BIOLOGICAL RESOURCE ASSESSMENT

Sign Hill Park Site

City of South San Francisco

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I.A. INTRODUCTION AND PURPOSE

The Sign Hill Park site in the City of South San Francisco contains approximately 44.7 acres of publicly-owned, largely undeveloped land of a ridgeline that parallels the southern edge of the more prominent San Bruno Mountain. The publicly owned parklands occupy the southern and upper elevations of the ridgeline, reaching a height of 581 feet at its highest point, and contains the historic landmark sign that reads "South San Francisco The Industrial City". Three privately owned undeveloped parcels occupy approximately 47 acres of the mid to lower elevations on the north and eastern edges of the ridgeline. These parcels contribute to the current biological and aesthetic values of Sign Hill Park, but are not the focus of this *Biological Resource Assessment* (BRA).

This BRA provides information on the regulatory framework related to sensitive biological and wetland resources, a general description of resources in the Sign Hill Park Site vicinity, and a discussion of key issues, opportunities, and possible constraints in improved habitat management. Its purpose is to provide preliminary background information on sensitive resources at the Sign Hill Park site and vicinity, regulations and programs which provide for their protection, and important planning considerations in preparing and implementing habitat management and enhancement as part of the city-wide Parks and Recreation Master Plan for the City of South San Francisco.

I.B. BACKGROUND AND METHODS

This BRA was based primarily on the review of available information and existing mapping, and limited field reconnaissance surveys and mapping conducted during preparation of this report. Available literature and resource mapping reviewed included: current policies and programs from Open Space and Conservation Element of the *City of South San Francisco General Plan*; the special-status species and sensitive natural communities occurrence records of the California Natural Diversity Data Base (CNDDB, 2014) of the California Department of Fish and Wildlife (CDFW); the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (2001 and electronic edition); the 1982 San Bruno Mountain Area Habitat Conservation Plan (HCP); and the 2008 San Bruno Mountain HCP Management Plan, among other information sources. Field reconnaissance surveys were conducted on November 25, 2014 and February 5, 2015. The field survey in November 2014 included a site tour with Loretta and Chuck Heimstadt, who have lead critically important volunteer stewardship efforts on Sign Hill, including invasive species removal, and have maintained updated lists of observed native and non-native plant species in the park. A list of references used during preparation of this report is provided in Section V.

II. REGULATORY FRAMEWORK

Local, State, and federal regulations have been enacted to provide for the protection and management of sensitive biological and wetland resources. On the federal level, the U.S. Fish and Wildlife Service (USFWS) is responsible for protection of terrestrial and freshwater organisms through implementation of the federal Endangered Species Act[1] and the Migratory Bird Treaty Act, and the National Marine Fisheries Service (NOAA Fisheries) is responsible for protection of anadromous fish and marine wildlife. The U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under Section 404 of the Clean Water Act. At the state level, the California Department of Fish and Wildlife (CDFW) is responsible for administration of the California Endangered Species Act, and for protection of streams and waterbodies through the Streambed Alteration Agreement process under Section 1600 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board is also required when a proposed activity may result in discharge into navigable waters, pursuant to Section 401 of the Clean Water Act and EPA Section 404(b)(1) Guidelines. And the RWQCB also regulates waters of the State under the Porter-Cologne Water Quality Control Act.

II.A. SPECIAL-STATUS SPECIES

Special-status species[2] are plants and animals that are legally protected under the State and/or federal Endangered Species Acts or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the federal and State Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" of these species. "Take" as defined by the federal Endangered Species Act (ESA) means "to harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or

[1] The federal Endangered Species Act (ESA) of 1973 declares that all federal departments and agencies shall utilize their authority to concern endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of the ESA and pertains to California species.

[2] Special-status species include: designated (rare, threatened, or endangered) and candidate species for listing by the CDFW; designated (threatened or endangered) and candidate species for listing by the USFWS; species considered to be rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act Guidelines, such as those identified on lists 1A, 1B, and 2 in the *Inventory of Rare and Endangered Plants of California* (electronic edition) by the California Native Plant Society (CNPS); and possibly other species which are considered sensitive due to limited distribution or lack of adequate information to permit listing or rejection for State or federal status, such as those included on list 3 in the CNPS *Inventory* or identified as California "Species of Special Concern" (SSC) species by the CDFW. Animal species designated as SSC have no legal protective status under the CESA but are of concern to the CDFW because of severe decline in breeding populations and other factors.

harming of wildlife due to significant obstruction of essential behavior patterns (i.e. breeding, feeding, or sheltering) through significant habitat modifications or degradation. The CDFW also considers the loss of listed species habitat as "take", although this policy lacks statutory authority and case law support under the California Endangered Species Act (CESA).

The primary information source on the distribution of special-status species in California is the California Natural Diversity Database (CNDDB) inventory, which is maintained by the Biogeographic Data Branch of the CDFW. The CNDDB inventory provides the most comprehensive statewide information on the location and distribution of special-status species and sensitive natural communities. Occurrence data is obtained from a variety of scientific, academic, and professional organizations, private consulting firms, and knowledgeable individuals, and entered into the inventory as expeditiously as possible. The occurrence of a species of concern in a particular region is an indication that an additional population may occur at another location if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question; only that no data has been entered into the CNDDB inventory. Detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location, where there is evidence of potential occurrence.

Federal Authority

The USFWS and NOAA Fisheries have jurisdiction over species that are formally listed as threatened or endangered under the federal ESA. The federal ESA is a complex law enacted in 1973 to protect and recover plant and animal species in danger of becoming extinct and to conserve their ecosystems, with an ultimate goal being the recovery of a species to the point where it is no longer in need of protection. An "endangered" plant or animal species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered within the foreseeable future. The USFWS also maintains a list of species proposed for listing as endangered or threatened, and a list of candidate species for which sufficient information is available to support issuance of a proposed listing rule.

