Biotic Resources Assessment

THE HABITAT RESTORATION GROUP

JOHN STANLEY & ASSOCIATES

6001 BUTLER LANE, SUITE #1
SCOTTS VALLEY, CA 95066
(408) 438-4102

BIOTIC RESOURCES ASSESSMENT

BUNKER HILL ESTATES PROPERTY

SAN MATEO COUNTY, CALIFORNIA

Prepared for

Mr. John Ward
John Ward and Associates

and

Mr. Jack Chamberlain
The Chamberlain Group

Prepared by

THE HABITAT RESTORATION GROUP
John Stanley and Associates

John T. Stanley, Principal
Kathleen B. Lyons, Project Manager and Botanist
David L. Suddjian, Wildlife Biologist
Mara Zucchi, Field Assistant
Garvin Hoefler, Field Assistant

File 458-02

April 4, 1989

BIOLOGICAL RESOURCES

Site Description

The project site encompasses 98 acres of a northeast-facing slope, draining into Polhemus Creek, a tributary of San Mateo Creek. An intermittent creek, flowing northeast through the center of the site, had surface water during the field survey. Elevations range from 750 feet near the northwestern portion of the site to approximately 325 feet at its central northeastern boundary. Habitats present are coast live oak woodland, Northern sage scrub, Northern mixed chaparral, willow riparian, serpentine grassland, and non-native grassland. The site is subject to regularly-occurring winds, with the ridgetop area at the southeastern border of the site being most strongly affected.

The project site is surrounded by roads and suburban development, and, for many species, may function as a discrete unit of habitat. Additional areas of natural habitat (coast live oak woodland and chaparral) exist adjacent to the southeast and northeast portions of the project site, but these are separated from the site by roads, and are also bordered by development. The project site remains the largest parcel of natural habitat in the area of land bordered by Polhemus Creek, San Mateo Creek, Crystal Springs Reservoir, and Highway 92.

The biological resources of the site were investigated during the month of February 1989. The vegetation of the site was identified using aerial photo interpretation and field observations. Wildlife use of the site was determined from field observations.

VEGETATION

The vegetation of the project site was surveyed during the months of February and March 1989. Vegetation analysis consisted of aerial photo interpretation (1988 photo) and on-site observations. Special attention was given to areas supporting native vegetation and areas that could be impacted from the proposed development.

All plants observed were identified using A California Flora (Munz and Keck, 1968) and Flora of the Santa Cruz Mountains (Thomas, 1968). A list of plant species found within the project site may be found in Appendix A. A total of 96 plant species were identified in the project site; 74 native and 22 non-native species.

The plant communities of the site were mapped (Figure 2) and described as to dominant species, environmental limiting factors and cover. Plant communities were named following the California Department of Fish and Game's Terrestrial Plant Communities, (Holland, 1986). Six plant communities were delineated on the project site: coast live oak woodland, non-native grassland, serpentine grassland, Diablan sage scrub, northern mixed chaparral, and willow thicket. Areas of planted non-native tree were also present on the site.

Information on the presence of rare and endangered plant taxa was gathered from the California Natural Diversity Data Base (CNDDB, 1989), California Native Plant Society (CNPS, 1988), and field observations.

Coast Live Oak Woodland

The coast live oak woodland community occurs along the north-facing slopes and ravines of the project site and along some of the ridgetop areas There are scattered occurrences of oak woodland along the south-facing hillside in the southern portion of the project site, adjacent to Ticonderoga Drive. The oak

woodland is the dominant plant community of the property.

The woodland overstory is dominated by coast live oak (Quercus agrifolia) , with the addition of California bay (Umbellularia californica), and California buckeye (Aesculus californica). Also present are scattered occurrences of madrone (Arbutus menziesii) and blue elderberry (Sambucus mexicana). To a very limited degree, red willow (Salix laevigata), a species typical of riparian habitat, was present in scattered locations along the northern two creeks. The vegetation along the creeks, however, is dominated by a coast live oak woodland. The overstory forms a dense canopy approximately 25-45 feet in height and in most areas provides 75-100% cover.

The shrub component include poison oak (Toxicodendron diversilobum), toyon (Heteromeles arbutifolia), coffee berry (Rhamnus californica), hillside gooseberry (Grossularia californicum), and California blackberry (Rubus ursinus). Scattered occurrences of silktassel (Garrya elliptica) and ocean sprat (Holodiscus discolor) were also observed. The herbaceous layer is continuous and well-developed floristically. Herbs of bracken fern (Pteridium aquilinum pubescens), California honeysuckle (Lonicera hispidula), columbine (Aquilegia sp.), Indian warrior (Pedicularis densiflora), sweet cecily (Osmorhiza chilensis), hounds tongue (Cynoglossum grande), iris (Iris sp.), and wood fern (Dryopteris arguta) were particularly common. Other herbaceous plants are expected to occur within this community but were not visible due to the time of year of the survey.

Within the proposed development areas (Areas A, B, C, D, and F), an inventory of every tree with a circumference of 38" or greater, measured at 4-1/2' from the ground (greater than 12" DBH) was performed. Each tree was labeled in the field; the number and location of each tree is shown on Figure 1. Each numbered tree's species, diameter, height, and general health is listed in Appendix B. A total of 722 tree trunks were recorded within the project site. 188 of these were trees with multiple trunks.

Tree species recorded in include coast live oak, bay, and

buckeye. Of particular interest are several coast live oaks in the range of 34-43" in diameter within Areas A and C. No Class 2 heritage trees were recorded within the development areas.

TABLE 1. Number of trees with a circumference of 38" or greater within the proposed development areas, Bunker Hill Estates, San Mateo County.

Area	Number of Trees Recorded	Number of Multiple Trunks	Total
A	259	78	337
B	48	17	65
C	189	68	257
D	17	4	21
F	24	18	42
Total	537	185	722

Non-Native Grassland

This community was found along the perimeter of the project site. The vegetation is characteristic of areas previously disturbed from grading or other plant removal, and is dominated by non-native plant species. Common plants included perennial ryegrass (Lolium perenne), oat (Avena sp.), ripgut grass (Bromus diandrus), long-beaked filaree (Erodium botrys), milk thistle (Silybum marianum), and other non-native species. Native species present included sky lupine (Lupinus nanus), California poppy (Eschscholzia californica), purple sanicle (Sanicula bipinnatifida), California buttercup (Ranunculus californicus), and blue-eyed grass (Dichelostemma pulchellum). Due to the time of year of the field survey, additional annual plants may occur within the grassland habitat but were not visible.

A small drainage area in the northwestern corner of the property (adjacent to Bunker Hill Drive) contained escaped garden plants of ice plant (Carpobrotus edule), red hot poker (Kniphofia

uvaria), and English ivy (Hedera helix).

Serpentine Grassland

This plant community was found within the central portion of the project site, occupying a slope west of the water tanks. The grassland intergraded with the adjacent mixed chaparral and coast live oak woodland. In contrast to the non-native grassland, this community was dominated by native species, in particular, perennial bunchgrasses.

Plants included purple needlegrass (Stipa pulchra), naked buckwheat (Eriogonum nudum), sky lupine, larkspur (Delphinium sp.), coyote mint (Monardella sp.), calochortus (Calochortus sp.) and blue-eyed grass. Several other species are expected to be found within this community, but were not visible at the time of year of this study.

The serpentine grassland is listed as a community of high priority with the California Natural Diversity Data Base and the California Department of Fish and Game. The high species diversity of this grassland area and the large number of locally unique plant species represents a significant botanical resource.

Willow Thicket

Along the creek, within the central portion of the project site, were thickets of red willow (Salix laevigata). Within these thickets, the willows were the dominant woody plant species. The understory included herbaceous plants of curly dock (Rumex crispus), poison hemlock (Conium maculatum), common rush (Juncus patens). The area closest to the homes near Yorktown and Newport streets included English ivy in the understory and a single Lombardy poplar (Populus nigra), a non-native tree, in the overstory.

Diablan Sage Scrub

This plant community occurred along the ridge top and south-facing slopes in the central portion of the project site. It is characterized by a dense growth of soft-woody shrubs ranging from 2-4 feet in height. The vegetation is adapted to shallow, rocky soils, which typically have low moisture availability.

The flora is dominated by shrubs of California sage (Artemisia californica), black sage (Salvia mellifera), sticky monkey flower (Diplacus aurantiacus), coyote brush (Baccharis pilularis consanguinea), pitcher sage (Lepechinia calycina), coffee berry (Rhamnus californica), and young coast live oaks. The herbaceous layer is sparse with scattered occurrences of small-flowered stipa (Stipa lepida), cudweed (Gnaphalium sp.), soap plant (Chlorogalum pomeridianum), and yellow yarrow (Eriophyllum confertiflorum).

Northern Mixed Chaparral

The mixed chaparral community occupied some of the ridge top and southwestern-facing slopes. The vegetation is dominated by shrubs, forming dense, virtually impenetrable thickets. The vegetation is adapted to dry, rocky soil with low-water availability.

The flora of the chaparral includes shrubs of coyote brush, coffee berry, poison oak, holly-leaved cherry (Prunus ilicifolia), toyon (Heteromeles arbutifolia), and sticky monkey flower. There are scattered occurrences of young coast live oaks. Herbaceous growth is limited to openings between shrubs and around rocky outcropping. Common plants include soap plant, coffee fern (Pellea andromedaefolia), wild onion (Allium sp.), purple stipa (Stipa pulchra), hairy honeysuckle (Lonicera hispidula), and common yarrow (Achillea millefolium).

Planted Trees of Pine and Acacia

Along the perimeter of the project site and around the two water tanks are planted trees of Monterey pine (Pinus radiata) and green wattle (Acacia decurrens).

