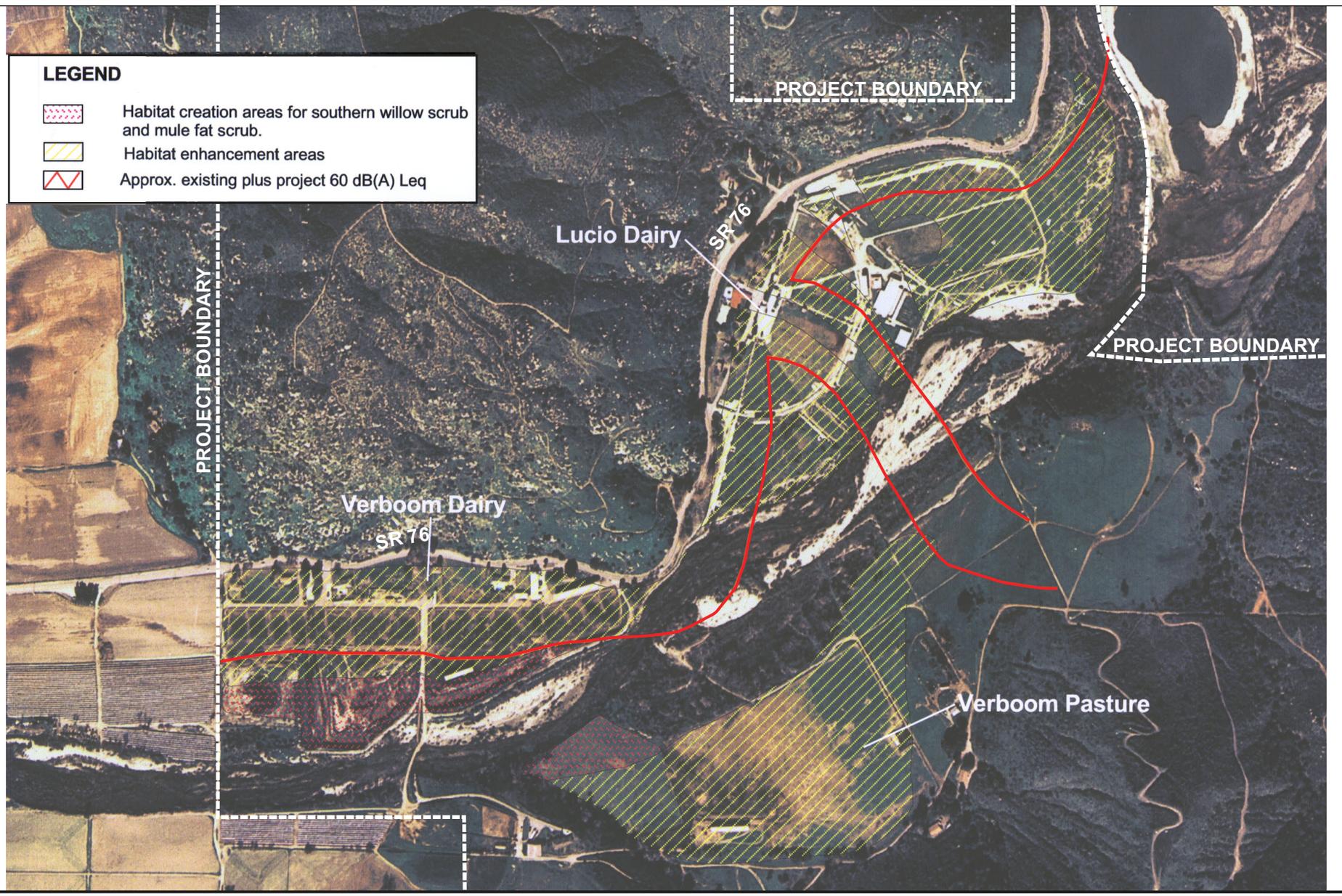
Impact 4.9-1: *The following sensitive resources would be significantly impacted by the landfill project: 178.8 acres of coastal sage scrub, 44.1 acres of coastal sage scrub/chaparral, 27.0 acres of coast live oak woodland (some of which includes Engelmann oaks and is state jurisdictional habitat), 0.2 acre of native perennial grassland, 2.4 acres of southern willow scrub, 0.2 acre of mule fat scrub, and 0.2 acre of open channel.*