It is illegal to take any listed species without specific authorization. Any activity that could result in take of a federally-listed species requires a Section 10 take permit authorization from the USFWS or NOAA Fisheries. Should another federal agency be involved with permitting the project, such as the Corps under jurisdiction of the Clean Water Act, Section 7 of the ESA requires the federal lead agency to consult with the USFWS and/or NOAA Fisheries before permitting any activity that may result in take of a listed species. Section 9 of the ESA and its applicable regulations restrict certain activities with respect to endangered and threatened plants. However, these restrictions are less stringent than those applicable to fish and wildlife species. The provisions prohibit the removal of, malicious damage to, or destruction of any listed plant species from areas under federal jurisdiction.

In addition to the protection offered under the ESA, the federal Migratory Bird Treaty Act (MBTA) provides for protection of migratory bird species, birds in danger of extinction, and their active nests. It is illegal to posses or take any bird protected under the act without a depredation permit from the USFWS, which includes protection of eggs, young, and nests in active use. Although the MBTA technically provides for protection of most bird species, it is typically applied as a mechanism to protect active nests of raptors and colonial nesting species through the breeding and nesting season.

State Authority

The CDFW has jurisdiction over threatened or endangered species that are formally listed under the CESA. The CESA is similar to the federal ESA both in process and substance, providing additional protection to listed species in California. The CESA does not supersede the federal ESA, but operates in conjunction, with some species having different listing status. The CESA is intended to conserve, protect, restore, and enhance listed species and their habitat. Compliance with the CESA is required when a take is considered likely by the CDFW.

The CDFW also maintains informal lists of California "Special Concern Species" (SSC) species. These species are broadly defined as animals that are of concern to the CDFW because of population declines and restricted distribution, and/or because they are associated with habitats that are declining in California. These species are inventoried in the CNDDB, focusing on nesting, roosting, and congregation sites for non-listed species. In addition, wildlife species designated as "Fully Protected" or "Protected" may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFW. The CESA prohibits the take of any plant listed as endangered, threatened, or rare. A "rare" plant species is one not presently threatened with extinction but may become endangered if its present environment worsens. State listing of plants began in 1977 with passage of the Native Plant Protection Act (NPPA). The CESA expanded upon the NPPA and enhanced legal protection for plants. To align with federal regulations, CESA created the categories of threatened and endangered species. It grandfathered all rare animals into the CESA as threatened species, but did not do so for rare plants.

The California Native Plant Society (CNPS) is a non-profit conservation organization dedicated to the preservation of native flora in California. The CNPS has been involved in assembling, evaluating, and distributing information on special-status plant species in the state, as listed in the *Inventory of Rare and Endangered Plants of California* (2001 and electronic inventory update). CNPS has recently updated their rating system for the rarity of special-status plants, and now include both a California Rare Plant Rank and a Threat Rank. For the California Rare Plant Rank, species are rated as follows:

- 1A = Presumed extinct in California.
- 1B = Rare, threatened, or endangered in California and elsewhere.
- 2 = Rare and endangered in California, but are more common elsewhere.
- 3 = Plant species for which additional data is needed (a review list).

- 4 = Plant species of limited distribution (a watch list).

The "Threat Rank" replaces the former rarity code used in the CNPS *Inventory*, and consists of the following rankings:

- 0.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
- 0.2 = Fairly threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat).
- 0.3 = Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

All of the plant species with a California Rare Plant Rank of 1A, 1B, and 2 meet the requirements of the NPPA (Section 1901, Chapter 10) or Section 2062 and 2067 of CESA, and are eligible for state listing. Species maintained by CNPS with these three rankings should be considered special-status species under the California Environmental Quality Act (CEQA). Some species with a Rare Plant Rank of 3 also meet the requirements for state listing. Very few plants with a Rare Plant ranking of 4 are eligible for listing but may be locally important and their listing status could be elevated if conditions change.

The CEQA requires government agencies to consider environmental impacts of discretionary projects and to avoid or mitigate them where possible. Under Section 15380, CEQA provides protection for both State-listed species and for any other species which can be shown to meet the criteria for State listing. The CDFW recognizes that special-status plants with a California Rare Plant Rank of 1A, 1B, and 2 in the CNPS *Inventory* consist of plants that, in a majority of cases, would qualify for listing and these species should be addressed under CEQA review. In addition, the CDFW recommends, and local governments may require, protection of species which are regionally significant, such as locally rare species, disjunct populations, essential nesting and roosting habitat for more common wildlife species, or plants with a CNPS California Rare Plant Rank of 3 and 4.

II.B. SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are natural community types considered to be rare or of a "high inventory priority" by the CDFW. Although sensitive natural communities have no legal protective status under the federal ESA or CESA, they are provided some level of consideration under CEQA. Appendix G of the CEQA Guidelines identifies potential impacts on a sensitive natural community as one of six criteria to consider in determining the significance of a proposed project. While no thresholds are established as part of this criterion, it serves as an acknowledgement that sensitive natural communities are an important resource and, depending on their rarity, should be recognized as part of the environmental review process. The level of significance of a project's impact on any particular sensitive natural community will depend on that natural community's relative abundance and rarity.

The CNDDB provides an inventory of sensitive natural communities considered to have a "high inventory priority" in the State by the CDFW. Initially, the classification of natural communities used by the CNDDB was a habitat-based approach defined by dominant or characteristic plant species as described in the *Preliminary descriptions of the terrestrial natural communities of California* (Holland, 1986). The classification of natural communities now used by the CNDDB is based on the system described in the *Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). While the classification system is still being refined by the CNDDB, it provides greater definition for which natural communities are considered sensitive and have a high inventory priority that should be recognized during CEQA review. CDFW ranks natural communities (also referred to as alliances) based on rarity rank using a system derived from NatureServe's standard heritage program,[3] as indicated in the *List of California Vegetation Alliances.*[4]

Federal and State Authority

Although sensitive natural communities have no legal protective status under the state or federal Endangered Species Acts, they are provided some level of protection under CEQA. The CEQA Guidelines identify potential impacts on a sensitive natural community as one of six significance criteria. As an example, a discretionary project that has a substantial adverse effect on any riparian habitat, native grassland, valley oak woodland, or other sensitive natural community would normally be considered to have a significant effect on the environment. Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on its relative abundance, quality and degree of past disturbance, and the anticipated impacts to the specific community type. Where determined to be significant under CEQA, the potential impact would require mitigation through avoidance, minimization of disturbance or loss, or some type of compensatory mitigation when unavoidable.

