

APPENDIX C
BIOLOGICAL RESOURCES TECHNICAL REPORT

**Biological Resources Technical Report for
the Expansion/Closure of the
Union Mine Disposal Site**
El Dorado County, California

Prepared for:

County of El Dorado
Environmental Management Department
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July 1991

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1.0 INTRODUCTION

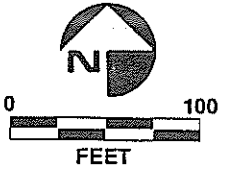
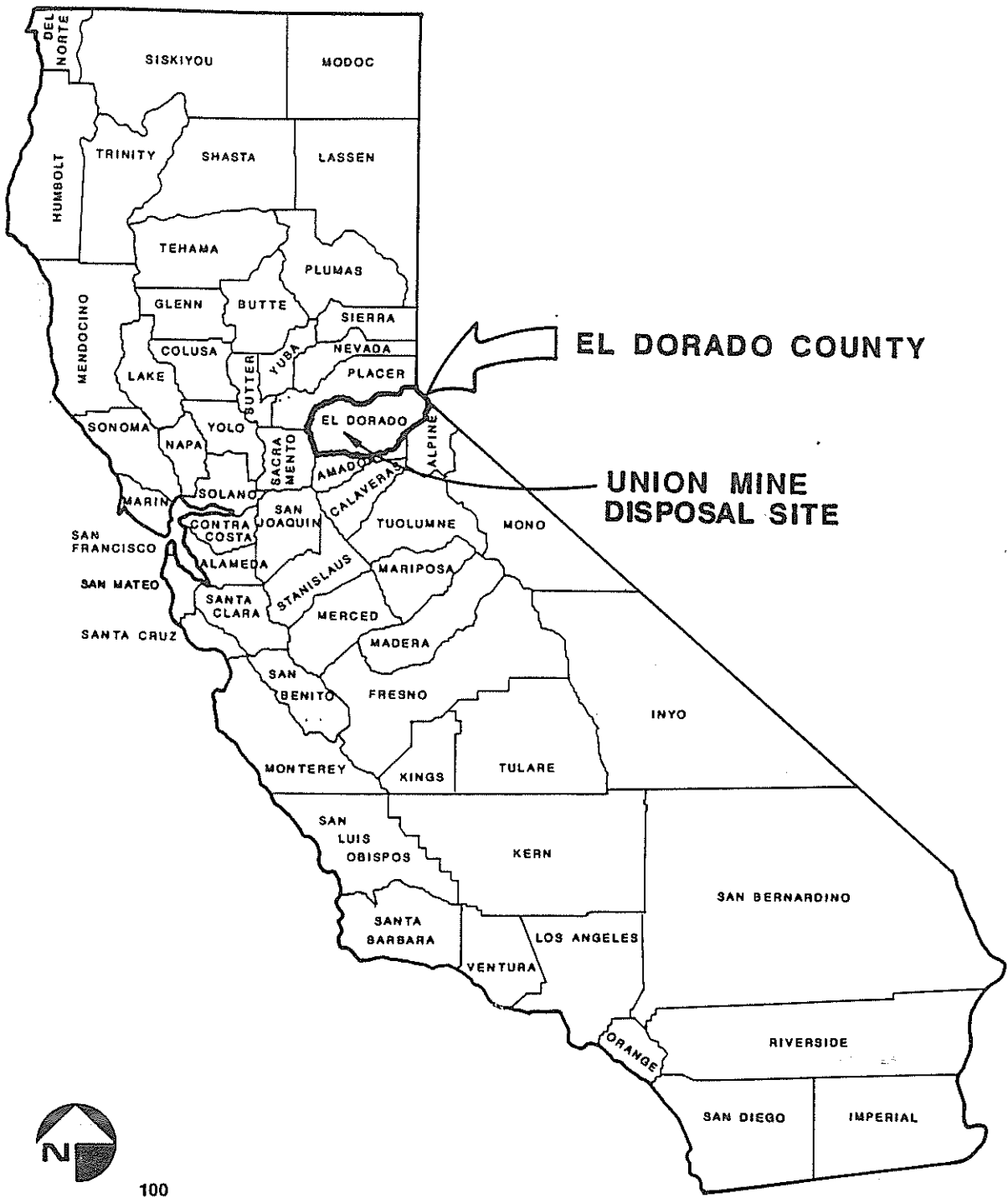
The proposed project consists of the expansion and eventual closure of the Union Mine Disposal Site, located in the western portion of El Dorado County, California and the development of a leachate/septage treatment plant and ancillary facilities near the existing landfill (Figure 1). This report describes biological resources occurring on the site, analyzes the potential impacts of the project to biological resources, and discusses measures to mitigate the potential biological impacts to below a level of significance.

The project area consists of a 217-acre parcel owned by the County of El Dorado surrounding the existing Union Mine Disposal site and a 20-acre alternate site along Martinez Creek east of the proposed expansion area. Topography of the site consists of low, moderately steep foothills ranging between 1140 and 1400 feet in elevation. Several intermittent streams flow across the property and are tributaries to Martinez Creek. Martinez Creek is a perennial stream flowing across the eastern edge of the proposed site and through the alternate site. On the Placerville USGS 7.5 minute quadrangle the project area occupies portions of Sections 12, 13, and 14, T. 9 N., R. 10 E (Figure 2).

A portion of the site exhibits only minimal disturbance; however, vegetation on the existing landfill site, the shooting range, and at the downstream ends of the intermittent drainages has been completely removed or is highly disturbed. In addition, several horizontal and vertical mines occur onsite, primarily on slopes adjacent to stream courses. Spoils from mining activities have greatly altered soils and ground contours in the immediate vicinity of the mines.

2.0 SURVEY METHODS

Biological resources on the landfill expansion site and surrounding area were assessed by biologists Michael White, Michael Wood, John Lovio, and Chris Rogers. The survey was conducted from April 29 to May 3, 1991. Surveys were conducted by walking transects over the entire 217-acre proposed site and the 20-acre alternate site. All vegetation communities were visited and mapped. All plant and animal species detected during the survey were recorded, and the presence or potential for occurrence of sensitive species was noted. Wetlands were delineated in accordance with the Unified Federal Method (FICWD 1989).