Rare and Endangered Plant Species

The California Natural Diversity Data Base (CNDDB, 1988), California Native Plant Society (CNPS, 1988), and field observations were utilized in determining the potential presence of rare and endangered vascular plant taxa on the project site. As of February, 1989 the CNDDB information for the San Mateo USGS quadrangle listed several plant species of concern adjacent to the project site. These are listed in Table 1.

The CNDDB had no recorded occurrences of any plant species of concern from the project site. Field surveys as part of this report, however, cannot confirm or deny this information due to the time of year of the survey. Several annual plants within the serpentine grassland area, for example, were not identifiable due to the time of year of the study. The potential occurrence for plant species of concern is highest within the serpentine grassland community.

TABLE 2. PLANT SPECIES OF CONCERN WITHIN THE VICINITY OF THE BUNKER HILL ESTATES DEVELOPMENT, SAN MATEO COUNTY.

GENUS-SPECIES, COMMON NAME	STATUS (1)	SUITABLE HABITAT (2)	CLOSEST KNOWN POPULATION (3)
Acanthomintha obovata ssp. duttonii San Mateo Thorn Mint	FE,CE	Serpentine slopes April-June	1972 sighting at Hwy 280/92 junction, probably extirpated.
Cirsium campylon Mt. Hamilton Thistle	C1	Wet seeps on serpentine May-July	One population on east side of Crystal Springs Reservoir; presumed extant.
Cirsium fontinale var. fontinale Fountain Thistle	C1,CE	Seepage areas on serpentine June-October	East side of Crystal Springs Reservoir; two populations, one threatened Hwy 280 activity. Recorded in 1985.
Eriophyllum latilobum San Mateo Woolly Sunflower	C1	Shady areas on slopes of oak buckeye, bay, and CA sage. May-June	1986 sighting along Crystal Springs Rd. north of project.
Fritillaria liliacea Fragrant Fritillary	C2	High quality serpentine grassland. Feb.-April	At NE end of Crystal Springs Reservoir on Pulgas Ridge. 100+ plants in 1987.
Hesperolinon congestum Marin Dwarf Flax	C1	Shallow serpentine soil and outcrops May-June	Two populations; both E of project. presumed extant on west slope of Ridge.

TABLE 2.(Con't.) PLANT SPECIES OF CONCERN WITHIN THE VICINITY OF THE BUNKER HILL ESTATES DEVELOPMENT, SAN MATEO COUNTY.

GENUS-SPECIES, COMMON NAME	STATUS (1)	SUITABLE HABITAT (2)	CLOSEST KNOWN POPULATION (3)
Pentachaeta bellidiflora White-Rayed Pentachaeta	C2	Shallow serpentine soil March-May	East slope of Pulgas Ridge; obs. in 1867. Known from herbarium records, presumed extant.

(1) Status:
- FE = Federally listed as endangered species or subspecies.
- FR = Federally listed as rare species or subspecies.
- CE = Listed as endangered by State of California.
- CR = Listed as rare by State of California.
- C1 = Enough data on file to support federal listing.
- C2 = Threat and/or distribution data are insufficient to support federal listing.

(2) Months indicate flowering time.

(3) Sighting information from California Natural Diversity Data Base (CNDDB, 1989).

WILDLIFE

Wildlife use of the project site was investigated on February 22, 1989. The entire site was surveyed to assess the wildlife value of the various habitats present, and to determine which wildlife species were likely to occur at the site. A brief examination of the surrounding area was also conducted to permit the project site to be evaluated in the context of the local setting. A search of the California Natural Diversity Data Base was performed on February 3, 1989. Wildlife use of the project site, and its habitat values are discussed below.

The project site is predicted to support six species of amphibians, 11 species of reptiles, 106 species of birds, and 41 species of mammals. Overall, the habitats at the project site have substantial wildlife value, particularly as relatively undisturbed areas surrounded by a suburban environment.

Coast Live Oak Woodland

The coast live oak woodland supports a more diverse wildlife community than of any of the project site's other habitats. The structural diversity of the canopy, and the dense understory vegetation provide niches for a variety of species. The northern central portion of the project site (proposed development area C), drained by the intermittent creek, was observed to be especially productive. This area was a focal point of bird activity during the field survey, and is expected to function as an important water source for most of the wildlife species occurring on the project site.

Some characteristic species of amphibians and reptiles expected or observed in the project site's coast live oak woodland habitat include California Newt (Taricha torosa), California Slender Salamander (Batrachoseps attenuatus), Arboreal Salamander (Aneides lugubris), Pacific Treefrog (Hyla regilla), Western Skink (Eumeces skiltonianus), Southern Alligator Lizard (Gerrhonotus multicarinatus), and Ring-necked Snake (Diadophis

punctatus). Numerous rocks and logs were turned over during the field survey to locate amphibian and reptile species. Eleven California Slender Salamanders were the only species observed. A Pacific Treefrog was heard calling in the vegetation along the small creek. This species, and the California Newt, require the pools of water for reproduction. The comparatively moist environment offered by this habitat, with its abundant downed wood and leaf litter, provides important shelter for the amphibians and reptiles present.

Birds were numerous in the coast live oak woodland habitat. The oaks provide acorns, an important food source for Steller's Jay (Cyanocitta stelleri) and Scrub Jay (Aphelocoma coerulescens). The oaks also attract numerous insects, in turn attracting a variety of insect-eating birds, such as Townsend's Warbler (Dendroica townsendi), Ruby-crowned Kinglet (Regulus calendula), Hutton's Vireo (Vireo huttoni), and Chestnut-backed Chickadee (Parus rufescens). Fruit-bearing understory plant species, such as poison oak, toyon, and California coffeeberry, provide food for American Robin (Turdus migratorius), Varied Thrush (Ixoreus naevius), Hermit Thrush (Catharus guttatus), Wrentit (Chamaea fasciata), and others. The trunks and branches of the oaks attract bark-gleaning species, such as Downy Woodpecker (Picoides pubescens) and Brown Creeper (Certhia americana).

The most numerous species observed on the field survey include Steller's Jay, Hutton's Vireo, Ruby-crowned Kinglet, Chestnut-backed Chickadee, Varied Thrush, Northern Flicker (Colaptes auratus), and Fox Sparrow (Passerella iliaca). Some of the bird species expected to breed in this habitat on the project site include Western Screech-Owl (Asio otus), Western Flycatcher (Empidonax difficilis), Steller's Jay, Chestnut-backed Chickadee, Plain Titmouse (Parus inornatus), Bewick's Wren (Thryomanes bewickii), Hutton's Vireo, Orange-crowned Warbler (Vermivora celata), Rufous-sided Towhee (Pipilo erythropthalmus), and Dark-eyed Junco (Junco hyemalis). The coast live oak woodland would also be attractive to migrant birds, with the small creek probably being a focal point.

Mammal species find cover and food in this habitat. The coast

live oak acorns are a primary food source for squirrels and deer, with squirrels also feeding on California Bay nuts. New foliage growth is consumed by a variety of herbivorous species. The small creek at the center of the project site is probably an important source of water for mammals using the area. Common species observed or predicted to occur in the project site's coast live oak woodland include Mule Deer (Odocoileus hemionus), Western Gray Squirrel (Sciurus griseus), Raccoon (Procyon lotor), Virginia Opossum (Didelphis virginiana), Deer Mouse (Peromyscus maniculatus), Dusky-footed Woodrat (Neotoma fuscipes), and Striped Skunk (Mephitis mephitis). Mule Deer were seen on the survey, frequenting the area around the small creek. Raccoon tracks and a Dusky-footed Woodrat nest were also observed.

Willow Thicket

Because of its limited distribution, and its close association with the coast live oak woodland, the wildlife species occurring in project site's willow riparian habitat are largely the same as those in the oak woodland. The field survey indicated that many individuals of a variety of species move freely from the site's willow riparian habitat to its coast live oak woodlands. The willow riparian provides food and cover for wildlife. The dense foliage of the willows attracts insects, providing good foraging substrate for insectivorous birds. Because of its small size, the project site's riparian habitat is not expected to attract any riparian-obligate nesting birds, such as Yellow Warbler (Dendroica petechia).

Northern Mixed Chaparral and Diablan Sage Scrub

These habitats attract essentially the same suite of wildlife species, and can be considered together. The dense plant growth in these habitats provides important cover for many species of wildlife. The abundant shrubs, such as California coffeeberry, provide food for a variety of species, particularly birds and small mammals. Several species frequenting the wooded habitats of the project site would not be expected to occur in the chaparral

habitats, and several species that are adapted to more xeric environments would not be expected to occur in the wooded habitats. In spite of these differences, there is extensive overlap in the species compositions of the woodland and chaparral habitats on the project site.

Amphibian species using these habitats at the project site are expected to be few, and are probably limited to small numbers of California Slender Salamander and Arboreal Salamander. These species would probably retreat to the adjacent woodland habitats during the dry months. Reptiles are probably most diverse at the project site in these comparatively dry habitats. The Western Fence Lizard (Sceloporus occidentalis) is probably the most abundant species. Other common reptile species occurring in this habitat are Western Skink, Southern Alligator Lizard, Racer (Coluber constrictor), and Gopher Snake (Pituophis melanoleucus). Western Rattlesnake (Crotalus viridis) probably occurs at the project site, but would be expected in small numbers.