3 Each community type is ranked with a Global (G) and a State (S) code of 1, 2, 3, 4, or 5, with a 1 representing the most sensitive and 5 representing relatively common types. If an alliance is marked with a 1 through 3 code on the State or Global level, this means that all of the associations within it will also be considered of high inventory priority and should be considered as part of the CEQA review process. If marked as G4 or G5, these alliances are generally considered common enough to not be of concern. As an example, most alliances of native willow have a State rank of 3 or less in the *List of California Vegetation Alliances*, meaning they have a high inventory priority and are generally considered a rare vegetation type by the CDFG.

4 California Department of Fish and Wildlife, Biogeographic Data Branch, Vegetation Classification and Mapping Program, *List of California Vegetation Alliances*. List updated by CNDDB on September 2014.

II.C. WETLANDS

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the Corps and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

Federal Authority

The Clean Water Act was enacted to address water pollution, establishing regulations and permit requirements regarding construction activities that affect storm water, dredge and fill material operations, and water quality standards. This regulatory program requires that discharges to surface waters be controlled under the National Pollutant Discharge Elimination System permit program, which apply to sources of water runoff, private developments, and public facilities.

Under Section 404 of the Clean Water Act, the Corps is responsible for regulating the discharge of fill material into waters of the United States. The term “waters” includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations. All three of the identified technical criteria must be met for an area to be identified as a wetland under Corps jurisdiction, unless the area has been modified by human activity. In general, a permit must be obtained before fill can be placed in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to discretion of the Corps.

Certain activities in wetlands or “other waters” are automatically authorized, or granted a nationwide permit which allows filling where impacts are considered minor. Eligibility for a nationwide permit simplifies the permit review process. Nationwide permits cover construction and fill of waters of the U.S. for a variety of routine activities such as minor road crossings, utility line crossings, streambank protection, recreational facilities and outfall structures. To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on the aquatic ecosystem, including species listed under the ESA. This typically means that there will be no net loss of either habitat acreage or habitat value, resulting in appropriate mitigation where fill activities are proposed.

The Corps assumes discretionary approval over proposed projects where impacts are considered significant, requiring adequate mitigation and permit approval. To provide compliance with the Environmental Protection Agency's Section 404(b)(1) Guidelines, an applicant must demonstrate that the proposed discharge is unavoidable and is the least environmentally damaging practicable alternative that will achieve the overall project purpose. The 1990 Memorandum of Agreement between the EPA and Corps concerning

the Determination of Mitigation under the Guidelines prioritizes mitigation, with the first priority to avoid impacts, the second to minimize impacts, and the third to provide compensatory mitigation for unavoidable impacts. Recent U.S. Supreme Court decisions have limited the extent of waters regulated by the Corps to those that are hydrologically connected to traditional navigable waters.

State Authority

Jurisdictional authority of the CDFW over wetland areas is established under Section 1600 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake without notifying the CDFW, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFW states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands...unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage".

In addition, the California Regional Water Quality Control Board (RWQCB) is responsible for upholding state water quality standards. Pursuant to Section 401 of the Clean Water Act, projects that apply for a Corps permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit must obtain water quality certification. Following the U.S. Supreme Court SWANCC decision in 2001, the RWQCB has taken an increasing role over regulating wetlands that are hydrologically isolated, and therefore no longer considered jurisdictional by the Corps under Section 404. These hydrologically isolated features are regulated under authority of Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act.

II.D. HABITAT CONNECTIVITY

As noted previously, protecting habitat on an ecosystem-level is essential to sustaining native plant and animal populations. Viability is a function of numerous factors, including the size and health of local plant and animal populations, habitat quality and diversity, habitat connectivity, and ecosystem dynamics such as fire, flooding, seasonal changes, and other natural disturbances, predation, and plant-herbivore pressures. Human-induced changes to the landscape have significant affects on the health and productivity of the natural environment, resulting in habitat loss and fragmentation due to urban, suburban, and even rural development, conversion to agricultural crops, and the network of roadways, flood control modifications to drainages, and other infrastructure that supports our existence.

Protecting and enhancing habitat connectivity and functional movement corridors between the remaining natural areas is essential to sustaining populations and allowing for the continued dispersal of native plant and animal species. Natural linkages include riparian corridors and drainages, canyons, ridgelines, and corridors across valley floors

where impermeable barriers such as dense urban development, exclusionary fencing, and heavily traveled roadways haven't yet eliminated options for wildlife movement and plant dispersal. While narrow corridors may be the only option in some locations due to the extent of existing development, habitat linkages are most effective through maintenance of a permeable landscape, one that allows for uninhibited movement of species across large areas.

Federal and State Authority

Although there are no state or federal laws directly addressing habitat connectivity and preserving biodiversity, the Endangered Species Acts provide for protection of essential habitat for listed species. In addition, one of the six significance criteria in the CEQA Guidelines focuses on potential impacts on the movement of any native resident or migratory fish or wildlife species, established wildlife corridors, and native wildlife nursery sites. This CEQA significance criterion serves to address potential impacts of discretionary projects on fish and wildlife species, but not the dispersal of native plant species which can be particularly vulnerable to extirpation in isolated occurrences. Another significance criterion in the CEQA Guidelines pertains to the degree to which a discretionary project conforms with local policies or ordinances protecting biological resources. This significance criterion does provide an opportunity to established specific local policies and perhaps ordinances pertaining to habitat connectivity and biodiversity on a local level.