MM 4.9-1a: Impacts to coastal sage scrub and coastal sage scrub/chaparral shall be mitigated at a minimum ratio of 2:1 through on-site preservation of coastal sage scrub and coastal sage scrub/chaparral in dedicated open space. A total of 445.8 acres shall be required for mitigation, including 88.2 acres of coastal sage scrub/chaparral and 357.6 acres of coastal sage scrub. To satisfy the coastal sage scrub/chaparral requirement, coastal sage scrub shall be utilized. The mitigation acres shall be preserved in perpetuity as on-site open space.

MM 4.9-1b: Impacts to southern willow scrub and mule fat scrub shall be mitigated by the creation of in-kind habitats on the landfill site in dedicated open space. A mitigation ratio of 4:1 shall be used. A total of 10.4 acres shall be required for mitigation including 9.6 acres of southern willow scrub and 0.8 acre of mule fat scrub. The habitat creation can occur in the locations for riparian habitat creation shown on Exhibit 4.9-5.

Habitat creation of southern willow scrub and mule fat scrub shall occur at the ratio specified herein, such that “no net loss” of habitat is achieved, in areas that would not be affected by noise levels equal to or greater than 60 dB(A) L_{eq} and that are part of the dedicated open space on site. Conditions to be met shall include the preparation of a detailed mitigation plan, final landscape construction documents, ACOE/CDFG permit approval, and installation, maintenance, and long term monitoring of the mitigation areas. The mitigation plan shall be developed and submitted to the ACOE and CDFG for approval as part of the project permitting process. The implementation of the mitigation shall be prior to or concurrent with construction or as otherwise determined in consultation with the resource agencies.

MM 4.9-1c: Impacts to 0.8 acre of open channel shall be mitigated through implementation of the habitat enhancement plan described in MM 4.9-18 to restore habitat in the San Luis Rey River watershed on site.



Source: Helix Environmental, June 2000

Exhibit 4.9-5
Conceptual Mitigation Areas

MM 4.9-1d: Impacts to 27.0 acres of coast live oak woodland (some of which includes Engelmann oaks and is state jurisdictional habitat) shall be mitigated at a 3:1 ratio through on-site preservation of 30.0 acres of in-kind habitat in dedicated open space off-site acquisition of a minimum of 51.0 acres of in-kind existing coast live oak woodland or a combination of preservation/acquisition and 5.9 acres of habitat creation to ensure a “no net loss” of state jurisdictional habitat. Within the 51-acre off-site mitigation parcel, the species-specific mitigation for Engelmann oaks shall be met, if possible (see MM 4.9-2). If an increase in on-site preservation occurs, the amount of off-site habitat acquisition shall be reduced accordingly. If creation is required, the amount of off-site habitat acquisition shall be reduced accordingly. The off-site acquisition shall occur in an unincorporated area of San Diego County. The habitat creation shall be implemented to the satisfaction of the County and CDFG in accordance with Section 1600 of the State Fish and Game Code. A conservation easement shall be placed across the off-site mitigation area to permanently protect the resource. If possible, individual oak trees shall be salvaged from impact areas and transplanted to appropriate open space habitat on site. The implementation of the mitigation shall be prior to or concurrent with construction or as otherwise determined in consultation with the County and CDFG.

MM 4.9-1e: Impacts to 0.2 acre of native perennial grassland shall be mitigated at a ratio of 2:1 by the acquisition of 0.4 acre of in-kind habitat in an unincorporated area of San Diego County, and a conservation easement shall be placed across the mitigation area to permanently protect the resource. Acquisition of grassland habitat shall occur as part of the acquisition of coast live oak woodland habitat (MM 4.9-1d) or Engelmann oak habitat (MM 4.9-2), if possible. The implementation of the mitigation shall be prior to or concurrent with construction or as determined in consultation with the County.