The suite of bird species observed and predicted to use the chaparral and sage scrub habitat includes many of the species which frequent the site's woodland habitats. Some of the most numerous species are California Quail (Callipepla california), Mourning Dove (Zenaida macroura), Anna's Hummingbird (Calypte anna), Allen's Hummingbird (Selasphorus sasin), Scrub Jay, Bushtit (Psaltriparus minimus), Bewick's Wren, Blue-gray Gnatcatcher (Polioptila caerulea), Wrentit, California Thrasher (Toxostoma redivivum), Orange-crowned Warbler, Rufous-sided Towhee, Brown Towhee (Pipilo fuscus), Golden-crowned Sparrow (Zonothrichia atricapilla), and Lesser Goldfinch (Carduelis psaltria). Many of these species would be expected to move freely between the chaparral habitats and the adjacent coast live oak woodland.

Many of the mammal species occurring in the coast live oak woodland are also expected to use the project site's chaparral and sage scrub habitat. Among the most common species observed or predicted in these habitats are Brush Rabbit (Sylvilagus bachmani), Merriam's Chipmunk (Tamias merriami), Dusky-footed Woodrat, Deer Mouse, and Mule Deer. Coyote (Canis latrans), Gray

Fox (Urocyon cinereoargenteus), and Bobcat (Lynx rufus) may occur in this habitat in small numbers.

Serpentine Grassland and Non-native Grassland

These habitats, while differing in plant species composition, attract largely the same species of wildlife, and can be considered together. The open terrain of the grassland habitats is favored by several species of wildlife over the other habitats occurring at the site, although the small area covered by this habitat limits the number and diversity of species present. The seeds of the grasses and other herbaceous plants are important for seed-eating birds and small mammals.

The grassland habitats are frequented by several snakes, including Racer, Gopher Snake, and Common Garter Snake (Thamnophis sirtalis subspecies infernalis). Western Fence Lizards are expected to be abundant, but being active during the warmer months, were not evident on the field survey. Amphibians are expected to be largely absent, except for occasional Western Toads (Bufo boreas).

The diversity of bird species using the project site's grassland habitats is reduced compared to the other habitats. The field survey indicated many of the birds using the grassland habitats were attracted to the habitat edge, where it grades into chaparral, sage scrub, or coast live oak woodland. Anna's and Allen's Hummingbirds were numerous in these areas. Flocks of Dark-eyed Juncos and Golden-crowned Sparrows feed among the grasses, taking refuge in the adjacent scrub and woodland. The grasslands are too small and too disturbed to be suitable for nesting by grassland-obligate birds, such as Western Meadowlark (Sturnella neglecta). Some birds species expected to visit the grassland habitat, but not the adjacent habitats, include American Kestrel (Falco sparverius), Killdeer (Charadrius vociferus), Great Horned Owl (Bubo virginianus), Say's Phoebe (Sayornis saya), Western Bluebird (Sialia mexicana), Loggerhead Shrike (Lanius ludovicianus), and Western Meadowlark.

Rodents find abundant food in the grassland habitats, tunneling beneath the grass roots. Species such as Meadow Vole (Microtus californicus), Deer Mouse, Botta's Pocket Gopher (Thomomys bottae) are common in this habitat, providing prey for raptors Coyotes, Bobcats, and snakes. Coyote droppings were frequently observed in the grassland habitats during the field survey. Mule Deer, remaining in the shelter of the woodlands by day, come to the grasslands to feed during the night.

Aerial Species

Several species were observed or predicted to use the air space over the project site, and would be expected to have little or no interaction with the site's terrestrial habitats. Several Turkey Vultures (Cathartes aura) and a Red-tailed Hawk (Buteo jamaicensis) were observed flying over the site during the field survey. These species, along with some of the other raptors predicted for the site, such as Black-shouldered Kite (Elanus caeruleus) and Red-shouldered Hawk (buteo lineatus), might occasionally hunt at the project site.

During the spring and summer months, several species of swallows might forage above the project site. The most common species are expected to be Cliff Swallow (Hirundo pyrrhonota), Barn Swallow (H. rustica), and Violet-green Swallow (Tachycineta thalassina). White-throated Swifts (Aeronautes saxatalis) may frequent the site's air space throughout the year, with Vaux's Swifts (Chaetura vauxi) passing over during the spring and fall.

Replacing the day-flying swallows by night would be several species of bats. Little Brown Myotis (Myotis lucifugus), California Myotis (M. californicus), Western Pipistrelle (Pipistrellus hesperus), and Red Bat (Lasiurus cinerius) would be among the more numerous species. Some bats might use the project site's woodland habitat as day-roosts. Most of the bats occurring at the site would be present during the warmer months.

Several species of gulls commonly fly over the project site, being joined by Caspian Terns during the spring and summer

months. These birds are commuting between the San Francisco Bay, Crystal Springs Reservoir, and the Pacific Ocean. They have no interaction with the project site's terrestrial habitats.

Rare, Threatened and Endangered Wildlife Species

No wildlife species listed as threatened or endangered were observed, predicted, or previously reported from the project site. Ten species listed as species of special concern by the California Dept. of Fish and Game were observed or predicted to occur at the site. Most of these are expected to occur only rarely, and several are not expected to have any interaction with the site's habitats. Species of special concern "are those whose breeding populations in the state have declined severely or are otherwise so low that extirpation is a real possibility" ("Bird Species of Special Concern in California", J.V. Remsen 1978). None of the species of special concern observed or predicted to occur at the project site are expected to breed there. Table 2 lists the predicted status and pattern of occurrence of these species at the site.

The project site was evaluated as potential habitat for the federally threatened Bay Checkerspot Butterfly (Euphydryas editha subspecies bayensis). Bay Checkerspot Butterfly habitat exists as islands of native grassland on shallow serpentine soils that support abundant growths of the butterfly's two larval foodplants, annual plantain (Plantago erecta) and annual owlsclover (Orthocarpus densiflorus). The presence of both foodplants is evidently required for successful completion of the butterfly's life cycle (Federal Register Part IV, 52:35366, U.S. Fish and Wildlife Service). Neither of these plant species were found on the February botanical surveys, though both species are inconspicuous at that time of the year, and both may be present at the site.

The CNDDB reports a population of Bay Checkerspot Butterflies was present in suitable habitat that at one time extended from northeast of Crystal Springs Reservoir southeast beyond the existing Highway 280/ Highway 92 intersection (CNDDB search

February 3, 1989). The construction of Highway 280 almost eliminated the colony, but a remnant colony or recolonization has since been discovered near the Highway 280/ Highway 92 interchange, approximately 1.1 - 1.3 miles south of serpentine grassland at the project site (Federal Register 52:35376). The project site is not known to support the Bay Checkerspot Butterfly. The project site's small area of serpentine grassland, and the lack of any adjacent reservoir populations (Bay Checkerspot colonies of significant size occupying large, topographically diverse areas), indicates the site is not likely to support this species.

The project site was evaluated as potential habitat for the State and federally endangered San Francisco Garter Snake (Thamnophis sirtalis subspecies tetrataenia). This snake occurs in grassland and scrub, near freshwater marshes, ponds, and slow moving streams. Although this subspecies is known to occur at Crystal Springs Reservoir, as close as 0.6 miles to the project site, the project site does not have suitable habitat for this snake.

TABLE 3. SPECIES OF SPECIAL CONCERN OBSERVED OR PREDICTED TO OCCUR AT THE BUNKER HILL ESTATES PROJECT SITE

Species	Status at Bunker Hill Estates
Osprey*	Very rare spring and fall migrant; no interaction with the habitats.
Black-shouldered Kite	Rare fall and winter visitor; possibly hunts in the site's grasslands.
Northern Harrier	Rare fall and winter visitor; possibly hunts in the site's grasslands.
Sharp-shinned Hawk	Uncommon fall migrant and winter visitor; probably hunts in all of the site's habitats.
Cooper's Hawk	Uncommon fall migrant and winter visitor; probably hunts in all of the site's habitats.
Merlin	Very rare fall and winter visitor; may occasionally hunt at the site.
California Gull	Common year-round flying over the site; no interaction with the site's habitats.
Caspian Tern	Fairly common during spring and summer, flying over the site; no Interaction with the site's habitats.
Yellow Warbler	Rare spring migrant and fairly common fall migrant; predicted to occur most commonly in the sites wooded habitats.
Townsend's Big-eared Bat	Possibly an occasional visitor to the over the site; no interaction with the site's habitats.

* Scientific names are given in Appendix B.

APPENDIX A
LIST OF VASCULAR PLANTS SPECIES
OBSERVED AT BUNKER HILL ESTATES

The following list, arranged by family according to A California Flora (Munz and Keck, 1968), contains all plant species observed on the Bunker Hill Estates site during a survey conducted in February, 1989. Most of the plants have been identified to species, but a few could only be identified to genus.