III. SETTING

III.A. VEGETATION AND WILDLIFE HABITAT

The Sign Hill Park site remains largely undeveloped, occupying the southern and upper elevations of the Sign Hill ridgeline, and bordered by residential development to the south, southeast, and west. Much of the existing vegetative cover on the Sign Hill Park site reflects past practices of introducing non-native trees, shrubs, and groundcover plant species onto what had previously been native grasslands. Many of these are highly invasive species which have continued to spread beyond their original planting zone, or have become established through natural dispersal mechanisms, and greatly compromise the existing habitat values of the site. High quality native grasslands continue to comprise a large portion of the public parklands, and provide essential habitat for special-status butterfly species and other wildlife. Privately owned undeveloped parcels occupy the mid to lower elevations on the north and eastern edges of the ridgeline, and contribute to the current biological and aesthetic values of Sign Hill Park but are not the focus of the BRA.

Vegetation on the Sign Hill Park site consists of a mosaic of high quality native grasslands, non-native grasslands, native scrub, and stands of non-native trees, shrubs and groundcovers. Vegetative cover is typically defined by species composition and relative abundance, and there is significant variation on the Sign Hill Park site. **Figure 1** shows the general vegetation cover types, based on mapping prepared through photo interpretation of an aerial base map with limited ground truthing during the field reconnaissance surveys performed during preparation of this BRA. The vegetative cover descriptions generally follow the classification system from *A Flora of the San Bruno Mountains* (FSBM) (McClintock et al, 1991) while nomenclature follows the Jepson Manual (Hickman, 1996). A comparison to the more modern and nationally recognized classification presented in *A Manual of California Vegetation* (MCV), (Sawyer and Keeler-Wolf, 1995) is also referenced where describing native grasslands. The following provides a description of the existing cover types, together with information on associated wildlife species.

Grasslands

Historically, native grasslands formed the predominant cover over the Sign Hill Park site and surrounding lands. Intensive grazing, dryland farming, and other disturbance factors have eliminated most of the native grasslands throughout California over the past 150 years, including the historic rangelands of the South San Francisco vicinity. The CNDDB now recognizes native grasslands as a sensitive resource with a high inventory priority. Because of their rarity, the CNDDB considers grasslands containing ten percent or greater cover by native grass species to represent a native grassland community. This ten percent threshold is a loosely applied standard that has been used by the CDFW for many years.

High quality native grasslands still occupy most of the upper elevations of the Sign Hill ridgeline, extending onto the private parcels to the north and northeast, and the parklands to the southeast, and much of nearby San Bruno Mountain. While the abundance of native grasses and forbs varies widely across the remaining native grasslands on the Sign Hill Park site, some areas are completely dominated by native species and contain a richness in diversity both grasses and forbs seldom found in native grasslands today, especially those in close proximity to urbanization.

Native purple needlegrass (*Nassella pulchra*) tends to be the dominant grass species on the south-facing slopes, forming the characteristic Valley Needlegrass Grassland under the FSBM classification or Purple Needlegrass Series under the MCV classification. Other native grass species include: California brome (*Bromus carinatus*), meadow barley (*Hordeum brachyantherum*), and blue wildrye (*Elymus glaucus*). Associated forb and wildflower species include: coast iris (*Iris longipetala*), soap plant (*Chlorogalum pomeridianum*), yarrow (*Achillea millefolium*), California poppy (*Eschscholzia californica*), checkerbloom (*Sidalcea malvaeflora*), among others, with dense stands of hummingbird sage (*Salvia spathacea*). Historic records indicate that coast iris once dominated much of the slopes on Sign Hill, but this species now occurs in only small clumps and scattered plants. Larval host plants of the federally-endangered mission blue butterfly (*Icaricia icariodes missionensis*) and callippe silverspot butterfly (*Speyeria callippe callippe*) are also scattered through these grasslands, These consist of silver bush lupine (*Lupinus albifrons* var. *collinus*) and Lindley's varied lupine (*Lupinus variicolor*) for the mission blue butterfly and golden violet (*Viola pedunculata*) for the callippe silverspot butterfly.

The native grasslands along the ridgecrest and upper elevations on the more northern-facing slopes form native grasslands more characteristic of Coastal Terrace Prairie under the FSBM classification or the California Oatgrass, Pacific Reedgrass or Tufted Hairgrass Series under the MCV classification, depending on the predominant indicator species. Representative native species include: California oatgrass (*Danthonia californica*), blue wildrye, California hairgrass (*Deschampsia cespitosa* ssp. *holciformis*), Hall's bent grass (*Agrostis hallii*), June grass (*Koeleria macrantha*), and beardless wild rye (*Elymus triticoides* ssp. *triticoides*), together with forbs and wildflowers such as California poppy, lupines, golden violet, hummingbird sage, blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), beach strawberry (*Fragaria chiloensis*), blue-eyed grass (*Sisyrinchium bellum*), California buttercup (*Ranunculus californicus*), and checker lily (*Fritillaria affinis*), among others. Beardless wild rye forms dense, almost monotypic stands in some locations on the north and northeast-facing hillsides.

Non-native grasslands dominate most of the south-facing slopes and lower elevations on the Sign Hill Park site, generally where the degree of past disturbance and the effects of invasive species have been greater. The non-native grasslands are composed of introduced grasses and broadleaf weedy species which tend to quickly recolonize disturbed areas. Some scattered native perennial grasses and forbs remain even in areas of non-native grasslands, but in such low frequency that the stands can no longer be

characterized as native grasslands. Common species in the areas of non-native grasslands include: wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), foxtail barley (*Hordeum leporinum*), field mustard (*Brassica campestris*), wild radish (*Rhaphanus sativus*), bindweed (*Convolvulus arvensis*), cheeseweed (*Malva parviflora*), and bur clover (*Medicago polymorpha*). In some locations, highly invasive non-native species are replacing non-native grasses, including stands of fennel (*Foeniculum vulgare*), Bermuda buttercup (*Oxalis pes-caprae*), iceplant (*Carpobrotus edulis*), yellow-star thistle (*Centaurea solstitialis*), and bristly ox-tongue (*Pichris echioides*), and Italian thistle (*Carduus pycnocephalus*), and pampas grass (*Cortaderia jubata*), and wild radish, among others. Fennel is a particularly wide-spread problem in the remaining grasslands as are invasive tree and shrub species, as discussed further below.