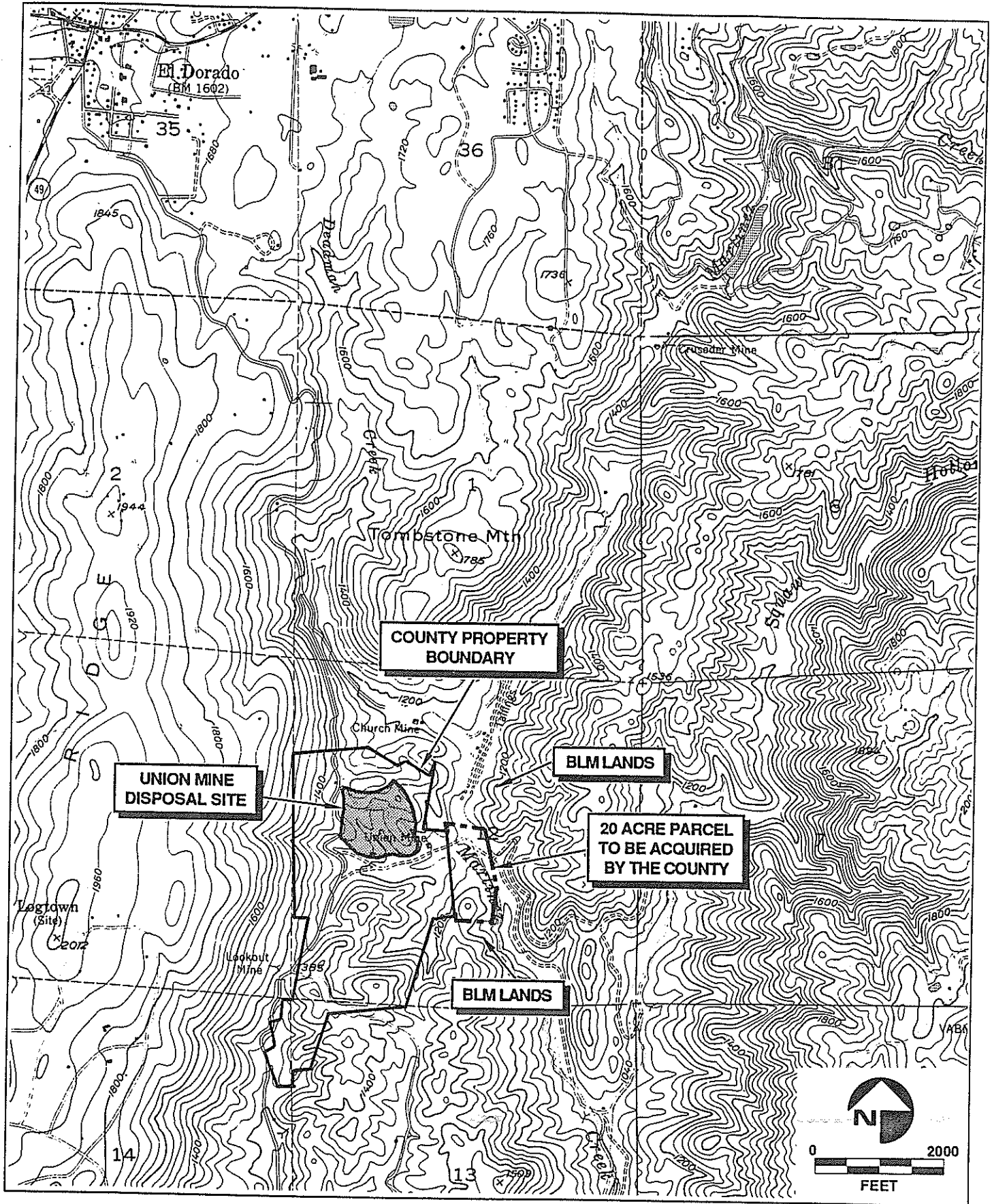
SOURCE: CH₂M Hill 1991



General Site Location

FIGURE

1



The principal intent of the biological survey was to document the presence or potential presence of sensitive biological resources onsite that could pose constraints to the proposed landfill expansion. No detailed quantitative plant transects or animal trapping studies were conducted as part of these studies.

Survey periods were optimal for detection and accurate identification of all sensitive plant and animal species likely to occur in the area. Biological resources were mapped using a 1"=100' topographic map, 1:8400 scale aerial photograph, and the soil survey map for El Dorado County (Soil Conservation Service 1974).

Scientific nomenclature used throughout this report conforms to Munz (1959) for plants, AOU (1983, 1989) for birds, Jennings (1983) for reptiles and amphibians, McGinnis (1984) for fish, and Jones et al. (1982) for mammals. Vegetation communities conform to Holland (1986).

3.0 EXISTING CONDITIONS

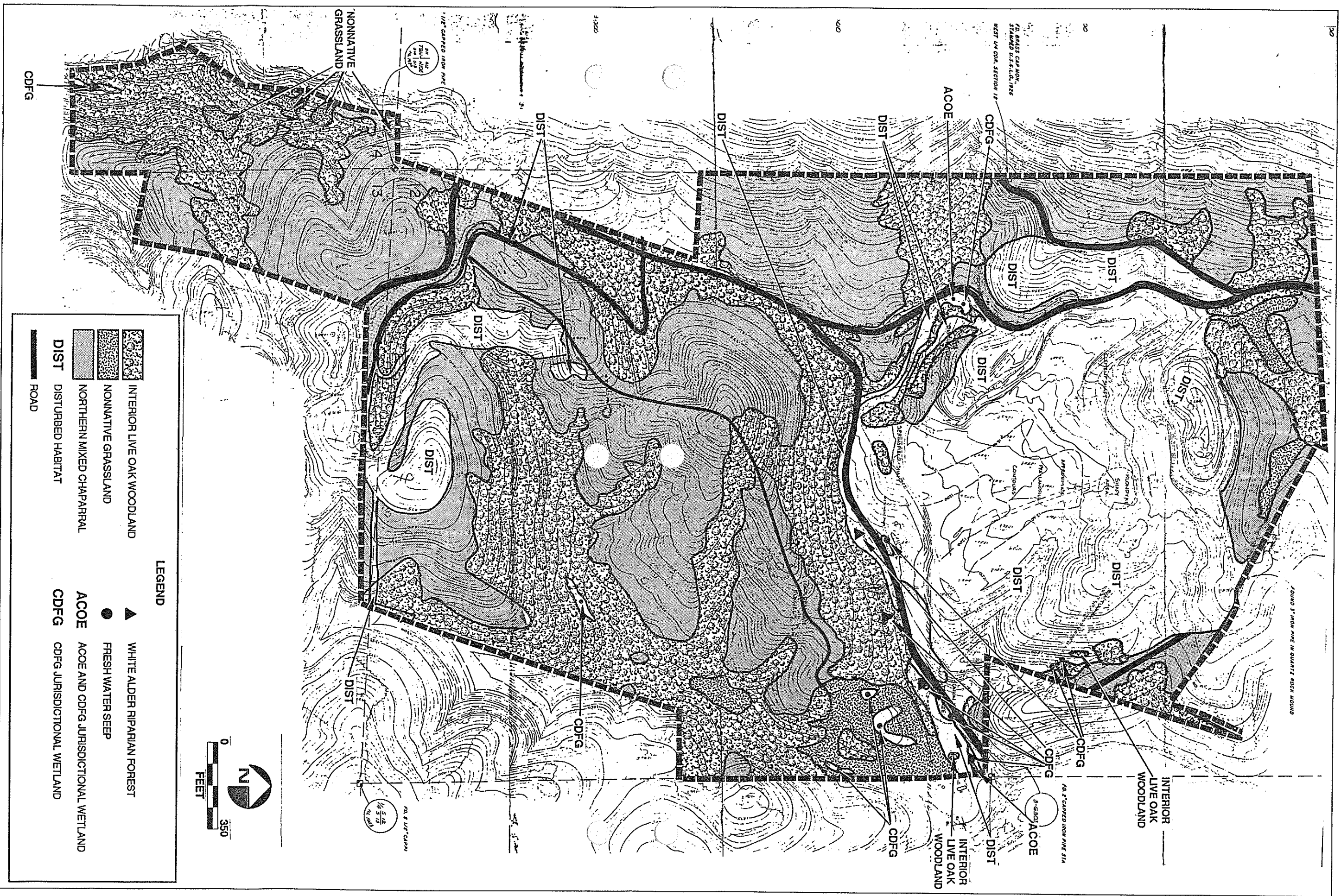
3.1 VEGETATION COMMUNITIES

Vegetation communities occurring within the study area include transitional interior/canyon live oak woodland, three phases of northern mixed chaparral, white alder riparian forest, freshwater seep, aquatic habitat, nonnative grassland, and disturbed area. Vegetation communities are delineated in Figure 3 and discussed in general terms below. Habitat types conform to Holland (1986). All native and nonnative plant species found within the property boundaries are listed in Appendix A.

Interior/Canyon Live Oak Woodland

Interior live oak woodland is typically dominated by broad-leaved trees to 45 feet in height (Holland 1986). The tree canopy is generally closed and the herbaceous and shrub layers tend to be poorly developed. This habitat type occurs on north-facing slopes extensively through the North Coast Ranges and foothills of the Sierra Nevada, and in scattered locations in the South Coast, Transverse, and Peninsular ranges.

Typical interior live oak woodland is dominated by interior live oak (*Quercus wislizenii*) and occurs throughout the site on north- and south-facing slopes. Oak woodland habitat



dominated by a dense cover of mature canyon live oak (*Quercus chrysolepis*) occurs on a north-facing slope to the south of the existing landfill site, within the proposed expansion area. This stand exhibits transitional characteristics of interior live oak forest and canyon live oak forest.