MM 4.9-1f: Temporary construction fencing shall be erected under the supervision of a qualified biologist outside the delineated boundary of dedicated open space where it interfaces with impact areas and permanent fencing marked with signs shall be installed around the mitigation areas. Where impact areas are adjacent to coast live oak woodland, fencing shall be erected outside the canopy area at a distance of 1.5 times the canopy radius of the outer trees. This fencing shall be erected prior to commencement of brushing or grading activities. The fencing (for example, strand wire or split rail) shall restrict human and equipment access but shall allow for wildlife movement.

Plant Species

Impact 4.9-2: *A total of 25 Engelmann oaks would be directly impacted as a result of the project. Since 100 percent of the population would be impacted, this impact would be significant.*

MM 4.9-2: A 3:1 minimum replacement acreage (based on canopy area) of Engelmann oak trees shall be preserved within the same acquisition parcel

for coast live oak woodland, if possible (see MM 4.9-1d). . Otherwise, a separate acquisition of Engelmann oak trees at a 3:1 minimum replacement acreage shall be required in an unincorporated area of San Diego County. This acreage shall then be subtracted from the coast live oak woodland mitigation requirement (MM 4.9-1d) to avoid duplicate mitigation. A conservation easement shall be placed across the off-site mitigation area to permanently protect the resource. The implementation of the mitigation shall be prior to or concurrent with construction or as otherwise determined in consultation with the County.

Animal Species

Impact 4.9-3: *The loss of approximately 3.1 acres of arroyo southwestern toad riparian breeding habitat from construction of the bridge would be significant.*

MM 4.9-3a: In addition to the riparian habitat creation in MM 4.9-1b, implementation of a habitat enhancement program described in MM 4.9-18 shall be undertaken to mitigate impacts to arroyo southwestern toad riparian breeding habitat.

MM 4.9-3b: The removal of toad riparian breeding habitat from riparian vegetation clearing and channel excavation for the bridge shall occur from October through December to minimize potential impacts to breeding adults (including potential sedimentation impacts to toad eggs) and dispersing juveniles.

Impact 4.9-4: *Significant impacts resulting in the loss of approximately 306 acres of potential arroyo southwestern toad upland habitat within 2.0 kilometers of the river would occur from construction of the landfill and related facilities, construction of the upland portions of the access road, new grading for the on-site haul road, use of the two borrow/stockpile areas, habitat disturbance from the landfill gas and groundwater monitoring wells, and access road improvements for the San Diego Gas and Electric tower/line relocation. It should be noted that toads commonly travel up to 0.5 kilometer from the stream and that the distance toads travel from breeding sites depends on topography and the extent of suitable habitat (USFWS 1999c). If only impacts to suitable upland areas on site are considered, the potential loss of upland habitat would be approximately 32 acres and would be significant.*

MM 4.9-4: The project preserves approximately 243 acres of sandy upland habitat adjacent to toad breeding habitat on site in addition to approximately 970 acres of other upland habitats. This preservation, in combination with the habitat enhancement program described in MM 4.9-18 would mitigate impacts to the loss of potential toad upland habitat.

Impact 4.9-5: *The potential loss of individual toads from construction of the landfill and related facilities and the access road/bridge would be significant. In addition, the potential loss of individual toads from roadkill due to traffic on the access road, haul road to Borrow/Stockpile Area A, and low-flow crossing would be significant.*