Many of the non-native grasses and forbs are considered to be invasive species with a moderate to severe priority rating by the California Invasive Plant Council (Cal-IPC). Invasive plants displace native plants and suitable habitat conditions for wildlife, which includes essential larval host species for the endangered butterfly species known from Sign Hill Park site and nearby San Bruno Mountain. The *California Invasive Plant Inventory* (Inventory) prepared by Cal-IPC categorizes non-native invasive plants based on an assessment of the ecological impact of each plant. Plants are categorized as having a High, Moderate, or Limited priority in terms of their negative ecological impact in California. As taken from the Inventory, the meaning of these overall ratings is described below.

- High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Most of the dominant non-native grasses and forbs found in areas of non-native grasslands on the Sign Hill Park site have a priority rating of Moderate, with pampas grass, iceplant, fennel, Bermuda buttercup, and yellow-star thistle having a High rating. All of these invasive grassland species, as well as the invasive tree and shrub species discussed below, pose a severe threat to the remaining native grasslands on the public lands and the remaining undeveloped parcels on the Sign Hill ridgeline. Past grading for

facility improvements and trail construction have eliminated native grassland cover within the limits of disturbance, and created conditions that typically favor non-native grasses and invasive species. And short-cutting of segments of the switchbacks installed along the eastern segment of the Ridge Trail and short-cutting at other segments of the Iris Hill, Letters, and Seubert Trails have stripped away most of the vegetative cover in some locations. Active containment of the current extent of invasive species and City support for on-going invasive species removal efforts are critical to protecting and restoring the remaining native grasslands and their important functions for listed butterfly species and other wildlife on the Sign Hill Park site.

Native and non-native grasslands support a variety of mammals, birds, and reptiles, and provide foraging habitat for raptors. Many species use the grassland for only part of their habitat requirements, foraging in the grassland and seeking cover in the nearby areas of dense brush. Grassland cover provides foraging, nesting, and denning opportunities for resident species such as western fence lizard, northern alligator lizard, gopher snake, western meadowlark, goldfinch, red-winged blackbird, California vole, Bottae pocket gopher, and black-tailed jackrabbit. The rodent, bird, and reptile populations offer foraging opportunities for avian predators such as black-shouldered kite, northern harrier, American kestrel, red-tailed hawk, barn owl, and great horned owl. Larger mammalian predators once utilized the grasslands for foraging such as gray fox, long-tailed weasel, and bobcat, but most of these have presumably been extirpated from the remaining undeveloped lands on Sign Hill. Coyote have been observed infrequently in recent years, but this species is known to disperse through urban areas and could move between Sign Hill and the larger open space lands on San Bruno Mountain.

Coastal Scrub

Coastal scrub is typically dominated by shrubby evergreen species that are adapted to the relatively moist conditions, forming the characteristic Northern Coastal Scrub under the FSBM classification and the Coyote Brush Series and California Sagebrush Series under the MCV classification. Typical coastal scrub species on the Sign Hill Park site include: coyote brush (*Baccharis pilularis*), California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), oso berry (*Oemleria cerasiformis*), coffee berry (*Frangula californica* ssp. *californica*), toyon (*Heteromeles arbutifolia*), bracken fern (*Pteridium aquilinum* var. *pubescens*), California hedge nettle (*Stachys bullata*), sticky monkeyflower (*Mimulus aurantiacus* var. *aurantiacus*), red elderberry (*Sambucus racemosa*), wood rose (*Rosa gymnocarpa*), and bee plant (*Scrophularia californica*), among others. Poison oak forms dense thickets with a few other species in the moist, north-facing slopes. And coyote brush is spreading throughout the native and non-native grasslands on the dryer, south facing slopes.

Grazing and natural wildfires tend to provide important controls on the extent of native scrub vegetation and its spread into nearby grasslands. Because grazing has been curtailed and wildfires are actively controlled, considerable succession from grasslands to scrub and brushland is occurring throughout the Sign Hill Park site and remaining undeveloped parcels. Coyote brush and poison oak are spreading throughout the south-

facing slopes below the historic sign and at other locations in what was most likely originally grasslands.

Future management should consider possible techniques to control this natural succession to scrublands, particularly where high quality native grasslands are being replaced by shrub species. Coastal scrub can overtake grasslands, and significantly reduce the habitat they provide for the endangered butterfly species known from Sign Hill Park, due to the fact that the larval hosts and many of the nectar plants are low-growing and can be shaded out by the taller shrubs. But these butterfly species also utilize nectar plants within coastal scrub habitat, and utilize shrubs for perching. For this reason, the goal of any vegetation management activities should be to control the succession from native grassland to coastal scrub, rather than eradicating this plant community.

Coastal scrub provides habitat for a wide variety of wildlife adapted to moist, shrub-dominated habitats. Mammals typically observed within this habitat type include: northern raccoon, striped skunk, Botta's pocket gopher, dusky-footed woodrat, and brush rabbit. Representative birds include: Allen's hummingbird, western scrub-jay, bushtit, Bewick's wren, wrentit, spotted towhee, song sparrow, Nuttall's white-crowned sparrow, and American goldfinch.

Non-Native Ornamental Plantings

As indicated in **Figure 1**, non-native ornamental trees, shrubs and groundcovers have been planted or have spread across much of the Sign Hill Park site. Mr. Alphonse Seubert began planting an estimated 5,000 trees on the Sign Hill Park site beginning in the 1960s, and was apparently instrumental in developing the existing trail network. Planted trees includes large groves of blue gum (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), coast redwood (*Sequoia sempervirens*), Monterey cypress (*Hesperocyparis macrocarpa*) and blackwood acacia (*Acacia melanoxylon*), along with scattered plantings of other tree species such as deodar cedar (*Cedrus deodara*), coast live oak, California buckeye, and liquid amber (*Liquidambar styraciflua*), among others. Understory cover in areas of mature, dense tree plantings is generally sparse, or consists of a dense cover of invasive Bermuda buttercup, iceplant, English ivy (*Hedera helix*), and periwinkle (*Vinca major*), and non-native grasses. And invasive shrub species such as cotoneaster (*Cotoneaster* sp.), pyracantha (*Pyracantha crenato-serrata*), and French broom (*Genista monspessulana*) occur along the fringes of the stands of woodland plantings and are spreading into grasslands.