Plant species characteristic of interior live oak woodland and detected onsite include California buckeye (*Aesculus californica*), ponderosa pine (*Pinus ponderosa*), digger pine (*Pinus sabiniana*), blue elderberry (*Sambucus caerulea*), blue oak (*Quercus douglasii*), and poison oak (*Toxicodendron diversilobum*).

Interior live oak woodland habitat onsite is relatively undisturbed and of high quality in terms of species diversity and value to wildlife.

Northern Mixed Chaparral

Northern mixed chaparral consists of broad-leaved sclerophyllous shrubs 6-15 feet high. This fire-adapted plant community is typically very dense, forming impenetrable stands with little or no understory. Northern mixed chaparral occurs on dry, steep rocky slopes and shallow soils and is distributed from the eastern slopes of the Klamath Mountains and North Coast Ranges, over the South Coast Ranges and western Sierran foothills, to the Transverse and Peninsular Ranges of southern California (Holland 1986).

Typical northern mixed chaparral is dominated by scrub oak (*Quercus dumosa*), chamise (*Adenostoma fasciculatum*), and various species of manzanita (*Arctostaphylos* spp.) and buckbrush (*Ceanothus* spp.). Three phases of this community type occur onsite: chamise-dominated, white-leaf manzanita (*Arctostaphylos viscida*) dominated, and mixed stands supporting chamise, white-leaf manzanita, and interior live oak. Chamise-dominated stands of northern mixed chaparral occur principally on south-facing slopes. White-leaf manzanita-dominated stands onsite are found at or near ridge tops and mixed stands are found on west-facing slopes.

Additional species detected onsite and characteristic of northern mixed chaparral include California buckeye, buckbrush (*Ceanothus cuneatus*), woolly-leaved ceanothus (*Ceanothus tomentosus* var. *tomentosus*), toyon (*Heteromeles arbutifolia*), yerba santa (*Eriodictyon californicum*), and poison oak.

White Alder Riparian Forest

White alder riparian forest is a broad-leafed deciduous forest of medium height which occurs along streams. It typically forms a dense shrubby understory of deciduous species. This plant community is most often found in steep sided canyons on coarse sandy soils with underlying bedrock (Holland 1986). White alder riparian forest is distributed at lower elevations of the Sierra Nevada, Coast, Transverse, and Peninsular ranges.

Habitat onsite is best characterized as early successional, having developed relatively recently in stream channels disturbed by placer mining. The most typical example of this community occurs along Martinez Creek on the alternate site. Poorly developed white alder riparian forest occurs in patches along the stream course at the canyon bottom immediately to the south of the landfill site, within the proposed expansion area.

Characteristic species detected onsite include white alder (*Alnus rhombifolia*), snowberry (*Symphoricarpos* sp.), California rose (*Rosa californica*), dogwood (*Cornus stolonifera*), big-leaf maple (*Acer macrophyllum*), arroyo willow (*Salix lasiolepis*), and black willow (*Salix gooddingii*).

Freshwater Seep

Freshwater seep habitat occurs throughout most of the state and is particularly common on permanently moist soils in grasslands and meadows (Holland 1986). It is usually dominated by perennial herbs such as sedges and grasses forming complete vegetative cover.

Numerous isolated and connected freshwater seeps occur within the study area. Some occur as typical mesic sites in meadows on the slopes of hills. Others occur as early successional habitat in open, wet depressions in placer diggings along stream courses. Typical species detected onsite include rushes (*Juncus* spp.), curly dock (*Rumex crispus*), Douglas' mugwort (*Artemisia douglasiana*), sedges (*Carex* spp.), soft flag cattail (*Typha latifolia*), water cress (*Rorippa nasturtium-aquaticum*), and duckweed (*Lemna* sp.).

Aquatic Habitat

Aquatic habitat in the project area is associated with the permanent water present in Martinez Creek. Plant species characteristic of this habitat include watercress, spearmint (*Mentha spicata*), and common horsetail (*Equisetum arvense*). This habitat occurs in close association with white alder riparian forest, and the roots and dead branches of the riparian trees contribute to the physical structure of the aquatic habitat.

Nonnative Grassland

This plant community is generally found in open areas interspersed among oak woodland and northern mixed chaparral and typically occurs on fine-textured loam or clay soils that are somewhat poorly-drained (Holland 1986). Nonnative grassland also frequently develops on grazed or otherwise disturbed sites.

This vegetation type is typically dominated by nonnative annual grasses and weedy annual and perennial forbs, with scattered native wildflower species. Characteristic nonnative plant species detected include brome grass (*Bromus* spp.), farmer's foxtail (*Hordeum leporinum*), red-stemmed filaree (*Erodium cicutarium*), cut-leaved geranium (*Geranium dissectum*), yellow star thistle (*Centaurea solstitialis*), and mouse-ear chickweed (*Cerastium viscosum*). Typical native species detected include Douglas' lupine (*Lupinus nanus*), California poppy (*Eschscholzia californica*), and henbit (*Lamium amplexicaule*).

Disturbed Area

Disturbed area is characterized as land on which the native vegetation has been significantly altered by agriculture, construction, or other surface disturbances. Such area typically occurs on vacant lots, roadsides, construction staging areas, or graded sites. Numerous locations onsite are highly disturbed. Recent surface disturbances have occurred at the landfill site and the immediate vicinity, and at the two shooting ranges. Historic disturbances resulting from mining operations occurred primarily along stream courses and at the bottoms of slopes.

Typical species found in disturbed areas include yellow star thistle, pineapple weed (*Matricaria matricarioides*), turkey mullein (*Verbascum thapsus*), red-stemmed filaree, horehound (*Marrubium vulgare*), and common vetch (*Vicia angustifolia*).

3.2 WILDLIFE HABITAT

The value of a site to wildlife is influenced by a combination of the physical and biological features of the immediate environment. Species diversity is a function of diversity of abiotic and biotic conditions and is greatly affected by human use/abuse of the land. The habitat quality of an area for use by wildlife, therefore, is ultimately determined by the type, size, and diversity of vegetation communities present and their degree of disturbance. As a plant community is degraded by loss of understory, creation of openings, and a reduction in area, a loss of structural diversity generally results. Degradation of structural diversity of a habitat typically diminishes habitat quality and usually results in a reduced ability to support a diversity of animal species.

Wildlife habitats are typically distinguished by vegetation type. Varying combinations of plant species provide different resources for utilization by wildlife. The following is a discussion of existing habitats on the project site and the wildlife species detected onsite that they support. All animal species detected during field surveys are listed in Appendix B.

Nonnative Grassland

Nonnative grasslands are of value primarily for the foraging opportunities they offer granivorous birds such as lesser goldfinch (*Carduelis psaltria*) and predators such as red-tailed hawk (*Buteo jamaicensis*). Grasslands are capable of supporting colonies of rodent species such as California vole (*Microtus californicus*). Rodents may then serve as prey for predators such as the gray fox (*Urocyon cinereoargenteus*). Nonnative grasslands are typically considered to be of low habitat quality to wildlife species.

Interior/Canyon Live Oak Woodland

Interior/canyon live oak woodland typically has high habitat value for wildlife species. Oak woodlands provide cover and forage for avian and mammalian species, as well as perching and nesting sites for resident birds. Characteristic avian species detected in oak woodland habitat onsite include acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Dendrocopos nuttali*), scrub jay (*Aphelocoma coerulescens*), Steller's jay (*Cyanocitta stelleri*), and northern pygmy-owl (*Glaucidium gnoma*). Mammalian species utilizing this

habitat type include mule deer (*Odocoileus hemionus*), California vole, western gray squirrel (*Sciurus griseus*) and gray fox. A variety of reptile and amphibian species are also likely to occur within oak woodland onsite. Detected residents include Gilbert's skink (*Eumeces gilberti*) and Pacific treefrog (*Hyla regilla*).