SCIENTIFIC NAME	COMMON NAME
AIZOAZEAE	
Carpobrotus edule	Ice Plant
ANACARDIACEAE	
Toxicodendron diversilobum	Poison Oak
APIACEAE	
Conium maculatum	Poison Hemlock
Sanicula crassicaulis	Pacific Sanicle
Sanicula bipinnafitida	Purple Sanicle
Osmorhiza chilensis	Sweet Cecily
AMARYLLIDACEAE	
Dichelostemma pulchellum	Blue Dicks
AMYGDALACEAE	
Prunus ilicifolia	Holly-leaved Cherry
ARALIACEAE	
Hedera helix	English Ivy
ASTERACEAE	
Achillea millefoliuum	Common Yarrow
Artemisia douglasiana	California Mugwort
Artemesia californica	California Sage
Baccharis pilularis ssp. consanquinea	Coyote Brush
Cirsium sp.	Thistle
Picris echioides	Bristly Ox-Tongue
Sonchus oleraceus	Common Sow Thistle
Silybum marianum	Milk Thistle
Taraxacum officinale	Commom Dandelion
Wyethia sp.	Mule Ears
BORAGINACEAE	
Cynoglossum grande	Hounds Tongue
BRASSICACEAE	
Brassica campestris	Field Mustard
Dentaria californica	Milkmaids
CAPRIFOLIACEAE	

Symphoricarpos rivularis	Snowberry
Lonicera hispidula	Hairy Honeysuckle
Sambucus mexicana	Blue Elderberry
CARYOPHYLLACEAE	
Stellaria media	Common Chickweed
Silene sp.	Catchfly
CONVALLARIACEAE	
Trillium ovatum	Wake Robin
CUCURBITACEAE	
Marah fabaceus	Wild Cucumber
CYPERACEAE	
Cyperus esculentus	Umbrella Sedge
ERICACEAE	
Arbutus menziesii	Madrone
FABACEAE	
Cytisus monspessilanus	French Broom
Lotus sp.	Bird's Foot Trefoil
Medicago polymorpha	Bur Clover
Lupinus nanus	Sky Lupine
Lupinus sp.	Lupine
Trifolium sp.	Clover
Vicia sp.	Vetch
FAGACEAE	
Quercus agrifolia	Coast Live Oak
Quercus wizlizeni	Interior Live Oak
FUMARIACEAE	
Eschscholzia californica	California Poppy
GERANIACEAE	
Erodium cicutarium	Red-stemmed Filaree
Erodium moschatun	White-stemmed Filaree
Geranium dissectum	Cut-leave Geranium
GRAMINEAE	
Avena barbata	Oat
Bromus mollis	Soft Chess
Bromus diandrus	Ripgut Grass
Cortaderia selloana	Pampas Grass
Lolium perenne	Perennial Ryegrass
Polypogon monseliensis	Rabbitsfoot Grass
Stipa pulchra	Purple Stipa
GROSSULARIACEAE	
Grossularia californicum	Hillside Gooseberry
Ribes sp.	Currant
HIPPOCASTANACEAE	

Aesculus californica	California Buckeye
IRIDACEAE	
Iris sp.	Iris
Sisyrinchium bellum	Blue-eyed Grass
JUNCACEAE	
Juncus effusus	Bog Rush
Juncus patens	Common Rush
Juncus sp.	Rush
LAMINACEAE	
Stachys sp.	Hedge Nettle
Satureja douglasii	Yerba Buena
Monardella sp.	Coyote Mint
Stachys bullata	Hedge Nettle
Lepechinia calycina	Pitcher sage
Salvia columbariae	Chia
LAURACEAE	
Umbellularia californica	California Bay Laurel
LILIACEAE	
Calochortus tolmei	Pussy Ears
Calochortus sp.	Lily
Chlorogalum pomeridianum	Soap Plant
Fritillaria sp.	Fritillary
Lilium ~~Lily~~ sp.	Lily
Kniphofia uvaria	Red Hot Pokers
Agapanthus sp.	Lily of the Nile
MIMOSACEAE	
Acacia decurrens	Green Wattle Acacia
MYRTACEAE	
Callistemom sp.	Bottlebrush
Leptosperm~~a~~um sp.	Australian Tea Tree
OLEACEAE	
Forsythia sp.	Forsythia
PINACEAE	
Pinus radiata	Monterey Pine
Pseudostuga menziesii	Douglas Fir
PLANTAGINACEAE	
Plantago lanceolata	English Plantain
Plantago major	Broadleaf Plantain
POLYGONACEAE	
Rumex crispus	Curly Dock *
Eriogonum nudum	Buckwheat
PORTULACACEAE	
Montia perfoliata	Miner's Lettuce

PRIMULACEAE	
Dodecatheon sp.	Shooting Star
PTERIDACEAE	
Adiantum jordanii	Maidenhair Fern
Pitrogramma triangularis	Gold Back Fern
Polypogon californicum	California Polypody
Dryopteris arguta	Wood Fern
Pteridium pubsecens	Bracken Fern
Polystichum munitum	Sword Fern
RANUNCULACEAE	
Ranunculus californicus	California Buttercup
Delphinium sp.	Larkspur
Aquilegia sp.	Columbine
Clematis ligusticifolia	Clematis
RHAMNACEAE	
Rhamnus californica	Coffee Berry
Ceanothus thyrsiflorus	Blue Blossom
ROSACEAE	
Rubus ursinus	Blackberry
Heteromeles arbutifolia	Toyon
Potentilla sp.	Silverweed
Rosa californica	California Rose
Holodiscus discolor	Ocean Spray
Fragaria californica	California Strawberry
RUBIACEAE	
Galium sp.	Bedstraw
SALICACEAE	
Salix laevigata	Red Willow
SCROPHULARIACEAE	
Diplacus aurantiacus	Sticky Monkey Flower
Scrophularia californica	California Bee Plant
Pedicularis densiflora	Indian Warrior

NOTABLY MISSING:

THYMELIACEAE

Dirca occidentalis — Western leatherwood

APPENDIX B

TREE INVENTORY - BUNKER HILL ESTATES
(Trees with circumference of 38" or greater
- greater than 12" in diameter)