While the intent to improve the aesthetics of the Sign Hill Park site through extensive plantings is commendable, the plantings have severely compromised and degraded native habitat values and have most likely replaced highly sensitive native grasslands that once dominated the entire ridgeline. Blue gum and black acacia are particularly invasive, and have spread beyond the footprint of the original planting areas, and pine and cypress trees are spreading in some locations as well. The invasive groundcovers now form monotypic stands in some locations, and ivy is creating dense thickets favored by Norway rat and other pest species.

Because many of the tree species are not well-adapted to the exposed, dry conditions found on the Sign Hill Park site, and trees were generally planted too close together, many are now dying or are in poor health. This includes the grove of redwoods planted along the lower segment of Iris Hill Trail, the grove of black acacia planted along the lower segment of Seubert Trail, and scattered tree plantings along Letters Trail. The large biomass and general poor health of the non-native trees contributes to relatively high fire fuels and risk. And without some management intervention, the continued spread of the more invasive tree species will result in further loss of the remaining grassland habitat as well.

As with the non-native grasslands, most of the dominant non-native tree and shrub species that have been planted on the Sign Hill Park site are considered to be invasive species by Cal-IPC. Blue gum, Monterey pine, Monterey cypress, and black acacia all have a priority rating of Moderate. Some of the invasive groundcover species found in the stands of trees and shrubs have a High Cal-IPC rating, including English ivy, Bermuda buttercup, and iceplant. As with the invasive non-native grasses, forbs, and shrub species, active containment and selective removal efforts are critical to protecting and restoring the remaining native grasslands and their important functions for listed butterfly species and other wildlife on the Sign Hill Park site.

In general, areas of non-native cover tend to have low to poor wildlife habitat value. This is due to the replacement of natural communities with non-native cover, the low species diversity and absence of resources suitable for native wildlife species, fragmentation that occurs as a result of replacing native vegetation, and tendency for a higher level of human disturbance. Planted trees and shrubs on the Sign Hill Park site do provide nest locations and cover for wildlife adapted to ornamental and naturalized species like blue gum, Monterey pine, and acacia. Typical native bird species that may utilize the planted and invasive tree cover include: mourning dove, scrub jay, northern mockingbird, American robin, brown towhee, and great horned owl. Introduced species include: rock dove, European starling, house finch, house sparrow, and barn owl. Raccoon, striped skunk, eastern fox squirrel, and pest species such as Norway rat, house mouse, and opossum may also be present in areas of dense groundcovers of English ivy and periwinkle.

Native Woodlands

Two small stands of native woodlands occur on the Sign Hill Park site, one consisting of coast live oak (*Quercus agrifolia*) and the other California buckeye (*Aesculus californica*). **Figure 1** indicates the location of these stands of native trees, with the buckeyes below the ridgecrest on the north-facing slope and the live oak in what appears to be a slump area on the south-facing slope along the east side of the Seubert Trail. Both stands appear to be relatively young in age and may have been planted. Other scattered live oaks of a relatively young age occur on the slope below the historic sign, together with a variety of non-native native tree species, which presumably were installed as part of past tree planting efforts.

The larger oaks do provide foraging, perching and possible nesting opportunities for birds. The acorns and buckeye nuts also provide a seasonal food resources for eastern fox squirrels, woodpeckers, scrub jay, and other birds when ripened. But these native cover types are too small to support species exclusively characteristic of woodland habitat.

III.B. SPECIAL-STATUS SPECIES

A record search conducted by the CNDDB, together with other relevant information, indicates that occurrences of numerous plant and animal species with special-status have been recorded from or are suspected to occur in the South San Francisco and Sign Hill Park site vicinity. **Figure 2** shows the distribution of known occurrences of special-status species in the Sign Hill Park site vicinity, together with a list of mapped species. Most of the occurrence records in the surrounding developed areas of South San Francisco are from broadly mapped, general historic occurrence records, many of which have presumably been extirpated where urbanization has occurred. Both mission blue and callippe silverspot butterfly have been mapped as specific occurrences on the remaining undeveloped lands on Sign Hill ridge, and are presumed extant where suitable larval host plants and adult nectar plants remain.

Only limited field investigations have been performed over the Sign Hill Park site and other remaining undeveloped parcels on Sign Hill ridge, and there remains a possibility that one or more occurrences of species of special-status may be present, in addition to the known presence of mission blue and callippe silverspot butterflies. In addition, many species that qualify as special-status are not carefully monitored by the CNDDB and so no occurrence records would be available on them, such as many of the bird and other animal species considered to be "Species of Special Concern" by the CNDDB. The following provides a summary of the special-status plant and animal species known or suspected to occur on the Sign Hill Park site and Sign Hill ridgeline.

Plant Species

Review of the CNDDB and CNPS occurrence records indicate that at least 23 special-status plant species have been reported from within a two mile radius of the Sign Hill Park site. As indicated in **Figure 2**, no occurrences have actually been recorded from Sign Hill ridge, but numerous occurrences occur in similar grassland and scrub habitat on nearby San Bruno Mountain. These include the federal and state-endangered San Francisco Lessingia (*Lessingia germanorum*), and numerous species considered by the CNPS to have a California Rare Plant Rank of 1B (rare, threatened, or endangered in California and elsewhere) such as bent-flowered fiddleneck (*Amsinckia lunaris*), Diablo Helianthella (*Helinathella castanea*), robust spineflower (*Chorizanthe robusta*), San Francisco campion (*Siliene vercunda verecunda),* San Francisco collinsia (*Collinsia multicolor*), San Francisco owl's clover (*Triphysaria floribunda*), San Francisco spineflower (*Chorizanthe cuspidata cuspidata*), and white-rayed pentachaeta (*Pentachaeta bellidiflora*), among others.