The oak woodland habitat within the proposed expansion area is considered to be of very high quality. This woodland is mature, is composed of a variety of oak and pine species, has a well developed understory, and has an abundance of leaf litter and dead wood. These features tend to make this particular habitat very attractive to wildlife species.

Riparian, Wetland, and Aquatic Habitats

Riparian habitat, such as white alder riparian forest, is of high habitat value to a wide variety of wildlife species. Riparian systems associated with perennial sources of water tend to support plant communities with great structural diversity and provide abundant cover, forage, and water for a wide array of resident and migratory animal species. In addition, riparian systems often act as movement corridors for wildlife. Intermittent streams, while providing similar resources for wildlife, may support fewer and less diverse animal species.

Avian species detected in riparian habitats onsite include song sparrow (*Melospiza melodia*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), and common yellowthroat (*Geothlypis trichas*). Mammalian species detected in riparian habitat onsite include gray fox, and dusky-footed woodrat (*Neotoma fuscipes*). Amphibians such as Pacific treefrog and California newt (*Taricha torosa*) were also detected in these habitats. Fishes observed in the aquatic habitat of Martinez Creek include mountain sucker (*Catostomus platyrhynchus*), sunfish (*Lepomis* sp.), and an unidentified trout species, possibly brown trout (*Salmo trutta*).

Freshwater seeps provide little in the way of cover for vertebrate species. However, due to the presence of water, seeps may support invertebrate populations providing food for insectivorous birds. Bird species detected include black phoebe (*Sayornis nigricans*) and American robin (*Turdus migratorius*). Pacific treefrog was detected in the freshwater seeps onsite as well.

Northern Mixed Chaparral

Northern mixed chaparral similarly provides abundant cover and forage opportunities but generally for fewer and smaller bird and mammal species than found in woodlands. Bird species detected in this habitat include dusky flycatcher (*Empidonax oberholseri*), Bewick's wren (*Thryomanes bewickii*), Nashville warbler (*Vermivora ruficapilla*), mountain quail (*Oreortyx pictus*), and Anna's hummingbird (*Calypte anna*).

Disturbed Areas

Disturbed sites such as old fields and abandoned mine tailings may provide suitable habitat for rodents. These sites may also provide forage for granivorous, insectivorous and predatory bird species. More highly impacted areas such as roads, roadsides, and graded pads may have virtually no habitat value for wildlife, depending on the length of time since disturbance. The only animal species detected in disturbed areas was western fence lizard (*Sceloporus occidentalis*).

3.3 SENSITIVE SPECIES

Plant and animals species are designated as sensitive due to their overall rarity, restricted distribution, and/or unique habitat requirements. In general, it is a combination of these factors that leads to the designation of a species as sensitive. The Endangered Species Act (ESA), enacted by Congress in 1973, outlines the procedures whereby species are listed as endangered or threatened and established a program for the conservation of such species as well as the habitat in which they occur.

Many individual states have enacted their own listing procedure to provide for the protection of additional locally sensitive biological resources. The California Endangered Species Act of 1984 amends the California Fish and Game Code to protect species deemed to be locally endangered and essentially expands the number of species protected under the ESA (CDFG 1991).

The California Department of Fish and Game (CDFG) has also compiled lists of species of "special concern" (Remsen 1978; Williams 1986; CDFG 1990b,c). Although such species are afforded no official legal status, they may receive special consideration during the planning stages of certain development projects. The CDFG further classifies some species

under the following categories: "fully protected," "protected furbearer," "protected amphibian," and "protected reptile." The designation "protected" indicates that a species may not be taken or possessed except under special permit from the CDFG; "fully protected" indicates that a species can be taken for scientific purposes by permit only.

The Audubon Society's Blue List (Tate 1986) is a periodically updated list of bird species considered to be declining in the United States. The list does not include species already federally listed. Local populations may and often do differ in status from the general Blue List status for the entire United States.

Plants

High interest plants include those listed by the U.S. Fish and Wildlife Service (USFWS) (USFWS 1989), CDFG (CDFG 1988; 1990a,c), and the California Native Plant Society (CNPS) (Smith and Berg 1988). The CNPS listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species (see Appendix C for a summary of potentially occurring sensitive species and an explanation of USFWS, CDFG, and CNPS listing codes). In addition, the County of El Dorado General Plan (County of El Dorado 1990) lists plant species considered sensitive.

Twelve plant species listed as sensitive by the CNPS are known to occur in the general vicinity of the project area in habitat types represented onsite. None of these are federal-listed endangered and, thus, have no formal status under the ESA. Three species are state-listed rare and are candidates for federal listing; three additional species are candidates for federal listing; and the remainder are considered sensitive by the CNPS. A general discussion of sensitive plant species known from the project vicinity and their potential for occurrence onsite is given below.

Nissenan manzanita (*Arctostaphylos nissenana*) is a low growing perennial shrub in the heath family. It is on the CNPS list 1B:3-2-3, but has been rejected for federal listing (C3c). The species occurs on bare, acidic mineral soils on slopes where competition from larger shrubs and trees is minimal. Nissenan manzanita was not detected during the present survey. There is no potential for its occurrence onsite due to a lack of suitable habitat and the fact that it would have been easily recognizable during the survey.

Pleasant Valley mariposa lily (*Calochortus clavatus* var. *avius*) is on the CNPS list 1B:3-2-3 and qualifies for federal listing (C1). The species produces erect, yellow lily-like flowers on stems up to 3 feet high. The flowering period is from April to June. Pleasant Valley mariposa lily occurs on dry, often rocky slopes in chaparral and foothill woodland below 4000 feet in elevation. Although suitable habitat occurs onsite and a non-flowering (and therefore unidentifiable) species of *Calochortus* was detected during the survey, potential for the target species to occur onsite is low. Due to the growth habit and habitat of these non-flowering individuals, it is believed that the species occurring onsite is the same as flowering individuals of the widespread fairy lantern (*Calochortus albus*) found offsite.

Sierra clarkia (*Clarkia virgata*), a member of the evening-primrose family, is on the CNPS list 4:1-1-3 but has no state or federal status. The species produces purple to dark lavender flowers from May through July and occurs in foothill woodland and lower yellow pine forest in the western Sierra Nevada. Because habitat onsite is not typical for the species and because the species would have been recognizable during the survey, it is not expected to occur within the project area.

Pine Hill flannelbush (*Fremontodendron decumbens*) is a shrub 3 feet in height and 6 to 12 feet across. It is on the CNPS list 1B:3-2-3, is state-listed rare (CR), and is a candidate for federal listing (C2). It produces large orange to red-brown flowers May-June and occurs in chaparral and foothill woodland. The potential for occurrence of the species is low due to the fact that it would have been readily identifiable during the survey.

El Dorado bedstraw (*Galium californicum* ssp. *sierrae*) is also on the CNPS list 1B:3-2-3, is state-listed rare (CR), and is a candidate for federal listing (C2). The species is a low herb to 1 foot high and produces diminutive yellowish flowers March-July. Although suitable habitat and other members of the genus occur onsite, the potential for the occurrence of El Dorado bedstraw onsite is low; the species would have been detectable during the survey.

Bisbee Peak rush-rose (*Helianthemum suffrutescens*) is on the CNPS list 1B:2-2-3 and is a candidate for federal listing (C2). It is a low multi-branched shrub 2 feet high and produces yellow flowers April-May. It occurs in open chaparral, often on disturbed soils. Although a similar species, California rush-rose (*H. scoparium*), occurs onsite, the target species was not detected and is not believed to be present because it would have been identifiable during the survey.

Parry's horkelia (*Horkelia parryi*) is on the CNPS list 1B:3-1-3 but has no state or federal status. This species is a low spreading herb developing from a horizontal rootstock. It occurs on dry hills below 1000 feet in open chaparral and foothill woodland. Although suitable habitat is present onsite, the species would have been detectable during the survey and is therefore not expected to occur within the project boundaries.