MAP #	SPECIES CODE *	DIAMETER	HEIGHT	COMMENTS
AREA A				
1	QUAG	18.5	25	
2	QUAG	35.0	35	
3	QUAG	16.8	35	
4	QUAG	14.0	25	
5	QUAG	19.0	25	
6	QUAG	14.0	25	
7	QUAG	17.0	25	
8	QUAG	22.8	25	
9	QUAG	21.6	25	DOUBLE TRUNK
	QUAG	19.2	25	
10	QUAG	16.1	25	
11	QUAG	21.2	30	
12	QUAG	15.3	30	
13	QUAG	17.1	30	
14	QUAG	16.2	30	FOUR TRUNK TREE
	QUAG	12.6	30	
	QUAG	20.1	30	
	QUAG	12.0	30	
15	QUAG	12.0	25	
16	QUAG	26.8	30	
17	QUAG	14.4	30	DOUBLE TRUNK
	QUAG	14.6	30	
18	QUAG	17.2	35	
19	QUAG	12.5	30	
20	QUAG	18.4	30	
21	QUAG	13.2	25	
22	QUAG	18.7	35	DOUBLE TRUNK
	QUAG	13.1	35	
23	QUAG	21.2	25	
24	QUAG	21.0	30	
25	QUAG	20.1	25	
26	QUAG	18.3	25	
27	QUAG	16.6	25	TRIPLE TRUNK
	QUAG	12.2	25	
	QUAG	12.3	25	
28	QUAG	18.0	30	
29	QUAG	15.9	30	
30	QUAG	12.0	30	
31	QUAG	12.0	30	
32	QUAG	15.3	30	
33	QUAG	27.2	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (cont't.)				
34	QUAG	14.2	27	DOUBLE TRUNK
	QUAG	15.3	27	
35	QUAG	12.1	25	DOUBLE TRUNK
	QUAG	12.1	25	
36	QUAG	17.1	25	
37	QUAG	12.0	30	
38	QUAG	13.1	25	
39	QUAG	12.5	27	
40	QUAG	18.0	25	DOUBLE TRUNK
	QUAG	18.0	25	
41	QUAG	15.1	30	
42	QUAG	19.0	30	
43	QUAG	19.3	30	
44	QUAG	12.6	25	DOUBLE TRUNK
	QUAG	14.0	25	
45	QUAG	15.1	25	DOUBLE TRUNK
	QUAG	16.3	25	
46	QUAG	15.8	35	
47	QUAG	12.0	30	
48	QUAG	27.0	30	DOUBLE TRUNK
	QUAG	14.2	30	
49	QUAG	12.3	30	
50	QUAG	14.5	30	
51	QUAG	21.4	30	
52	QUAG	12.7	25	
53	QUAG	17.1	30	
54	QUAG	13.2	30	
55	AECA	14.8	25	DOUBLE TRUNK
	AECA	13.8	25	
56	QUAG	14.0	25	
57	QUAG	17.0	35	TRIPLE TRUNK
	QUAG	12.3	35	
	QUAG	13.3	35	
58	QUAG	21.3	35	
59	QUAG	19.2	25	
60	QUAG	16.6	25	PARTIALLY BROKEN LIMB
61	QUAG	15.0	35	
62	QUAG	18.7	35	
63	QUAG	18.6	25	DOUBLE TRUNK
	QUAG	12.0	25	
64	QUAG	17.4	30	
65	QUAG	12.4	30	
66	QUAG	19.9	30	
67	QUAG	18.8	30	
68	QUAG	13.4	30	
69	QUAG	14.0	25	DOUBLE TRUNK
	QUAG	15.2	25	
70	QUAG	12.4	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
71	QUAG	15.1	25	
72	QUAG	17.1	25	DOUBLE TRUNK
	QUAG	15.1	25	
73	QUAG	22.4	25	
74	QUAG	13.0	20	NO TAG, POISON OAK
75	QUAG	16.0	25	
76	QUAG	21.8	25	
77	QUAG	14.5	20	
78	QUAG	14.6	25	DOUBLE TRUNK
	QUAG	14.6	25	
79	QUAG	12.5	25	
80	QUAG	15.0	25	PARTIALLY HOLLOW TRUNK
81	QUAG	24.3	25	
82	QUAG	18.0	25	
83	QUAG	14.9	20	
84	QUAG	18.0	25	
85	QUAG	15.0	25	DOUBLE TRUNK
	QUAG	13.3	25	
86	QUAG	21.0	20	
87	QUAG	15.9	25	
88	QUAG	14.9	30	
89	QUAG	13.3	30	
90	QUAG	19.0	30	
91	QUAG	17.3	35	
92	QUAG	22.6	30	
93	AECA	14.6	25	
94	QUAG	13.4	20	DOUBLE TRUNK
	QUAG	19.9	20	
95	QUAG	15.0	20	
96	QUAG	14.0	25	DOUBLE TRUNK
	QUAG	12.3	25	
97	QUAG	12.0	20	DOUBLE TRUNK
	QUAG	14.4	20	
98	QUAG	12.8	30	DOUBLE TRUNK
	QUAG	18.9	30	
99	QUAG	14.8	25	
100	QUAG	17.5	25	DOUBLE TRUNK
	QUAG	21.5	25	
101	QUAG	15.2	25	TRIPLE TRUNK
	QUAG	13.1	25	
	QUAG	14.8	25	
102	QUAG	12.4	25	
103	QUAG	17.4	30	
104	AECA	22.0	25	
105	QUAG	22.3	25	
106	QUAG	16.1	25	
107	QUAG	16.0	25	
108	QUAG	13.1	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
109	QUAG	13.7	25	TRIPLE TRUNK
	QUAG	12.2	25	
	QUAG	14.1	25	
110	QUAG	14.8	25	
111	QUAG	13.3	25	
112	QUAG	12.6	25	
113	QUAG	22.2	30	DOUBLE TRUNK
	QUAG	12.5	30	
114	QUAG	16.3	30	DOUBLE TRUNK
	QUAG	12.3	30	
115	QUAG	12.2	25	
116	QUAG	14.2	25	
117	QUAG	25.6	30	
118	QUAG	14.8	30	TRIPLE TRUNK
	QUAG	17.0	30	
	QUAG	15.8	30	
119	QUAG	30.3	30	
120	QUAG	13.5	20	
121	QUAG	18.6	25	DOUBLE TRUNK
	QUAG	15.7	25	
122	QUAG	21.6	25	DOUBLE TRUNK
	QUAG	18.4	25	
123	QUAG	20.0	30	
124	QUAG	16.8	25	
125	QUAG	21.1	30	
126	QUAG	14.1	25	
127	QUAG	15.4	20	
128	QUAG	12.9	20	
129	QUAG	19.6	35	
130	QUAG	14.5	30	
131	QUAG	12.4	25	DOUBLE TRUNK
	QUAG	13.7	25	
132	QUAG	19.3	25	
133	QUAG	13.9	25	
134	QUAG	13.0	25	
135	QUAG	14.2	30	FOUR TRUNKS
	QUAG	14.4	30	
	QUAG	13.3	30	
	QUAG	15.6	30	
136	QUAG	12.4	20	
137	QUAG	20.8	30	
138	QUAG	19.4	30	
139	QUAG	25.0	25	NO TAG; POISON OAK
140	QUAG	14.4	25	DOUBLE TRUNK
	QUAG	16.2	25	
141	QUAG	16.2	20	DOUBLE TRUNK
	QUAG	13.0	20	
142	QUAG	22.0	20	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
143	QUAG	14.9	20	
144	QUAG	18.4	20	
145	QUAG	26.4	20	
146	QUAG	12.1	15	
147	QUAG	14.2	30	TRIPLE TRUNK
	QUAG	14.5	30	
	QUAG	14.8	30	
148	QUAG	13.0	30	DOUBLE TRUNK
	QUAG	17.5	30	
149	QUAG	14.4	25	
150	AECA	13.0	15	
151	QUAG	14.5	30	
152	QUAG	13.7	30	
153	QUAG	15.4	25	
154	QUAG	18.0	25	
155	QUAG	12.4	25	DOUBLE TRUNK
	QUAG	15.6	25	
156	QUAG	16.9	25	
157	AECA	12.6	30	TRIPLE TRUNK
	AECA	12.0	30	
	AECA	12.6	30	
158	QUAG	20.8	25	
159	QUAG	17.2	25	
160	QUAG	24.5	30	
161	QUAG	12.5	20	
162	QUAG	12.1	30	
163	QUAG	15.2	20	
164	QUAG	13.5	30	
165	QUAG	14.3	30	
166	QUAG	18.8	25	DOUBLE TRUNK
	QUAG	18.0	25	
167	QUAG	13.5	30	
168	QUAG	19.3	30	
169	QUAG	12.3	20	
170	QUAG	16.2	25	HOLLOW BASE
171	QUAG	13.0	15	
172	QUAG	13.8	20	
173	QUAG	18.1	25	
174	QUAG	14.2	25	
175	QUAG	18.6	25	
176	QUAG	17.1	20	
177	QUAG	13.8	20	
178	QUAG	16.8	30	
179	QUAG	13.0	20	
180	QUAG	14.2	20	
181	QUAG	18.6	30	
182	QUAG	12.5	20	
183	QUAG	12.9	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
184	QUAG	20.5	30	
185	QUAG	24.4	30	DOUBLE TRUNK
	QUAG	25.0	30	
186	QUAG	19.0	25	
187	QUAG	36.0	30	DOUBLE TRUNK
	QUAG	30.0	30	
188	QUAG	27.9	35	
189	QUAG	18.0	25	
190	QUAG	18.4	25	
191	QUAG	23.1	30	
192	QUAG	22.6	25	
193	QUAG	13.0	25	NO TAG; POISON OAK
194	QUAG	16.4	30	DOUBLE TRUNK
	QUAG	20.6	30	
195	QUAG	15.0	15	
196	QUAG	12.2	20	
197	QUAG	13,1	25	
198	QUAG	14.0	25	
199	QUAG	17.0	15	
200	QUAG	12.0	15	
201	QUAG	17.1	20	DOUBLE TRUNK
	QUAG	12.4	20	
202	QUAG	14.2	25	
203	QUAG	16.4	30	
204	QUAG	12.9	15	
205	QUAG	17.8	15	
206	QUAG	21.8	25	
207	QUAG	16.0	30	
208	QUAG	16.0	30	
209	QUAG	13.2	30	
210	QUAG	19.0	30	NO TAG; POISON OAK
211	QUAG	17.5	30	FIVE TRUNKS
	QUAG	20.8	30	
	QUAG	13.2	30	
	QUAG	12.6	30	
	QUAG	15.3	30	
212	QUAG	28.5	35	
213	QUAG	13.9	25	
214	QUAG	15.4	20	
215	QUAG	23.2	25	
216	QUAG	23.4	35	
217	QUAG	16.8	30	
218	QUAG	19.8	35	
219	UMCA	12.2	30	DOUBLE TRUNK
	UMCA	20.0	30	
220	QUAG	14.4	25	
221	QUAG	22.2	30	TRIPLE TRUNK
	QUAG	24.8	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
	QUAG	23.0	30	
222	QUAG	17.3	30	DOUBLE TRUNK
	QUAG	17.3	30	
223	QUAG	14.3	25	DOUBLE TRUNK
	QUAG	25.0	25	
224	QUAG	24.4	25	
225	QUAG	16.2	30	DOUBLE TRUNK
	QUAG	12.2	30	
226	QUAG	13.2	25	TRIPLE TRUNK
	QUAG	15.0	25	
	QUAG	15.0	25	
227	QUAG	19.2	25	
228	QUAG	13.6	25	
2289	QUAG	12.9	20	DOUBLE TRUNK
	QUAG	12.9	20	
230	QUAG	12.7	25	
231	QUAG	13.7	20	
232	QUAG	16.6	25	
233	QUAG	23.8	25	
234	QUAG	14.8	25	
235	QUAG	12.2	30	TRIPLE TRUNK
	QUAG	19.0	30	
	QUAG	17.3	30	
236	QUAG	16.7	20	
237	QUAG	12.6	20	
238	QUAG	12.8	30	
239	QUAG	19.6	30	
240	QUAG	15.0	20	
241	AECA	25.3	20	
242	QUAG	23.6	30	
243	QUAG	15.3	25	
244	QUAG	15.4	20	
245	QUAG	26.3	35	TRIPLE TRUNK
	QUAG	19.4	35	
	QUAG	15.0	35	
246	QUAG	15.3	30	DOUBLE TRUNK
	QUAG	18.5	30	
247	QUAG	13.2	30	
248	QUAG	12.0	25	DOUBLE TRUNK
	QUAG	12.8	25	
249	QUAG	15.3	25	DOUBLE TRUNK
250	QUAG	12.9	20	
251	QUAG	14.4	25	DOUBLE TRUNK
	QUAG	12.4	25	
252	QUAG	26.3	30	
253	QUAG	17.6	15	
254	QUAG	13.4	15	
255	QUAG	13.4	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA A (con't)				
256	QUAG	12.5	25	
257	QUAG	15.9	20	
258	QUAG	27.0	25	DOUBLE TRUNK
	QUAG	16.1	25	
259	QUAG	13.6	25	TRIPLE TRUNK
	QUAG	14.0	25	
	QUAG	21.0	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA B				
1	QUAG	22.2	25	
2	QUAG	18.6	25	
3	QUAG	12.0	25	
4	QUAG	13.0	20	4 TRUNKS; ONE OVER 12" DBH
5	QUAG	17.1	25	4 TRUNKS; THREE OVER 12" DBH
	QUAG	16.5	25	
	QUAG	13.1	25	
6	QUAG	12.4	25	2 TRUNKS; ONE OVER 12" DBH
7	QUAG	13.2	25	
8	QUAG	14.1	25	
9	QUAG	18.0	25	
10	QUAG	18.2	25	
11	QUAG	15.6	20	
12	QUAG	15.2	20	
13	QUAG	12.6	20	
14	QUAG	18.2	20	
15	QUAG	13.3	20	
16	QUAG	14.6	20	DOUBLE TRUNK
	QUAG	14.6	20	
17	QUAG	13.1	20	
18	QUAG	14.0	25	
19	QUAG	14.4	20	
20	QUAG	13.5	20	
21	QUAG	16.0	20	TRIPLE TRUNKS
	QUAG	15.2	20	
	QUAG	14.8	20	
22	QUAG	14.8	20	
23	QUAG	14.1	20	
24	QUAG	15.0	20	
25	QUAG	12.0	20	
26	QUAG	18.3	20	
27	QUAG	13.0	25	DOUBLE TRUNK
	QUAG	14.4	25	
28	QUAG	14.0	15	
29	QUAG	17.3	25	
30	QUAG	18.0	25	NO TAG; POISON OAK
31	QUAG	14.0	25	NO TAG; POISON OAK
32	QUAG	20.5	30	DOUBLE TRUNK
33	QUAG	31.4	25	
34	QUAG	14.0	30	
35	QUAG	14.0	30	NO TAG; POISON OAK
36	QUAG	14.8	25	
37	QUAG	13.2	15	
38	QUAG	30.1	25	
39	QUAG	14.3	15	
40	QUAG	13.3	20	
41	QUAG	18.0	25	TRIPLE TRUNK
	QUAG	14.3	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA B (con't)				
	QUAG	19.6	25	
42	QUAG	28.0	25	NO TAG; POISON OAK
43	QUAG	13.2	20	
44	QUAG	14.0	20	
45	QUAG	14.3	15	DOUBLE TRUNK
	QUAG	12.5	15	
46	QUAG	23.3	25	DOUBLE TRUNK
47	QUAG	12.5	25	
48	QUAG	13.1	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C				
1	QUAG	13.2	25	DOUBLE TRUNK
	QUAG	14.9	25	
2	QUAG	14.4	20	
3	QUAG	12.3	25	
4	QUAG	13.0	20	
5	QUAG	14.5	20	
6	QUAG	19.1	30	DOUBLE TRUNK
	QUAG	29.3	30	
7	QUAG	13.5	15	
8	QUAG	13.4	15	
9	QUAG	13.8	25	
10	SASP	13.0	25	
11	QUAG	18.4	25	DOUBLE TRUNK
	QUAG	21.4	25	
12	QUAG	15.8	30	
13	QUAG	12.4	25	
14	QUAG	19.8	20	
15	UMCA	12.4	30	
16	UMCA	12.0	30	DOUBLE TRUNK
	UMCA	15.2	30	
17	QUAG	18.0	20	
18	SASP	14.3	25	
19	QUAG	17.0	25	DOUBLE TRUNK
	QUAG	13.1	25	
20	QUAG	15.6	25	
21	QUAG	16.0	20	
22	QUAG	16.0	15	
23	QUAG	13.0	20	DOUBLE TRUNK
24	QUAG	12.3	20	TRIPLE TRUNK
	QUAG	14.0	20	
	QUAG	13.0	20	
25	SASP	16.0	30	
26	PONI	25.0	50	
27	QUAG	34.6	40	
28	QUAG	24.2	40	
29	QUAG	13.0	30	
30	AECA	14.2	25	
31	AECA	14.8	30	
32	AECA	12.2	30	DOUBLE TRUNK
	AECA	15.4	30	
33	QUAG	19.7	30	
	QUAG	18.3	30	
34	AECA	14.6	40	
35	AECA	17.9	30	TRIPLE TRUNK
	AECA	16.1	30	
	AECA	13.0	30	
36	QUAG	15.1	30	
37	AECA	15.1	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C (con't)				
38	AECA	16.8	40	
39	QUAG	20.0	30	
40	QUAG	22.2	35	
41	AECA	12.6	35	DOUBLE TRUNK
	AECA	20.0	35	
42	QUAG	12.4	25	
43	AECA	13.8	20	
44	QUAG	15.4	25	DOUBLE TRUNK
	QUAG	13.3	25	
45	QUAG	15.8	25	
46	AECA	14.0	20	DOUBLE TRUNK
	QUAG	22.4	20	
47	QUAG	13.0	20	
48	QUAG	13.5	25	
49	QUAG	16.8	25	
50	AECA	15.2	25	
51	QUAG	13.4	20	
52	QUAG	18.2	25	
53	QUAG	16.4	25	
54	QUAG	20.2	25	
55	AECA	22.5	25	DOUBLE TRUNK
	AECA	12.0	25	
56	QUAG	27.2	30	
57	QUAG	16.8	30	
58	QUAG	28.5	25	
59	QUAG	12.8	30	DOUBLE TRUNK
	QUAG	12.9	30	
60	QUAG	22.0	30	
61	AECA	19.8	25	
62	QUAG	16.2	30	
63	QUAG	16.0	30	
64	QUAG	29.0	30	DOUBLE TRUNK
	QUAG	20.6	30	
65	QUAG	23.6	35	
66	QUAG	16.1	30	
67	QUAG	16.9	30	TRIPLE TRUNK
	QUAG	14.1	30	
	QUAG	13.3	30	
68	QUAG	16.3	35	DOUBLE TRUNK
	QUAG	15.0	35	
69	QUAG	24.4	30	
70	QUAG	21.6	35	DOUBLE TRUNK
	QUAG	13.2	35	
71	QUAG	29.4	25	DOUBLE TRUNK
	QUAG	21.0	25	
72	AECA	13.1	25	TRIPLE TRUNK
	AECA	13.8	25	
	AECA	12.5	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C (con't)				
	UMCA	21.6	40	
155	QUAG	43.0	35	
156	QUAG	36.0	35	NO TAG; POISON OAK
157	AECA	23.0	30	
158	AECA	15.0	25	HOLLOW TRUNK
159	UMCA	18.4	35	DOUBLE TRUNK
	UMCA	14.2	35	
160	QUAG	14.5	30	
161	UMCA	21.4	40	TRIPLE TRUNK
	UMCA	18.3	40	
	UMCA	24.4	40	
162	UMCA	38.0	35	
163	AECA	14.4	20	TRIPLE TRUNK
	AECA	13.2	20	
	AECA	15.2	20	
164	UMCA	20.0	35	SIX TRUNKS
	UMCA	22.1	35	
	UMCA	16.1	35	
	UMCA	20.0	35	
	UMCA	18.0	35	
	UMCA	22.0	35	
165	AECA	19.3	25	
166	QUAG	22.0	40	
167	UMCA	23.0	30	DOUBLE TRUNK
	UMCA	25.0	30	
168	AECA	14.4	30	DOUBLE TRUNK
	AECA	14.1	30	
169	AECA	33.0	25	
170	AECA	14.0	25	DOUBLE TRUNK
	AECA	14.2	25	
171	UMCA	21.3	30	NINE TRUNKS
	UMCA	18.2	30	
	UMCA	22.4	30	
	UMCA	23.3	30	
	UMCA	20.0	30	
	UMCA	16.0	30	
	UMCA	16.1	30	
	UMCA	21.1	30	
	UMCA	13.2	30	
172	AECA	13.2	20	
	AECA	14.6	20	
173	AECA	23.1	30	
174	AECA	13.1	20	
175	UMCA	16.4	30	
176	AECA	16.2	25	
177	UMCA	15.0	30	DOUBLE TRUNK
	UMCA	17.3	30	
178	AECA	16.3	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C (con't)				
120	QUAG	18.0	40	
121	QUAG	17.6	35	DOUBLE TRUNK
122	QUAG	22.4	35	
123	QUAG	16.4	30	
124	QUAG	12.2	20	
125	UMCA	13.1	30	
126	AECA	16.1	25	
127	QUAG	13.8	30	
128	UMCA	12.3	30	
129	QUAG	19.2	30	
130	QUAG	14.4	25	
131	QUAG	14.2	25	
132	QUAG	15.1	30	
133	QUAG	12.6	20	
134	QUAG	15.8	25	DOUBLE TRUNK
	QUAG	16.0	25	
135	QUAG	12.3	20	
136	UMCA	14.6	25	DOUBLE TRUNK
	UMCA	15.2	25	
137	UMCA	12.1	25	DOUBLE TRUNK
	UMCA	12.9	25	
138	UMCA	12.5	25	
139	AECA	12.4	25	
140	UMCA	12.4	25	
141	UMCA	12.5	25	HEART ROT EVIDENT
142	AECA	12.2	25	
143	UMCA	21.0	30	FIVE TRUNKS
	UMCA	19.1	30	
	UMCA	12.6	30	
	UMCA	21.7	30	
	UMCA	16.4	30	
144	AECA	15.3	20	
145	QUAG	31.4	30	
146	UMCA	13.2	30	SIX TRUNKS
	UMCA	16.5	30	
	UMCA	12.4	30	
	UMCA	18.3	30	
	UMCA	22.7	30	
	UMCA	24.1	30	
147	QUAG	13.6	18	
148	UMCA	20.2	25	
149	QUAG	43.0	30	PARTIALLY HOLLOW TRUNK
150	AECA	14.0	25	
151	QUAG	22.4	25	
152	QUAG	21.0	30	
153	UMCA	22.0	35	
154	UMCA	16.8	40	THREE TRUNKS, LARGEST HOLLOW
	UMCA	16.9	40	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C (con't)				
73	QUAG	17.0	30	
74	QUAG	14.0	35	
75	QUAG	25.0	35	
76	QUAG	26.1	35	
77	QUAG	19.1	30	
78	QUAG	16.2	25	
79	QUAG	19.3	25	DOUBLE TRUNK
80	QUAG	13.0	45	
81	QUAG	23.2	30	
82	QUAG	17.1	30	
83	QUAG	13.3	40	
84	QUAG	26.9	35	
85	QUAG	13.8	25	
86	QUAG	13.4	20	
87	QUAG	17.4	25	
88	UMCA	17.0	35	
89	QUAG	17.5	30	
90	QUAG	12.5	30	
91	QUAG	12.4	30	
92	QUAG	15.0	30	
93	QUAG	13.5	30	
94	UMCA	24.3	40	
95	QUAG	20.0	30	
96	QUAG	15.3	35	
97	QUAG	12.4	35	
98	QUAG	24.1	40	
99	QUAG	21.4	40	
100	QUAG	20.5	40	
101	QUAG	14.5	40	DOUBLE TRUNK
	QUAG	12.4	40	
102	QUAG	26.1	40	
103	QUAG	16.5	40	
104	QUAG	17.5	40	
105	QUAG	16.0	30	
106	QUAG	13.0	25	
107	QUAG	21.8	40	
108	QUAG	21.9	35	
109	QUAG	23.2	45	
110	QUAG	24.0	45	
111	QUAG	19.3	35	
112	QUAG	28.4	45	
113	QUAG	14.4	25	
114	QUAG	14.8	25	
115	QUAG	15.8	30	
116	QUAG	18.8	30	
117	QUAG	14.6	25	
118	QUAG	15.9	25	
119	QUAG	14.9	30	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA C (con't)				
179	AECA	16.0	20	
180	AECA	12.4	20	
181	UMCA	25.0	40	
182	AECA	16.4	25	TRIPLE TRUNK
	AECA	14.2	25	
	AECA	40.2	25	
183	AECA	13.0	30	
184	AECA	13.2	35	
185	AECA	12.4	25	
186	AECA	14.2	25	
187	AECA	12.2	25	
188	AECA	12.4	25	
189	QUAG	13.3	25	FOUR TRUNKS
	QUAG	16.0	25	
	QUAG	15.3	25	
	QUAG	14.3	25	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA D				
1	QUAG	12.9	25	DOUBLE TRUNK
	QUAG	13.4	25	
2	QUAG	19.2	25	DOUBLE TRUNK
	QUAG	15.9	25	
3	QUAG	12.8	20	
4	QUAG	12.1	20	
5	QUAG	13.6	15	
6	QUAG	19.0	20	
7	QUAG	15.7	20	
8	QUAG	28.0	25	
9	QUAG	21.8	25	DOUBLE TRUNK
	QUAG	14.7	25	
10	QUAG	21.4	25	
11	QUAG	12.3	15	
12	QUAG	13.8	20	
13	QUAG	16.2	20	DOUBLE TRUNK
	QUAG	21.2	20	
14	QUAG	14.2	20	
15	QUAG	21.2	20	
16	QUAG	19.5	15	
17	QUAG	23.0	20	