Systematic surveys are typically necessary to confirm presence or absence of special-status plant species from a specific location, but none are believed to have ever been conducted on the Sign Hill Park site. The high quality native grasslands and native scrub, and even locations dominated by non-native grasslands that retain some native species component could support occurrences of special-status plant species known from similar habitat on San Bruno Mountain. Systematic surveys would be necessary to confirm presence or absence in remaining areas of suitable habitat on the Sign Hill Park site.

An occurrence of coast rock cress (*Arabis blepharophylla*) has been observed on the rock outcropping along the crest of the ridge in Sign Hill Park, just east of the tower facilities. This species has no special-status under the State or federal endangered species acts, but has a CNPS California Rare Plant Rank of 4.3 (limited distribution) and should be considered in any future management activities and park-related improvements. Coast rock cress has been reported from coastal prairie, northern coastal scrub and mixed evergreen forest habitats. It is a perennial species that is typically associated with shallow, rocky soils where competition is relatively limited. Establishment of highly invasive species such as French broom, iceplant, or Bermuda buttercup, trampling by humans, or inadvertent modifications by humans all pose a threat to this occurrence in Sign Hill Park site given its relatively vulnerable location along the edge of Ridge Trail and in an area where visitors tend to congregate.

Animal Species

Based on a review of the CNDDB and other sources, as indicated in **Figure 2** at least 19 special-status animal species have been reported within a two mile radius of the Sign Hill Park site. Both mission blue and callippe silverspot butterfly have been reported from the remaining undeveloped lands on Sign Hill ridge, as well as nearby San Bruno Mountain, and federally-designated critical habitat for bay checkerspot butterfly (*Euphydryas editha bayensis*) occurs on portions of the San Bruno Mountain open space lands to the north.

Suitable habitat for many of the special-status animal species known from the South San Francisco vicinity is absent from the Sign Hill Park site. This includes absence of essential coastal salt marsh, freshwater marsh, and riparian habitat necessary to support occurrences of the State and federally-endangered California clapper rail (*Rallus longirostris obsoletus*), the federally-threatened California red-legged frog (*Rana draytonii*), and the State and federally-endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), as well as other species recognized as Species of Concern (SSC) by CDFW.

In addition to the known presence of special-status butterfly species, the habitat suitability analysis conducted as part of the BRA indicates that the Sign Hill Park site provides foraging and possibly nesting habitat for a number of bird species protected under the federal Migratory Bird Treaty Act, and could possibly support native San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) in areas of dense coastal scrub and increasing woodland cover. The following provides a discussion of each these special-status animal species.

Special-Status Butterfly Species

As discussed above, mission blue and callippe silverspot butterfly have been reported from the Sign Hill Park site by the CNDDB. Two other special-status butterfly species have been reported from nearby San Bruno Mountain, the federally-endangered San Bruno elfin butterfly (*Incisalia mossii bayensis*) and the federally-threatened Bay checkerspot butterfly (*Euphydryas editha bayensis*). Neither of these butterfly species has been reported from Sign Hill ridge, presumably due to limited habitat suitability, and Bay checkerspot butterfly is now believed to be extirpated from San Bruno Mountain. These special-status butterfly species require grassland habitats that support their larval host plants and nectar plants. Habitat conditions for these species is generally not static, with both seasonal and annual fluctuations within areas where suitable soils and slope exposures are present. Information on each of these butterfly species, and conclusion regarding their possible occurrence on Sign Hill ridge is summarized below.

Mission Blue. The mission blue butterfly is the most widespread of the endangered butterfly species on San Bruno Mountain, and its distribution corresponds closely to the distribution of its host plants. Larval host plants for the mission blue butterfly are three perennial lupines: silver lupine, and varied lupine, which are known from Sign Hill ridge, and summer lupine *(L. formosus* var. *formosus)*. Mission blue butterfly uses a variety of native and nonnative species for nectaring (particularly thistles) that are found throughout grassland and scrub communities. Mission blues have been found to move up to approximately 0.25 miles between habitat patches (Thomas Reid Associates, 1981). However this species is likely to move further, during multiple movements between habitat areas. Protection from wind appears to be an important habitat component for this species, and often individuals are detected on the leeward side of slopes, or within protected cut slopes where higher densities of host plants are present. Habitat management activities on the Sign Hill Park site must recognize the importance of maintaining the lupine larval host plants to ensure habitat suitability for this species.

Callippe Silverspot. This butterfly species is found in suitable grassland habitat where the larval host plant, golden violet is present. It has a highly restricted range, known only from San Bruno Mountain and Sign Hill ridge, the East Bay Hills, and the foothills of Solano County. The callippe silverspot butterfly has been encountered on the Sign Hill Park site in past field work conducted during preparation of the Habitat Conservation Plan for San Bruno Mountain, but in smaller numbers than mission blue butterfly. On San Bruno Mountain, ridgelines and hilltops within grassland habitats tend to be important habitat features for this butterfly species, because it utilizes these areas for mate selection. Callippe silverspots use a variety of native and nonnative species for nectaring (especially thistles) that are found throughout the grassland and coastal scrub plant communities. The species has been shown to move up to approximately 0.75 miles between habitat patches (Thomas Reid Associates, 1981), but likely can move further in multiple movements, and is believed to move between suitable habitat areas on Sign Hill

ridge and San Bruno Mountain. Due to their larger size and stronger flying ability than mission blues, callippes are not as sensitive to strong winds. On San Bruno Mountain, this species is often detected along ridgelines and hilltops in relatively high densities, sometimes during windy conditions with wind speeds greater than 10 miles per hour. The preference of this species to utilize ridgetops for mate selection poses risks at the Sign Hill Park site given that much of the public visitor activity is concentrated along Ridge Trail.