- MM 4.9-5a:** The construction zone for the bridge shall be fenced with exclusion fencing to prevent toad access to the construction zone. The fencing shall be a silt-screen type barrier comprised of a minimum 24-inch high fence with the remainder (minimum 12 inches) anchored firmly against the ground. The fence may be buried if necessary to exclude toad access. The fence locations shall be identified by a qualified biologist and adjusted as necessary. Exclusion fencing shall be monitored daily by a qualified biologist, and maintained in its original condition by construction personnel for the entire length of the construction period.
- MM 4.9-5b:** Pre- and post-exclusion fencing surveys within the construction zone for the bridge shall be conducted for arroyo southwestern toads by a biologist permitted by the USFWS to handle the toad. Prior to construction commencement, a minimum of three surveys shall be conducted by this biologist following installation of the fencing. Daily surveys shall be conducted each morning prior to construction activity. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space.
- MM 4.9-5c:** Exclusion fencing shall be installed along both sides of the access road for its entire length (except where sides of bridge act as barrier) as part of access road construction. The same exclusion fencing shall also wrap around the northern edge of the facilities area and continue east and south around the 1.8-acre desiltation basin. The fencing shall continue until the topography becomes too steep or rocky on the east side of the landfill footprint as determined by a qualified biologist. The fencing shall be of a corrugated metal or other similar durable material and shall be a minimum of 24 inches high.
- MM 4.9-5d:** A minimum of three surveys shall be conducted by a biologist permitted by the USFWS to handle the arroyo southwestern toad following installation of the exclusion fencing along the access road and prior to access road use. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space.
- MM 4.9-5e:** A minimum of three surveys shall be conducted by a biologist permitted by the USFWS to handle the arroyo southwestern toad following installation of exclusion fencing around the facilities area and desiltation basin as described in MM 4.9-5c. Up to three additional surveys shall be conducted if favorable temperature and moisture conditions for toad activity have not already occurred during the first three surveys. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space.
- MM 4.9-5f:** At least one road undercrossing shall be installed in the fill beneath the access road north and south of the river. The design of the undercrossings shall be approved by the USFWS.
- MM4.9-5g:** Exclusion fencing of the material and design described in MM 4.9-5c shall be installed on the north side of the haul road to Borrow/Stockpile Area A. The fencing shall be installed prior to initial project construction and shall be removed when initial project construction is complete, and

the haul road is no longer in use. The exclusion fencing shall be re-installed prior to the use of Borrow/Stockpile Area A, which begins again in approximately year 25. The fencing shall be removed once the landfill is completely closed and the haul road is no longer in use.

MM 4.9-5h: A minimum of three surveys shall be conducted by a biologist permitted by the USFWS to handle the arroyo southwestern toad following installation and re-installation of the exclusion fencing along the access road to Borrow/Stockpile Area A prior to its use. Up to three additional surveys shall be conducted during the use period if favorable temperature and moisture conditions for toad movement have not already occurred during the three original surveys. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space.

MM 4.9-5i: Exclusion fencing of the material and design described in MM 4.9-5c shall be installed along both sides of the low-flow crossing until the road connects with the haul road described in MM 4.9-5g. The fencing shall be installed during initial project construction and shall be removed when initial project construction is complete, and the crossing is no longer in use. A minimum of three surveys shall be conducted by a biologist permitted by the USFWS to handle the arroyo southwestern toad following installation of the fencing, and daily surveys shall be conducted each morning prior to use of the low-flow crossing. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space.

Impact 4.9-6: *Direct loss of individual toads could occur in association with proposed landfill project mitigation measures to create, restore and/or enhance riparian habitats and riparian/upland transition habitats on the landfill site as described in MM 4.9-18.*

MM 4.9-6: The USFWS (1999c) has indicated in the Final Recovery Plan for the species that short-term negative effects to individual toads from such activities may be offset by the long-term positive effects of implementing such a habitat enhancement program. Therefore, the habitat enhancement plan described in MM 4.9-18 shall be implemented. The final plan shall include precautions where possible to avoid impacts to the arroyo southwestern toad.

Impact 4.9-7: *Riprap associated with the access road bridge could harbor potential predators of the arroyo toad. This impact would be significant.*

MM 4.9-7: Prior to final design, the bridge abutment design specifications shall indicate that gaps in the riprap be filled with concrete.

Impact 4.9-8: *If the northernmost SDG&E transmission tower is replaced during the critical breeding period of the golden eagle (December through May) this would be a significant impact.*

MM 4.9-8: The northernmost tower shall be replaced during the period of July through October to avoid the golden eagle breeding season.