MAP #	SPECIES	DIAMETER	HEIGHT	COMMENTS
AREA F				
1	QUAG	15.4	25	DOUBLE TRUNK
	QUAG	23.5	25	
2	QUAG	11.8	25	TRIPLE TRUNK
	QUAG	17.1	25	
	QUAG	16.3	25	
3	QUAG	12.6	25	
4	QUAG	15.0	25	DOUBLE TRUNK
	QUAG	12.4	25	
5	QUAG	13.8	25	
6	QUAG	18.5	25	
7	QUAG	15.4	15	
8	QUAG	12.3	20	DOUBLE TRUNK
	QUAG	14.0	20	
9	QUAG	13.9	25	
10	QUAG	11.5	20	
11	QUAG	15.0	20	DOUBLE TRUNK, NO TAG
	QUAG	13.0	20	
12	QUAG	12.4	20	DOUBLE TRUNK
	QUAG	14.8	20	
13	QUAG	16.3	20	TRIPLE TRUNK
	QUAG	11.2	20	
	QUAG	18.2	20	
14	QUAG	17.9	20	DOUBLE TRUNK
	QUAG	13.1	20	
15	QUAG	14.8	20	TRIPLE TRUNK
	QUAG	14.9	20	
	QUAG	14.3	20	
16	QUAG	15.2	20	DOUBLE TRUNK
	QUAG	14.4	20	
17	QUAG	18.1	20	
18	QUAG	12.7	15	
19	QUAG	11.2	15	DOUBLE TRUNK
	QUAG	12.8	15	
20	QUAG	14.7	20	
21	QUAG	16.2	20	
22	QUAG	12.6	20	FOUR TRUNKS
	QUAG	19.9	20	
	QUAG	13.1	20	
	QUAG	14.5	20	
23	QUAG	13.1	20	DOUBLE TRUNK
	QUAG	12.9	20	
24	QUAG	13.1	20	