Hoary navarretia (*Navarretia eriocephala*) is on the CNPS list 4: 1-1-3 but has no state or federal status. This annual herb produces cream-yellow flowers on stems 2 to 8 inches high from May through June. It occurs in dry, open grasslands and foothill woodland below 1000 feet. There is a low potential for occurrence of hoary navarretia. Although suitable habitat occurs onsite, the plant would have been detectable during the survey and is therefore not expected to occur in the project area.

Yellow bur navarretia (*Navarretia prolifera* ssp. *lutea*) is on the CNPS list 4:1-1-3 and was rejected for federal listing (C3c). The subspecies is also an annual herb producing bright yellow flowers on stems 2 to 6 inches high from May through June. It occurs above 2700 feet in elevation in yellow pine forest. There is no potential for the occurrence of this subspecies due to the facts that the site lacks suitable habitat and that the taxon would have been identifiable during the survey.

Mariposa phacelia (*Phacelia vallicola*) is on the CNPS list 4:1-1-3 and has no state or federal status. This small annual herb produces purple flowers May through June and occurs in rocky places in chaparral, and foothill woodland above 1800 feet. Although a few individuals of one unidentified species of *Phacelia* were detected onsite, it is not believed to be the target species due to differences in the plant's habit and because the elevation of the site is below 1400 feet.

Layne's butterweed (*Senecio layneae*) is on the CNPS list 1B:2-2-3, is listed as rare (CR) by the CDFG, and is a candidate (C2) for federal listing. It is a perennial herb growing 8-20 inches high and producing yellow flowers in May. The species occurs in chaparral and foothill woodland, often on ultramaphic soils. Layne's butterweed is not expected onsite due to the fact that it would have been readily recognizable during the present survey.

El Dorado County mule ears (*Wyethia reticulata*) is on the CNPS list 1B:2-2-3 and is a candidate (C2) for federal listing. The species is a low, leafy perennial reaching two feet in height. It produces yellow flowers in sunflower-like heads 1 inch across from May through July and occurs on stony clay soils in open chaparral and foothill woodland between 1200 and 1500 feet in elevation. The potential for the occurrence of the species onsite is low because it would have been readily detectable during the spring survey.

Animals

High interest animals include those listed by the USFWS (1989), the CDFG (1990b; 1991); Remsen (1978), Williams (1986), and Tate (1986), as well as those considered sensitive by the County of El Dorado General Plan (County of El Dorado 1990). The El Dorado National Forest Land and Resource Management Plan FEIR lists additional species as sensitive (U.S. Forest Service 1988).

The USFWS officially lists sensitive species as either threatened or endangered, and unofficially recognizes additional species as candidates for listing. Additional species (i.e., bald eagle, golden eagle) receive federal protection under the Bald Eagle Protection Act.

No federally- or state-listed endangered or threatened animal species are known to occur in the vicinity of the project site (CDFG 1990b). However, four animal species recognized as being of special concern by the CDFG or as sensitive by the County of El Dorado either occur or have the potential of occurring on the site. A general discussion of sensitive animal species known from the project vicinity and their potential for occurrence onsite is given below.

Several breeding bird species of concern (Remsen 1978) or declining species (Everett 1979) are associated specifically with riparian woodland habitat. These sensitive bird species include warbling vireo (*Vireo gilvus*), yellow warbler, and yellow-breasted chat. Brownheaded cowbird (*Molothrus ater*) parasitism in combination with habitat loss are suspected as the major reasons for the decline of these species.

Warbling vireo may potentially occur as a summer visitor in El Dorado County. Warbling vireos formerly nested in oak and riparian woodlands but have been essentially extirpated

from this habitat, apparently because of brood parasitism by brown-headed cowbirds. This species was not detected during the surveys.

Yellow warbler is a summer visitor that in California nests only in mature riparian woodland. It is a frequent victim of the brown-headed cowbird. The yellow warbler is considered a second-priority species of special concern by the CDFG. This species was detected in the riparian habitat of Martinez Creek and may potentially breed there.

Yellow-breasted chat is another species restricted to riparian woodland, where it frequents dense undergrowth. It is a second-priority species of special concern (Remsen 1978). The yellow-breasted chat is a summer visitor to California, arriving in early April. This species was detected in the riparian habitat of Martinez Creek and may potentially breed there.

A sensitive amphibian that potentially may be in the vicinity of the project is the California red-legged frog (*Rana aurora draytonii*), which is protected by the CDFG (1982) and is a candidate (Category 2) for federal listing as threatened or endangered. This species frequents marshes, slow parts of streams, lakes, reservoirs, ponds, and other usually permanent water sources. It occurs primarily in wooded areas in lowlands and foothills, although it can also be found in grassland. It is considered a pond frog (Stebbins 1966) and is typically associated with deep water pools (at least 0.5 meter in depth) fringed by thick vegetation (Zweifel 1955; Hayes, pers. comm.), especially arroyo willow or native cattails. During the breeding season the males call from the water while floating, producing weak vocalizations (Hayes and Krempels 1986). The adults are strictly nocturnal and extremely wary; any attempt to census this species must be conducted at night.

The decline of the California red-legged frog, as well as other western ranids, is probably the result of numerous confounding factors such as competition and predation with and by introduced species (bullfrogs and fish), acid rain, pathogens and parasites, catastrophic events (severe drought and scouring floods), and habitat alteration (Hayes and Jennings 1986). These frogs often exist in small populations (Storm 1960; Hayes, pers. comm.) and as such are sensitive and subject to local extinctions. The tadpoles of this frog require cool water (>21C is lethal); therefore habitat alterations that increase water temperature, such as removal of riparian vegetation or reduction in stream flow, could lead to local extinctions. This species was not detected during the survey and has a low potential for occurrence onsite due to the lack of appropriate habitat and the presence of exotic species such as the bullfrog (*Rana catesbiana*).

3.4 SENSITIVE HABITATS

Sensitive habitats are those which are considered rare in the region, support sensitive plant or animal species, receive regulatory protection such as wetlands under the U.S. Army Corps of Engineers (ACOE) 404 permit process and/or the CDFG 1600-1606 (Streambed Alteration Agreement), or are those considered important by the County of El Dorado General Plan (County of El Dorado 1990). In addition, the CNDDDB has designated a number of communities as rare; these communities are given the highest inventory priority (Holland 1986).

Sensitive habitats within the Union Mine Landfill expansion area include the two wetland plant communities, white alder riparian forest and freshwater seep, and interior/canyon live oak woodland. Locations of sensitive habitats and jurisdictional wetlands are identified in Figure 3.

Wetland habitat is considered a sensitive and declining resource by several regulatory agencies including the CDFG and the USFWS. Wetlands are specifically addressed by the CDFG Code sections 1600-1606 (Streambed Alteration Agreement), and Section 404 of the Clean Water Act (Reinen 1978). Section 404 permit provisions regulating the dredging and filling of wetlands are enforced by the ACOE and U.S. Environmental Protection Agency (EPA), with technical input from the USFWS. The ACOE exerts jurisdiction over "waters of the U.S." which include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high water marks.

Wetland communities identified within the project area include white alder riparian forest and freshwater seep. A majority of the white alder riparian forest habitat occurs along Martinez Creek at the alternate site with additional patches onsite along an unnamed tributary in the canyon just south of the existing landfill. Freshwater seep habitat is abundant along Martinez Creek and the same unnamed tributary mentioned above as well as other unnamed tributaries onsite and in disturbed grassland at the east end of the expansion area. Jurisdictional drainages ("waters of the U.S.") are present within the two main unnamed tributaries and Martinez Creek.

Oak woodland in general is considered a sensitive plant community by the CNPS and the CDFG due to the decline of this habitat type in California as a result of land conversion, fragmentation, and lack of regeneration (CNPS 1989). Approximately 7.2 million acres of oak woodland presently occur in the state; 1 million acres have been lost since 1945 (McCreary, personal communication). Although no local or state ordinances govern impacts to interior/canyon live oak woodland in El Dorado County, *per se*, Sections 1913-1933 of the State Fish and Game Code, governing the protection of biodiversity, outlines requirements for preserving significant natural areas, including significant examples of plant community types, which apply to areas of this habitat onsite.