- Impact 4.9-9:** *Abandonment of the golden eagle nest site and territory, should it occur due to the project, would be a significant impact.*
- MM 4.9-9a:** Access to the Gregory Canyon nesting site(s) shall be restricted to eagle specialists and researchers conducting monitoring.
- MM 4.9-9b:** Prior to ground disturbance, a pre-construction survey for the eagle pair shall be conducted to determine if and where the eagles are nesting on site. Weekly monitoring of the eagle pair shall be conducted by an eagle specialist during the breeding season (December through May) to confirm the eagle pair is exhibiting reproductive behavior patterns, such as nest building. After one year of construction activity, if the monitoring determines that the eagles have abandoned the site, the applicant shall create a habitat acquisition fund for purchase and preservation of off-site known or potential golden eagle nesting habitat or shall purchase an equivalent amount of golden eagle nesting habitat to be included in the MSCP Preserve. The amount of funding or habitat purchase shall be negotiated with the County.
- MM 4.9-9c:** Initial landfill construction activity less than 2,000 feet from the eagle's nest shall begin as close to the end of the eagle breeding season in June to allow the eagle pair on site to become conditioned to the activity prior to the next breeding season starting in December.
- Impact 4.9-10:** *Movement of the southernmost SDG&E tower proposed for relocation while the red-tailed hawk nest is active (likely between December and May) would not be allowed under the Migratory Bird Treaty Act. Likewise, removal of any raptor nest while it is active would not be allowed under the act.*
- MM 4.9-10:** The southernmost tower shall be moved during the period of June through November or at any time when the nest is not active. Likewise, any raptor nest removal shall only occur when the nest is inactive. A qualified biologist shall determine whether or not a raptor nest is active.
- Impact 4.9-11:** *Direct impacts to least Bell's vireo and southwestern willow flycatcher habitat including 2.4 acres of southern willow scrub and 0.2 acre of mule fat scrub would be significant.*
- MM 4.9-11a:** Removal of any riparian habitat shall only occur from October through December to avoid the breeding seasons of these bird species and to minimize potential impacts to the arroyo southwestern toad.
- MM 4.9-11b:** Impacts to vireo and flycatcher habitat shall be mitigated through riparian habitat creation as described under MM 4.9-1b. The habitat enhancement described under MM 4.9-18 would also benefit these species.
- MM 4.9-11c:** The project applicant shall provide funding for cowbird trapping along the San Luis Rey River on the project site for a period of five years from initial landfill operation.
- Impact 4.9-12:** *Initial construction, including the use of the low-flow crossing, and bridge construction could produce short-term construction noise that would potentially exceed the 60 dB(A) L_{eq} threshold during the vireo breeding*

season (March 15 through September 15) and the southwestern willow flycatcher breeding season (late April through mid-September) resulting in a significant noise impact.

- MM 4.9-12a:** Daily noise monitoring by a qualified acoustician shall be conducted between March 15 and September 15 during initial construction to verify that noise levels are below 60 dB(A) L_{eq} in vireo and flycatcher habitat. If the 60 dB(A) L_{eq} is exceeded, the acoustician shall work with the construction contractor to make operational changes and/or barriers designed by the acoustician shall be installed prior to March 15 or immediately if during the breeding season, to reduce noise levels during the breeding season. Weekly noise monitoring shall occur following operational changes and/or installation of barriers to ensure their effectiveness. If ineffective, the acoustician shall work with the construction contractor to make additional operational changes or to install other barriers that would reduce noise to less than 60 dB(A) L_{eq} .
- MM 4.9-12b:** The low-flow crossing shall only be used between September 15 and March 15. Use of the crossing could occur outside of that time period if daily monitoring by a qualified biologist determines that vireos and flycatchers have not yet arrived on site or have migrated out of the area early, or if operational changes can be made and/or barriers designed by an acoustician can be installed prior to March 15 to reduce noise levels to less than 60 dB(A) L_{eq} in the vireo and flycatcher habitat. Daily noise monitoring shall be conducted in accordance with MM 4.9-12a and noise reduction measures contained in MM 4.9-12a shall be implemented, if necessary.
- MM 4.9-12c:** Bridge construction shall only occur between September 15 and March 15 unless daily monitoring by a qualified biologist during the breeding season determines that vireos and flycatchers have not yet arrived on site or have migrated out of the area early or if operational changes can be made and/or barriers designed by an acoustician can be installed prior to March 15 to reduce noise levels to less than 60 dB(A) L_{eq} in vireo and flycatcher habitat. Daily noise monitoring shall be conducted in accordance with MM 4.9-12a and noise reduction measures contained in MM 4.9-12a shall be implemented, if necessary.
- Impact 4.9-13:** *Implementation of the riparian habitat creation and restoration and/or enhancement program (required as mitigation to offset direct impacts to the least Bell's vireo and southwestern willow flycatcher) could significantly impact these species through excessive equipment noise if installation occurs during their breeding seasons.*
- MM 4.9-13:** Mitigation activities shall only occur between September 15 and March 15 unless operational changes can be made and/or barriers designed by an acoustician can be installed prior to March 15 to reduce noise levels to less than 60 dB(A) L_{eq} in vireo and flycatcher habitat. Daily noise monitoring shall be conducted between March 15 and September 15 to verify that the measures are effective. If the 60 dB(A) L_{eq} is exceeded, the acoustician shall work with the contractor to make