* Legend to Species Code

QUAG	Quercus agrifolia	Coast Live Oak
AECA	Aesculus californica	California Buckeye
UMCA	Umbellularia californica	California Bay
SASP	Salix species	Willow

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

CLASS: AMPHIBIA	
ORDER: CAUDATA (Salamanders)	
FAMILY: SALAMANDRIDAE (Newts)	
California Newt, (Taricha torosa)	O
FAMILY: PLETHODONITDAE (Lungless Salamanders)	
Ensatina, (Ensatina eschscholtzi)	P
California Slender Salamander, (Batrachoseps attenuatus)	O
Arboreal Salamander, (Aneides lugubris)	P
ORDER: SALIENTIA (Frogs and Toads)	
FAMILY: BUFONIDAE (True Toads)	
Western Toad, (Bufo boreas)	P
FAMILY: HYLIDAE (Treefrogs and Relatives)	
Pacific Treefrog, (Hyla regilla)	O
CLASS: REPTILIA	
ORDER: SQUAMATA (Lizards and Snakes)	
SUBORDER: SAURIA (Lizards)	
FAMILY: IGUANIDAE (Iguanids)	
Western Fence Lizard, (Sceloporus occidentalis)	P
FAMILY: SCINCIDAE (Skinks)	
Western Skink, (Eumeces skiltonianus)	P
FAMILY: ANGUIDAE (Alligator Lizards and Relatives)	
Southern Alligator Lizard, (Gerrhonotus multicarinatus)	P
Northern Alligator Lizard, (Gerrhonotus coeruleus)	P
SUBORDER: SERPENTES (Snakes)	
FAMILY: COLUBRIDAE (Colubrids)	
Ringneck Snake, (Diadophis punctatus)	P
Racer, (Coluber constrictor)	P
Gopher Snake, (Pituophis melanoleucus)	P
Common Kingsnake, (Lampropeltis getulus)	P
Common Garter Snake, (Thamnophis sirtalis)	P
Western Terrestrial Garter Snake, (Thamnophis elegens)	P
FAMILY: VIPERIDAE (Vipers)	
Western Rattlesnake, (Crotalus viridis)	P

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

CLASS: AVES	
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)	
FAMILY: CATHARTIDAE (American Vultures)	
Turkey Vulture, (Cathartes aura)	P,a
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)	
Osprey, (Pandion haliaetus)	P,a
Black-shouldered Kite, (Elanus caeruleus)	P,a
Northern Harrier, (Circus cyaneus)	P,a
Sharp-shinned hawk, (Accipiter striatus)	P
Cooper's Hawk, (Accipiter cooperii)	P
Red-shouldered Hawk, (Buteo lineatus)	P,a
Red-tailed Hawk, (Buteo jamaicensis)	P,n(?)
FAMILY: FALCONIDAE (Caracaras and Falcons)	
American Kestrel, (Falco sparverius)	P
Merlin, (Falco columbarius)	P,a
ORDER: GALLIFORMES (Megapodes, Currassows, Pheasants, and Relatives)	
FAMILY: PHASIANIDAE (Quails, Pheasants, and Relatives)	
California Quail, (Callipepla californica)	O,n
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and Relatives)	
FAMILY: CHARADRIIDAE (Plovers and Relatives)	
Killdeer, (Charadrius vociferus)	P
FAMILY: LARIDAE (Gulls and Terns)	
Mew Gull, (Larus canus)	P,a
Ring-billed Gull, (Larus delawarensis)	P,a
California Gull, (Larus californicus)	O,a
Herring Gull, (Larus argentatus)	P,a
Thayer's Gull, (Larus thayeri)	P,a
Western Gull, (Larus occidentalis)	O,a
Glaucous-winged Gull, (Larus glaucescens)	P,a
Caspian Tern, (Sterna caspia)	P,a
ORDER: COLUMBIFORMES (Pigeons and Doves)	
FAMILY: COLUMBIDAE (Pigeons and Doves)	
Rock Dove, (Columba livia)	P,a
Band-tailed Pigeon, (Columba fasciata)	P
Mourning Dove, (Zenaida macroura)	O,n
ORDER: STRIGIFORMES (Owls)	
FAMILY: TYTONIDAE (Barn Owls)	
Common Barn-Owl, (Tyto alba)	P