4.0 IMPACTS AND ANALYSIS OF SIGNIFICANCE

4.1 DEFINITION OF IMPACT TYPE AND SIGNIFICANCE CRITERIA

The proposed project has the potential to produce three different types of project-related impacts to biological resources: direct impacts, indirect impacts, and cumulative impacts. Direct impacts may be short-term or long-term, and occur when biological resources are altered, destroyed, or removed during the course of project construction (e.g., removal of vegetation by grading or filling, loss of individuals from habitat clearing and/or construction-related mortalities, loss of foraging, nesting, or burrowing habitat for wildlife species, and habitat disturbance which results in unfavorable substrate conditions to allow natural vegetative regeneration). Indirect impacts may also be short-term or long-term, and occur when project-related activities affect, in an indirect manner, biological resources (e.g., increased amounts of noise, erosion, sedimentation, and dust). Cumulative impacts are the sum of all impacts that occur throughout the project area, from this and other projects (e.g., cumulative noise levels or human activity).

Significance criteria are based on local interpretation, CEQA guidelines, and guidelines provided in Nelson (1981).

Significant adverse impacts include:

- Impacts to federal or state-listed species or habitats;

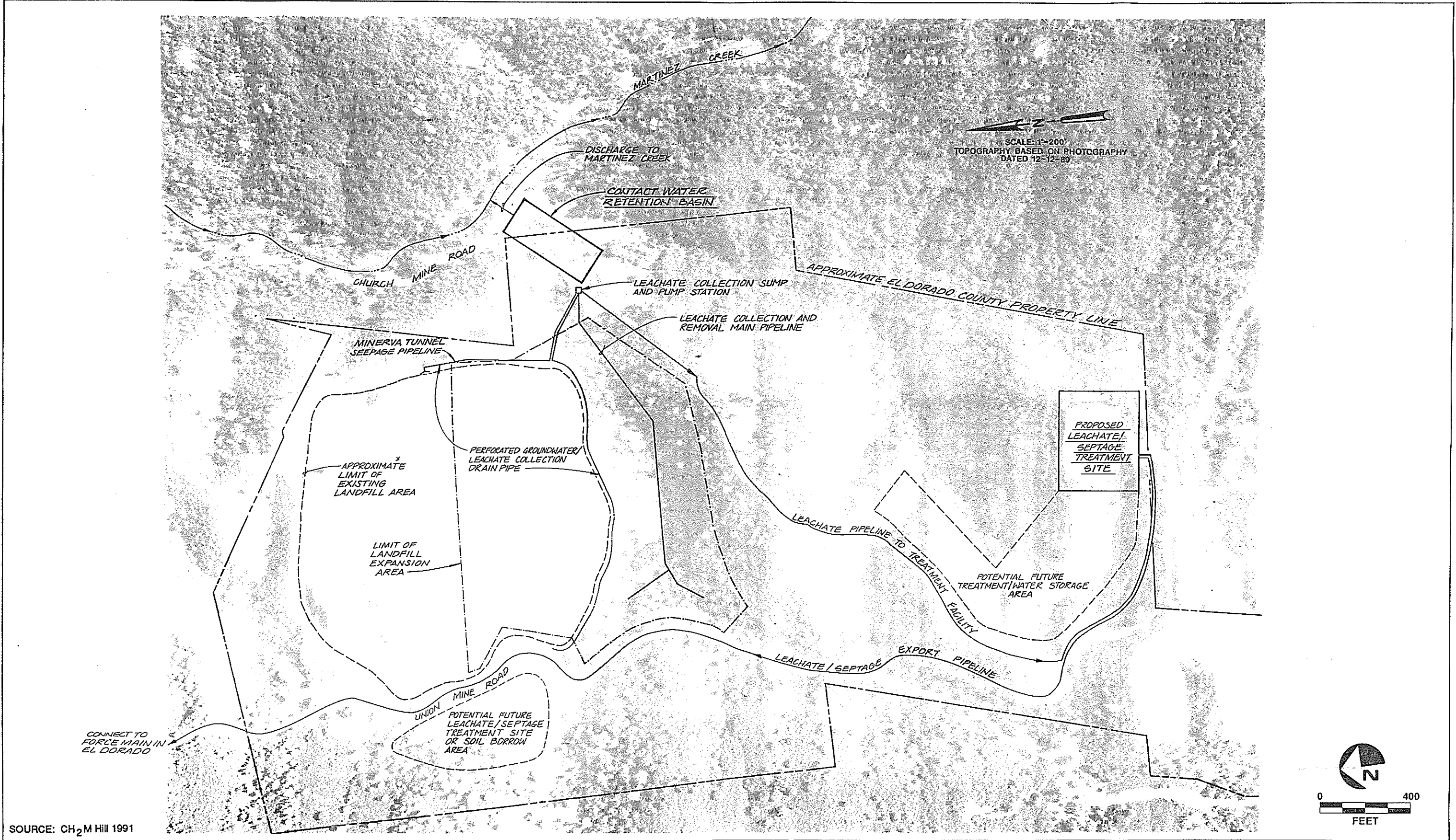
- Impacts to high quality or undisturbed biological communities, vegetation associations, and habitats that are restricted on a regional basis or serve as wildlife corridors or buffers;
- Impacts to habitat that serves as breeding, feeding, nesting, or migrating ground and is limited in availability or serves as core habitats to regional plant, wildlife, and fish populations; and
- Impacts to biological resources of scientific interest because they are at their physical or geographic limits or represent an unusual variation in a population or community.
- Impacts to habitats that are key to the maintenance of localized plant and animal populations, even if these habitats are not biologically significant on a regional basis (i.e., these impacts would be locally, but not regionally, significant).

Adverse but non-significant impacts include:

- Impacts resulting from construction, operation, or maintenance of a proposed project that adversely affect biological resources but would not significantly change or stress the resources on a long-term basis; and
- Impacts to biological resources that are already disturbed or lack importance in the preservation of local or regional native biological diversity and productivity.

Impacts to biological resources have been assessed for the entire study area. A "worst-case scenario" has been assumed when details of the project description are lacking. The potential direct impacts associated with this project can be attributed to five project components (Figure 4):

1. Impacts associated with the expansion of the landfill to the south.
2. Impacts associated with the proposed leachate/septage treatment site.
3. Impacts associated with the potential future leachate/septage treatment site or borrow area.
4. Impacts associated with the retention basin.
5. Impacts associated with leachate/septage pipelines and pump stations.



SOURCE: CH₂M Hill 1991



Aerial Photograph and Schematic Location of Proposed Facilities

FIGURE

4

A 20-foot wide construction zone has been assumed for the leachate/septage pipelines. Impacts have been calculated for the retention basin assuming grading as shown in Figure 5.

4.2 SENSITIVE SPECIES

Two sensitive animal species were detected in the project area (yellow warbler, yellow-breasted chat). No impacts to these sensitive species are anticipated from implementation of the proposed project.