additional operational changes or to install additional barriers that would reduce noise to less than 60 dB(A) L_{eq} .

Impact 4.9-14: *Approximately 4.8 acres on site and 4.6 acres off site of vireo and flycatcher habitat would be significantly impacted by traffic noise caused by the project.*

MM 4.9-14a: A total of 4.8 acres of vireo and flycatcher habitats (0.2 acre of cottonwood-willow riparian forest, 0.8 acre of mule fat scrub, and 3.8 acres of southern willow scrub) shall be created on the landfill site in dedicated open space in an area that would not be affected by noise levels equal to or greater than 60 dB(A) L_{eq} (Exhibit 4.9-5) in conjunction with that created on site for direct impacts as described in MM 4.9-1b and MM 4.9-1c.

MM 4.9-14b: The project applicant shall purchase and conserve in perpetuity 4.6 acres of off-site vireo and flycatcher habitat that would not be affected by noise levels of 60 dB(A) L_{eq} or greater as a result of project-generated or cumulative traffic. A conservation easement shall be placed across the off-site mitigation area to permanently protect the vireo and flycatcher habitat. The implementation of the mitigation shall be prior to or concurrent with construction or as otherwise determined in consultation with the County.

Impact 4.9-15: *Noise produced by landfill equipment operating at the closest point to vireo and flycatcher habitat within the landfill footprint and Borrow/Stockpile Area A (approximately 520 feet away) would potentially create noise levels in excess of 60 dB(A) L_{eq} in that habitat, resulting in a significant impact during the vireo and flycatcher breeding seasons.*

MM 4.9-15a: A temporary 12-foot high wall or berm shall be constructed along the northern edge of Borrow/Stockpile Area A outside the vireo/flycatcher breeding season (March 15 to September 15) and prior to the use of Borrow/Stockpile Area A. The barrier can be removed once topography provides the necessary noise barrier to reduce noise levels in the habitat during the breeding seasons to less than 60 dB(A) L_{eq} .

MM 4.9-15b: Noise monitoring shall be conducted weekly for up to one month by a qualified acoustician to verify that operational noise levels are below 60 dB(A) L_{eq} in vireo and flycatcher habitat. If noise levels equal or exceed 60 dB(A) L_{eq} , a 16-foot high permanent noise wall shall be installed prior to the vireo breeding season (March 15 to September 15, includes flycatcher breeding season) or immediately if during the breeding season. If noise levels exceed 60dB(A) L_{eq} during the breeding season, operational changes shall be made to reduce noise levels to less than 60 dB(A) while the noise wall is being constructed. The noise wall shall be constructed east of the knoll between the internal haul road and the top of slope for the facilities area to block truck noise emanating into the habitat.

General Indirect Impacts

Impact 4.9-16: *Potential impacts from potential human activities would be significant because of the edge effects these activities could create.*

MM 4.9-16: Throughout the life of the project, access routes shall be restricted to existing roads, and entry into non-impact areas shall be restricted by the landfill operator. Areas not directly impacted by the project shall be posted with signs precluding access due to habitat sensitivity. A public education program shall be developed by a qualified biologist and shall be implemented to inform landfill staff and visitors about access restrictions and the sensitivity of habitats on site.

Impact 4.9-17: *The potential for non-native plant species invasion would be significant for the area of channel excavation associated with construction of the bridge and for temporary and permanent slopes.*

MM 4.9-17a: Control of invasive, exotic plant species shall occur as described in the habitat enhancement plan presented in MM 4.9-18 and shall include the channel excavation area associated with construction of the bridge.