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

FAMILY: STRIGIDAE (Typical Owls)	
Western Screech-Owl, (Otus asio)	P,n
Great Horned Owl, (Bubo virginianus)	P,n(?)
ORDER: APODIFORMES (Swifts and Hummingbirds)	
FAMILY: APODIDAE (Swifts)	
Vaux's Swift, (Chaetura vauxi)	P,a
White-throated Swift, (Aeronautes saxatalis)	P,a
FAMILY: TROCHILIDAE (Hummingbirds)	
Anna's Hummingbird, (Calypte anna)	O,n
Rufous Hummingbird, (Selasphorus rufus)	P
Allen's Hummingbird, (Selasphorus sasin)	O,n
ORDER: PICIFORMES (Woodpeckers and Relatives)	
FAMILY: PICIDAE (Woodpeckers and Wrynecks)	
Red-breasted Sapsucker, (Sphyrapicus ruber)	P
Nuttall's Woodpecker, (Picoides nuttallii)	P
Downy Woodpecker, (Picoides pubescens)	P,n(?)
Hairy Woodpecker, (Picoides villosus)	P
Northern Flicker, (Colaptes auratus)	O
ORDER: PASSERIFORMES (Perching Birds)	
FAMILY: TYRANNIDAE (Tyrant Flycatchers)	
Olive-sided Flycatcher, (Contopus borealis)	P
Western Wood-Pewee, (Contopus sordidulus)	P,n
Western Flycatcher, (Empidonax difficilis)	P,n
Black Phoebe, (Sayornis nigricans)	P
Say's Phoebe, (Sayornis saya)	P
Western Kingbird, (Tyrannus verticalis)	P
FAMILY: HIRUNDINIDAE (Swallows)	
Tree Swallow, (Tachycineta bicolor)	P,a
Violet-green Swallow, (Tachycineta thalassina)	P,a,n(
Northern Rough-winged Swallow, (Stelgidopteryx serripennis)	P,a
Cliff Swallow, (Hirundo pyrrhonota)	P,a,n(
Barn Swallow, (Hirundo rustica)	P,a,n(
FAMILY: CORVIDAE (Jays, Magpies, and Crows)	
Steller's Jay, (Cyanocitta stelleri)	O,n
Scrub Jay, (Aphelocoma coerulescens)	O,n
Common Raven, (Corvus corax)	P,a
FAMILY: PARIDAE (Titmice)	
Chestnut-backed Chickadee, (Parus rufescens)	O,n
Plain Titmouse, (Parus inornatus)	P,n
FAMILY: AEGITHALIDAE (Bushtit)	
Bushtit, (Psaltriparus minimus)	O,n
FAMILY: SITTIDAE (Nuthatches)	
White-breasted Nuthatch, (Sitta carolinensis)	P
FAMILY: CERTHIIDAE (Creepers)	
Brown Creeper, (Certhia americana)	P

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

FAMILY: TROGLODYTIDAE (Wrens)	
Bewick's Wren, (Thryomanes bewickii)	O,n
House Wren, (Troglodytes aedon)	P
Winter Wren, (Troglodytes troglodytes)	P
FAMILY: MUSCICAPIDAE (Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit)	
Golden-crowned Kinglet, (Regulus satrapa)	P
Ruby-crowned Kinglet, (Regulus calendula)	O
Blue-gray Gnatcatcher, (Polioptila caerulea)	P,n
Western Bluebird, (Sialia mexicana)	P
Swainson's Thrush, (Catharus ustulatus)	P
Hermit Thrush, (Catharus guttatus)	O
American Robin, (Turdus migratorius)	O,n
Varied Thrush, (Ixoreus naevius)	O
Wrentit, (Chamaea fasciata)	O,n
FAMILY: MIMIDAE (Mockingbirds and Thrashers)	
Northern Mockingbird, (Mimus polyglottos)	O,n
California Thrasher, (Toxostoma redivivum)	P,n
FAMILY: MOTACILLIDAE (Wagtails and Pipits)	
Water Pipit, (Anthus spinoletta)	P
FAMILY: BOMBYCILLIDAE (Waxwings)	
Cedar Waxwing, (Bombycilla cedrorum)	O
FAMILY: LANIIDAE (Shrikes)	
Loggerhead Shrike, (Lanius ludovicianus)	P
FAMILY: STURNIDAE (Starlings)	
European Starling, (Sturnus vulgaris)	P,n
FAMILY: VIREONIDAE (Typical Vireos)	
Hutton's Vireo, (Vireo huttoni)	O,n
Warbling Vireo, (Vireo gilvus)	P,n
FAMILY: EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and Relatives)	
Orange-crowned Warbler, (Vermivora celata)	O,n
Nashville Warbler, (Vermivora ruficapilla)	P
Yellow Warbler, (Dendroica petechia)	P
Yellow-rumped Warbler, (Dendroica coronata)	P
Black-throated Gray Warbler, (Dendroica nigrescens)	P
Townsend's Warbler, (Dendroica townsendi)	O
Hermit Warbler, (Dendroica occidentalis)	P
Wilson's Warbler, (Wilsonia pusilla)	P,n(?)
Western Tanager, (Piranga ludoviciana)	P
Black-headed Grosbeak, (Pheucticus melanocephalus)	P,n(?)
Rufous-sided Towhee, (Pipilo erythropthalmus)	O,n
Brown Towhee, (Pipilo fuscus)	O,n
Savannah Sparrow, (Passerculus sandwichensis)	P
Fox Sparrow, (Passerella iliaca)	O
Song Sparrow, (Melospiza melodia)	O,n
Lincoln's Sparrow (Melospiza lincolnii)	P
White-throated Sparrow, (Zonotrichia albicollis)	P
Golden-crowned Sparrow, (Zonotrichia atricapilla)	O
White-crowned Sparrow, (Zonotrichia leucophrys)	P
Dark-eyed Junco, (Junco hyemalis)	O,n
Red-winged Blackbird, (Agelaius phoeniceus)	O

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

Western Meadowlark, (Sturnella neglecta)	P
Brewer's Blackbird, (Euphagus cyanocephalus)	P,n
Brown-headed Cowbird, (Molothrus ater)	P,n
Northern Oriole, (Icterus galbula)	P
FAMILY: FRINGILLIDAE (Finches)	
Purple Finch, (Carpodacus purpureus)	P,n
House Finch, (Carpodacus mexicanus)	O,n
Pine Siskin, (Carduelis pinus)	P
Lesser Goldfinch, (Carduelis psaltria)	O,n
American Goldfinch, (Carduelis tristis)	P
FAMILY: PASSERIDAE (Weaver Finches)	
House Sparrow, (Passer domesticus)	P,n
CLASS: MAMMALIA	
ORDER: MARSUPIALIA (Opossums, Kangaroos, and Relatives)	
FAMILY: DIDELPHIDAE (Opossums)	
Virginia Opossum, (Didelphis virginiana)	?
ORDER: INSECTIVORA (Shrews and Moles)	
FAMILY: SORICIDAE (Shrews)	
Trowbridge Shrew, (Sorex trowbridgei)	P
FAMILY: TALPIDAE (Moles)	
Broad-footed Mole, (Scapanus latimanus)	S
ORDER: CHIROPTERA (Bats)	
FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)	
Little Brown Myotis, (Myotis lucifugus)	P,a
Yuma Myotis, (Myotis yumanensis)	P,a
Long-eared Myotis, (Myotis evotis)	P,a
Long-legged Myotis, (Myotis volans)	P,a
California Myotis, (Myotis californicus)	P,a
Fringed Myotis (Myotis thysanodes)	P,a
Small-footed Myotis, (Myotis subulatus)	P,a
Western Pipistrelle, (Pipistrellus hesperus)	P,a
Big Brown Bat, (Eptesicus fuscus)	P,a
Red Bat, (Lasiurus borealis)	P,a
Hoary Bat, (Lasiurus cinereus)	P,a
Townsend's Big-eared Bat, (Plecotus townsendii)	P,a
Pallid Bat, (Antrozous pallidus)	P,a
FAMILY: MOLOSSIDAE (Free-tailed Bat)	
Brazilian Free-tailed Bat, (Tadarida brasiliensis)	P,a
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)	
FAMILY: LEPORTIDAE (Rabbits and Hares)	
Brush Rabbit, (Sylvilagus bachmani)	S

Appendix C. Wildlife Species Observed or Predicted to Occur at Bunker Hill Estates, San Mateo County.

ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)	
FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)	
Merriam's Chipmunk, (Tamias merriami)	P
Western Gray Squirrel, (Sciurus griseus)	O
Fox Squirrel, (Sciurus niger)	P
FAMILY: GEOMYIDAE (Pocket Gophers)	
Botta's Pocket Gopher, (Thomomys bottae)	S
FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)	
California Pocket Mouse, (Perognathus californicus)	P
FAMILY: CRICETIDAE (Deer Mice, Voles, and Relatives)	
Western Harvest Mouse, (Reithrodontomys megalotis)	P
California Mouse, (Peromyscus californicus)	P
Deer Mouse, (Peromyscus maniculatus)	P
Brush Mouse, (Peromyscus boylii)	P
Pinyon Mouse, (Peromyscus truei)	P
Dusky-footed Woodrat, (Neotoma fuscipes)	S
California Vole, (Microtus californicus)	O
FAMILY: MURIDAE (Old World Rats and Mice)	
Black Rat, (Rattus rattus)	P
Norway Rat, (Rattus norvegicus)	P
House Mouse, (Mus musculus)	P
ORDER: CARNIVORA (Carnivores)	
FAMILY: CANIDAE (Foxes, Wolves, and Relatives)	
Coyote, (Canis latrans)	S
Gray Fox, (Urocyon cinereoargenteus)	P
FAMILY: PROCYONIDAE (Raccoons and Relatives)	
Raccoon, (Procyon lotor)	S
FAMILY: MUSTELIDAE (Weasels, Badgers, and Relatives)	
Long-tailed Weasel, (Mustela frenata)	P
Western Spotted Skunk, (Spilogale gracilis)	P
Striped Skunk, (Mephitis mephitis)	P
FAMILY: FELIDAE (Cats)	
Bobcat, (Lynx rufus)	P
ORDER: ARTIODACTYLA	
FAMILY: CERVIDAE (Deer, Elk, and Relatives)	
Mule Deer, (Odocoileus hemionus)	O

Key.
O = Species observed on or immediately adjacent to the project site on February 22, 1989. S = sign (tracks, droppings) of species observed on February 22, 1989. P = Species predicted to occur on or immediately adjacent to the project site. a = Species expected to occur primarily in the air space above the project site, with limited or no interaction with the site's terrestrial habitats. n = bird species predicted to nest on or immediately adjacent to the project site.