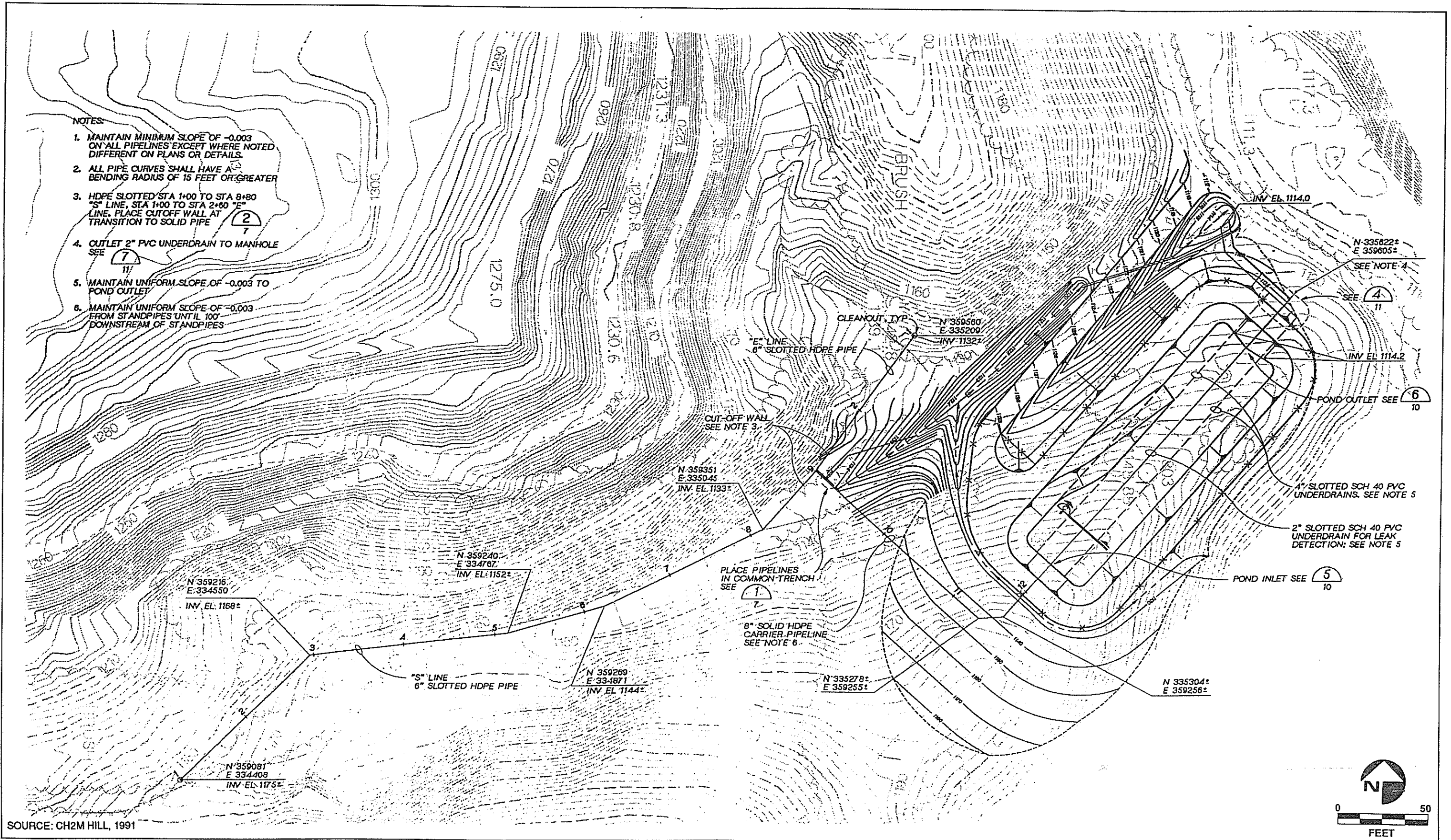
4.3 SENSITIVE HABITATS

Project implementation would result in an overall loss of 21.0 acres of native and nonnative habitat. However, the quality of the habitat varies between the various portions of the project area due to variations in maturity, structural diversity, and levels of disturbance. Table 1 provides impact acreages for all habitat types broken down by the five project components. Total acres of habitats occurring within the project area are presented below and include the alternate site (i.e., total project area = 237 acres).

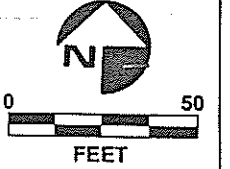
Interior/canyon live oak woodland habitat covers approximately 82.9 acres within the project area, of which, a total of 12.2 acres would be impacted as a result of the proposed project. However, of this 12.2 acres of oak woodland, approximately 2.3 acres located at the southwest corner of the landfill site (Figure 3), are fragmented and generally disturbed with little understory; this area is not considered high quality habitat.

Oak woodlands are generally considered a sensitive resource by the CNPS and the CDFG. Oak woodland onsite represents a valuable biological resource due to its extensive cover, low degree of disturbance, and the high diversity of animal and plant species associated with it. The impacts to 9.9 acres of oak woodlands onsite (exclusive of the 2.3 acres at the southwest corner of the existing landfill disturbance area) are considered a significant impact. Impacts to the 2.3 acres of habitat at the southwest corner of the existing landfill are not considered significant because of its highly disturbed and fragmented nature.

Direct impacts would result from the clearing of land supporting oak woodland by construction and grading activities. Indirect impacts may result from fugitive dust and



SOURCE: CH2M HILL, 1991



Leachate Collection Facilities Plan

FIGURE
5

Table 1

IMPACT ACREAGES FOR HABITAT TYPES IN THE PROJECT AREA BY PROJECT COMPONENT

Habitat Type	Total Project Area	Expansion Area	Proposed Leachate/Septage Treatment Site	Future Leachate/Septage Treatment Site	Retention Basins	Leachate/Septage Pipelines	Total Impacts
Interior Live Oak Woodland	82.9	10.3	1.4		0.4	0.1	12.2
White Alder Riparian Forest	4.7	0.6			0.02		0.6
Freshwater Seeps	0.7	0.04			0.3		0.3
Northern Mixed Chaparral	81.6	0.2	6.2	1.3			7.7
Nonnative Grassland	7.7				0.20		0.2
ACOE/CDFG Jurisdictional Wetlands	0.02	0.01			0.01		0.02
CDFG Jurisdictional Wetlands	0.98	0.64			0.30		0.9
Waters of the U.S.	0.56	0.12			0.04		0.16
Disturbed Areas	59.4						
Total Project Area	237	11.9	7.6	1.3	1.27	0.1	21.0*

* Total impact acreage represents impacts to habitat types only.

disturbance of the soil surface within the root protection zone of trees adjacent to graded areas, effectively increasing the total acreage of actual impacts. Because the potential area of indirect impact is small and this indirect impact may be reduced by contractor education, indirect impacts to oaks are not considered significant. Cumulative impacts would result from a net overall reduction of this habitat type within El Dorado County and are considered adverse but not significant.

Approximately 4.7 acres of white alder riparian forest and 0.7 acre of freshwater seep occur within the project area. Approximately 0.9 acre of wetland habitat (0.6 acre white alder riparian forest and 0.3 acre of freshwater seep) would be directly impacted as a result of project implementation. Impacts would include 0.02 acre of ACOE jurisdictional wetlands, 0.16 acre of ACOE jurisdictional "waters," and 0.9 acre jurisdictional CDFG wetlands. Direct and indirect impacts to wetlands are considered significant due to their high biological value and protected status at the state and federal levels.

Impacts to ACOE jurisdictional wetlands are less than 1 acre and therefore qualify for a Nationwide 26 permit, thereby avoiding the need for an Individual 404 permit requiring mitigation to offset wetland habitat loss. The CDFG warden for this area, who is familiar with the project area, has indicated that he would not require a Streambed Alteration Agreement (CDFG Section 1601) for impacts to the drainage in the proposed expansion area (personal communication, Ken Ball, CDFG to Mike White, ERCE, May 9, 1991).

Potential indirect impacts to wetlands or waters of the U.S. could result from sedimentation, erosion, or spillage of toxic materials, and could affect habitat within the project area or downstream. These impacts are considered significant but avoidable through sensitive construction practices, as outlined in Section 5.0.

Approximately 81.6 acres of northern mixed chaparral occur onsite. The proposed project would result in impacts to approximately 7.7 acres of northern mixed chaparral. These impacts are not considered significant.

Nonnative grassland covers approximately 7.7 acres of the project area. The proposed project would impact approximately 0.2 acres of nonnative grassland. This impact is not considered significant.

The remaining area onsite is disturbed by existing landfill operations, the gun club areas and roadways. Any impacts to disturbed areas are not considered significant.

5.0 MITIGATION MEASURES

To mitigate potential direct, indirect, and cumulative impacts to below a level of significance, the following mitigation measures are recommended and should be incorporated as project design features.