MM 4.9-17b: Temporary and permanent slopes shall be revegetated with native plant species to inhibit the growth of non-natives.

Cumulative Impacts

Impact 4.9-18: *Loss of habitats, habitat fragmentation, decreased water quality, night lighting, human activity, and the introduction of non-native plant species are cumulatively significant impacts to which the project would contribute. In addition, during the life of the landfill, cumulatively significant indirect traffic noise impacts that could affect the breeding success of endangered bird species inhabiting this portion of the river could occur. Finally, landfill operations and cell construction could be on-going throughout the Pipeline No. 6 construction period and could lead to periodic cumulative impacts.*

MM 4.9-18: The project applicant shall implement a habitat enhancement plan to improve the San Luis Rey River watershed on site as described below and detailed in Appendix L of this document.

Beyond the mitigation obligation associated with compensating for direct and indirect project impacts to vegetation communities, the project applicant for the Gregory Canyon Landfill shall be required to implement a habitat enhancement program for improvements to the San Luis Rey River watershed. In addition to the proposed open space dedication (1,313 acres), the project applicant shall restore approximately 88 acres of upland and 13 acres of riparian area within the portion of the San Luis Rey River corridor contained on site (Exhibit 4.9-5). The restoration will likely be phased and not occur all at one time.

The habitat enhancement program shall focus on the restoration of riparian and upland habitats within the San Luis Rey River floodplain on site above and beyond the project's direct mitigation obligations for vegetation community impacts. The San Luis Rey River has been

identified as one of the most easily restorable rivers in southern California (ACOE 1981). This portion of the program shall consist of the restoration of lost and/or damaged habitat and water quality caused by the long-term agricultural use of the property and the removal of highly invasive, exotic plant species. The project applicant is proposing to remove the existing Verboom dairy operations and most structures and all equipment associated with the Verboom and Lucio dairies from the site in concert with the initial construction of the landfill. Under this enhancement program, man-made berms and weed seed banks in the river's watershed shall be excavated to restore more historic river flows and invasive, non-native plant species would be replaced with native plantings. The excavation shall be focused on bringing the ground elevations down to level that would connect the areas hydrologically with the existing groundwater system and to create a series of terraces that taper into the existing upland habitat. The excavation would be done in a manner that would prevent adverse effects on upstream and downstream properties. All upland and drier riparian areas shall be planted with tree species native to the site and hand-seeded to initiate native plant re-establishment. Weed control and monitoring shall be implemented regularly during the first five years of each phase of restoration to prevent the re-establishment of non-native plant species. The goal of the restoration shall be to provide breeding and upland habitat for endangered species and widen the vegetative buffer around the riparian corridor present on site.

The dedicated open space on site, including the restored river corridor, shall be managed with a financial contribution provided by the project applicant. The project applicant shall work with the USFWS and the CDFG to identify a qualified conservancy or other non-profit organization to be responsible for implementing long-term management activities for the restored river. The type of management activities shall depend upon the condition of the site, the resources present, and the funds available to manage those resources. Management activities shall include restrictions on vehicular and human access through the installation of fencing and signs, control of exotic species [e.g., brown-headed cowbirds and giant reed (*Arundo donax*)], control of illegal dumping, and monitoring endangered species populations.

First San Diego Aqueduct Relocation Option

If the First San Diego Aqueduct were relocated, the following mitigation measures shall be incorporated:

General Measure

MM 4.9a: A pre-construction meeting shall take place with a qualified biologist and construction personnel. The biologist shall explain the access restrictions on site, the importance of remaining within construction zones, the sensitivity of the habitats and species on site, and shall explain the potential consequences of violating the access restrictions and impacting biological resources outside the construction zones. Any accidental impacts to sensitive habitat occur outside the designated impact area shall

be mitigated at a 3:1 ratio. A letter from the applicant's biologist and contractor(s) verifying receipt of biological information shall be provided to the County Department of Environmental Health prior to commencement of construction.

- Impact 4.9-19:** *Construction impacts to 9.5 acres of coastal sage scrub and 0.8 acre of coast live oak woodland would be significant from relocation of the First San Diego Aqueduct pipelines. In addition, potential significant impacts could occur during construction to wildlife, in particular the arroyo southwestern toad, least Bell's vireo, and southwestern willow flycatcher.*
- MM 4.9-19a:** The construction easement (minus permanent access road) shall be revegetated with coastal sage scrub immediately following completion of the pipeline relocation on the landfill site. The landscape plans shall incorporate this revegetation requirement.
- MM 4.9-19b:** Coastal sage scrub shall be mitigated at a 2:1 ratio by the preservation of 19.0 acres of coastal sage scrub in dedicated open space on the landfill site.
- MM 4.9-19c:** Coast live oak woodland shall be mitigated at a 2:1 ratio by the off-site acquisition of 1.6 acres of existing coast live oak woodland of like quality. The off-site acquisition shall occur in an unincorporated area of San Diego County. A conservation easement shall be placed across the off-site mitigation area to permanently protect the resource. If possible, individual oak trees shall be salvaged from the impact area and transplanted to appropriate open space habitat on the landfill site. The implementation of this mitigation shall be prior to or concurrent with construction or as otherwise determined in consultation with the County.
- MM 4.9-19d:** Temporary construction fencing shall be erected under the supervision of a qualified biologist at outside the delineated boundary of dedicated open space (Figure 3b) where it interfaces with impact areas. Where impact areas are adjacent to coast live oak woodland, fencing shall be erected outside the canopy area at a distance of 1.5 times the canopy radius of the outer trees. This fencing shall be erected prior to commencement of brushing or grading activities. The fencing (for example, strand wire or split rail) shall restrict human and equipment access but shall allow for wildlife movement.
- MM 4.9-19e:** Impacts to potential arroyo southwestern toad upland habitat from the relocation of the pipelines shall be mitigated through the Wetland Mitigation and Habitat Enhancement Plan to be implemented as part of the landfill project.
- MM 4.9-19f:** Temporary erosion control measures such as silt fencing, sand bags, and straw matting shall be used to reduce potential siltation of drainage courses including the San Luis Rey River.
- MM 4.9-19g:** The pipeline easement shall be fenced within two kilometers of the San Luis Rey River with exclusion fencing to prevent arroyo southwestern toad access to the construction zone. The fencing shall be a silt-screen type barrier comprised of a minimum 24-inch high fence with the

remainder (minimum 12 inches) anchored firmly against the ground. The fence may be buried if necessary to exclude toad access. The fence locations shall be identified by a qualified biologist and adjusted as necessary. Exclusion fencing shall be monitored by a qualified biologist and maintained in its original condition by construction personnel for the entire length of the construction period.

MM 4.9-19h: Pre- and post-exclusion fencing surveys within the construction zone shall be conducted for arroyo southwestern toads by a biologist permitted by the USFWS to handle the toad. Prior to construction commencement, a minimum of three surveys shall be conducted by this biologist following installation of the fencing. Any toads found shall be relocated to appropriate similar habitat outside project impact areas and in dedicated open space on the landfill site.

MM 4.9-19i: The trench dug for relocation of the pipelines shall be securely covered at the end of construction each day such that wildlife does not become trapped in the trench.

MM 4.9-19j: Construction noise shall not result in exceedances of 60 dB(A) L_{eq} on least Bell's vireo and southwestern willow flycatcher habitat between March 15 and September 15 unless noise attenuation measures designed by an acoustician are implemented to reduce noise levels in vireo/flycatcher habitat to below 60 dB(A) L_{eq} .

4.9.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of the mitigation measures for significant impacts to sensitive biological resources including coastal sage scrub, coastal sage scrub/chaparral, southern willow scrub, mule fat scrub, open channel, coast live oak woodland, native perennial grassland, Engelmann oak, arroyo southwestern toad, least Bell's vireo, southwestern willow flycatcher, and golden eagle, the project impacts to sensitive biological resources would be rendered less than significant since all habitat impacted would be mitigated through preservation and creation and restoration and/or enhancement at appropriate ratios, and precautions would be taken to avoid impacts to sensitive species. With implementation of MM 4.9-18, the project's contribution to cumulative impacts to biological resources would be less than significant.