5.1 General Mitigation Measures

Many of the potential direct and indirect impacts outlined in Section 4.0 can be minimized or avoided altogether by adherence to the following general project design mitigation measures.

1. The County will retain a project biologist to oversee aspects of construction monitoring that pertain to biological resource protection, and to ensure compliance with the mitigation measures described below. The project biologist will be responsible for the contractor education program (no. 2 & 3, below) and will monitor all construction activities in areas supporting sensitive biological resources. The project biologist will act as the liaison between the County of El Dorado and the contractor(s), and will act in the County's interest in resolving conflicts between resource protection and project implementation.
2. Provisions will be made to inform the construction contractor(s) about the biological constraints of this project. All sensitive habitat areas to be avoided shall be clearly marked on project maps provided to the contractor. These areas will be designated as "no construction" or "limited construction" zones. These areas will be flagged by the project biologist prior to the onset of construction activities. In some cases, resources may need to be fenced or otherwise protected from direct or indirect impacts.
3. A contractor education program will be implemented to ensure that contractors and all construction personnel are fully informed of the biological resources associated with this project. This program will focus on a) the purpose for resource protection, b) contractor identification of sensitive resource areas in

the field (e.g., areas delineated on maps and by flags or fencing), c) sensitive construction practices (see nos. 4-7, below), d) protocol to resolve conflicts that may arise during the construction process, and e) ramifications of noncompliance. This program will be conducted by a qualified biologist (preferably, the project biologist/construction monitor), and will be a requirement for all construction personnel.

4. Vehicles will use existing access roads to the degree feasible. Where new access is required, all vehicles will use the same route, even if this requires heavy equipment to back out of such areas. All access routes outside of existing roads or the construction easement will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction. All access roads outside of existing roads or the construction easement will be delineated on the grading plans and reviewed by a qualified biologist.
5. Topsoil will be stockpiled in disturbed areas, to the degree feasible, presently lacking native vegetation. Stockpile areas will be delineated on the grading plans and reviewed by a qualified biologist.
6. Staging areas will be located in disturbed habitat, to the degree feasible. Staging areas are prohibited within sensitive habitat areas. Staging areas will be delineated on the grading plans and reviewed by a qualified biologist.
7. Fueling of equipment will not occur adjacent to drainages. "No-fueling zones" will be designated on construction maps and will be situated a minimum distance of 50 feet from all drainages.

5.2 Mitigation for Direct Impacts

Sensitive Species

No sensitive plant or animal species will be impacted as a result of project implementation, and therefore no mitigation measures are required.

Sensitive Habitats

Oak Woodlands

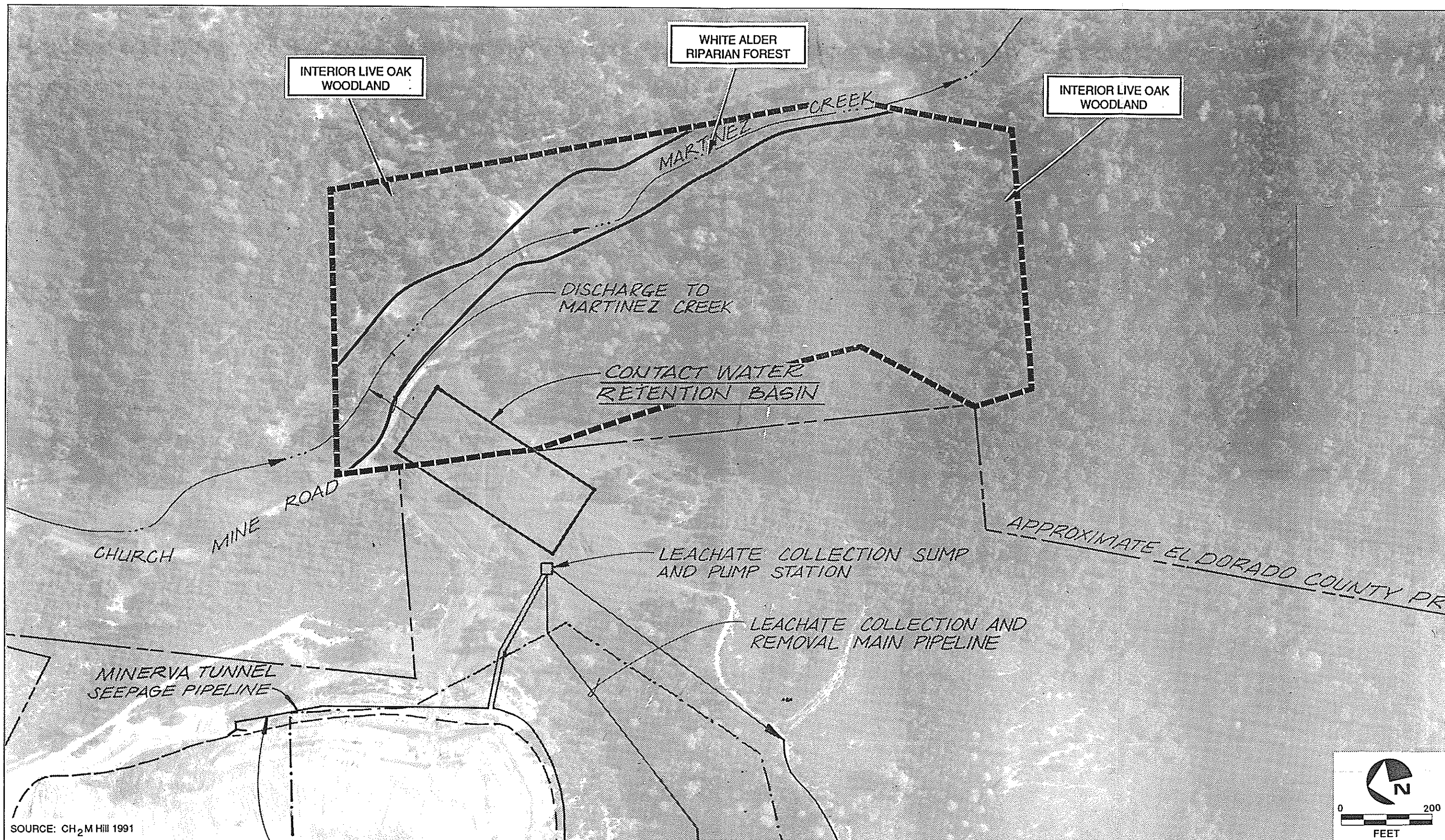
Project implementation will result in significant impacts to 9.9 acres of oak woodland. Although El Dorado County has no formal mitigation policy for oak trees, the CNPS, CDFG, and the California Oak Foundation recommend that direct impacts to oak woodland should be minimized as much as possible. As mitigation for the loss of interior/canyon live oak woodlands resulting from project implementation, the County of El Dorado has proposed that the alternate site along Martinez Creek be acquired and set aside as a native habitat preserve; the alternate site currently supports approximately 13.6 acres of similar oak woodland (Figure 6). This parcel is currently being acquired by the County of El Dorado and the acquisition of the parcel by El Dorado County for preservation will preclude future development on this land. Designating approximately 13.6 acres of oak woodland as biological open space will mitigate the project related impacts to oak woodlands to below a level of significance.

Wetlands

As mitigation for significant impacts to 0.9 acres of wetlands, the County of El Dorado proposes to acquire the alternate site described above to be set aside as a native habitat preserve. The site presently supports approximately 4.0 acres of high quality white alder riparian forest and freshwater marsh habitats with even greater value to wildlife than those wetland habitats found onsite (Figure 6). Mitigation of this sort will require and creation of a mitigation agreement with the CDFG guaranteeing the preservation of the site and ensuring its protection in perpetuity. Designating 4.0 acres of white alder riparian forest as biological open space will mitigate the project related impacts to wetlands to below a level of significance.

5.3 Mitigation for Indirect Impacts

In general, indirect impacts may result from increased runoff and erosion, toxic spills into drainages, and fugitive dust. These potential significant impacts are mitigable to below a level of significance, as described below.



SOURCE: CH₂M HILL 1991