San Bruno Elfin. The larval host plant for the San Bruno elfin butterfly, Pacific stonecrop (*Sedum spathulifolium*), is predominately found in native grassland patches and rocky outcrops, on north-facing slopes. The coastal scrub community type is utilized frequently for nectaring and perching by San Bruno elfin butterflies. Pacific stonecrop was not observed during the field reconnaissance surveys conducted as part of the BRA, and no records of San Bruno elfin butterfly have been reported by CNDDB from Sign Hill ridge. But no systematic surveys were performed and suitable larval host plants may occur in the scattered rock outcrops found on the Sign Hill Park site, especially in the native grasslands and scrub on the northern slopes of the ridgeline. San Bruno elfins use a variety of nectar plants generally associated with higher elevation grasslands and scrub on San Bruno Mountain. This species has been documented to move at least 0.15 mile between habitat patches (Arnold, 1983), and can likely move much further over the course of multiple flight movements. Further detailed habitat assessment and field confirmation work would be necessary to conclusively determine presence or absence of San Bruno elfin butterfly from the Sign Hill Park site, but any future habitat management activities should include careful controls and practices around rock outcrops where suitable larval host plants may be present.

Bay Checkerspot. According to the CNDDB records, it has never been reported from the Sign Hill Park site, but a population was reported in a relatively small area of suitable habitat along the summit of San Bruno Mountain up until the mid-1980s. It is suspected that the combination of an extremely small population size, drought, wildfire, and possibly collecting brought about the extirpation of bay checkerspot butterflies on San Bruno Mountain, and no individuals have been observed since 1984. The host plants for this species, California plantain (*Plantago erecta*) and owl's clover (*Castilleja densiflora*) are still found in relative abundance in coastal prairie and grassland on San Bruno Mountain. Larval host plants for this species were not observed during the field reconnaissance surveys conducted as part of this BRA, and no records of Bay checkerspot have been reported by CNDDB from Sign Hill ridge. Further detailed habitat assessment and field confirmation work would be necessary to conclusively confirm absence of Bay checkerspot butterfly from the Sign Hill Park site, but it appears unlikely that this species is present.

The USFWS designated Critical Habitat for this species on San Bruno Mountain in 2001. San Bruno Mountain represents the most northerly part of the subspecies' former range on the San Francisco peninsula and has reasonably good conditions to support the species.

Nesting Birds

Active nests of most bird species found on the Sign Hill Park site are protected under the federal Migratory Bird Treaty Act and State Fish and Game code. A number of bird species which have the potential to forage and possibly nest in areas of open grasslands and scrublands on Sign Hill ridge are recognized as Species of Special Concern by CDFW, including northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus caeruleus*), and loggerhead shrike (*Lanius ludovicianus*). Other CDFW Species of Special Concern may occasionally forage in the open grasslands and scrublands, but suitable nesting habitat is considered absent, such as golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), and American peregrine falcon (*Falco peregrinus anatum*). Still other more common raptors, which are not recognized as Species of Special Concern may forage and possibly nest in areas of suitable habitat, such as native Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and great horned owl (*Bubo virginianus*), and introduced barn owl (*Tyto alba*). Nests of raptors in active use are also protected under provisions in the State Fish and Game Code. Future habitat management activities must consider the potential for disturbance of bird nests in active use, which can typically be addressed by avoiding major vegetation removal or treatment during the active nesting season (generally from March 1 through August 31), or by conducting preconstruction surveys to confirm that no active nests are present within a proposed treatment area.

San Francisco Dusky Footed Woodrat

San Francisco dusky-footed woodrat is one of 11 subspecies of woodrat that live in California and the arid west. They are medium-sized rodents, about the size of an adult rat, with a body around seven inches long, and a furred tail. The San Francisco subspecies has no listing status under the State or federal endangered species acts, but is considered a Species of Special Concern by CDFW because of concerns over declining population levels and vulnerability to disturbance as a result of development and vegetation management practices. They construct large, conspicuous nests out of sticks that can reach up to six feet in height, with varying widths at the base. They occur in a variety of brushy and forested habitats, including the scrub, woodland and chaparral habitats. No nests were detected during the field reconnaissance surveys conducted as part of this BRA, but the dense stands of coastal scrub provide suitable habitat for this species on the north-facing slopes of Sign Hill ridge. Future management activities or facility improvements that could affect suitable habitat, such as additional trail construction, should confirm the presence or absence of nests of this subspecies in advance of habitat modifications, and if any nests should preferably be avoided.

III.C. SENSITIVE NATURAL COMMUNITIES

All of the areas of native grassland on the Sign Hill Park site are considered to have a high inventory priority with the CNDDB, should be considered sensitive natural community types, and should receive appropriate recognition in planning for facility

improvements and habitat management and enhancement efforts. Native grasslands have become largely replaced by non-native species throughout California as a result of historic grazing over the past century and a half, and have been designated as sensitive due to rarity and continuing loss as a result of conversion to development, replacement by invasive species, and other factors. Detailed field surveys would be required to more accurately map the extent and species composition of the native grasslands, but **Figure 1** provides a general sense of the extent of this sensitive natural community type on the Sign Hill Park site.

Rock outcroppings are not a recognized sensitive natural community type, but tend to be locations that support native grasses and forbs, provide unique habitat conditions for associated wildlife species, and are known to support coast rock cress and possibly larval host plants for special-status butterfly species. Future habitat management practices should address the risks associated with trampling and intensive disturbance given these features tend to be attractive to park visitors for sitting and exploring. And a number of invasive plant species are capable of becoming established and outcompeting natives, including fennel, French broom, iceplant and Bermuda buttercup.

III.D. WETLANDS

No evidence of any jurisdictional waters were observed on the Sign Hill Park site during the field reconnaissance surveys conducted as part of this BRA. Some evidence of temporal, seasonal seep activity was observed in scattered locations on the south-facing slopes below the historic sign, together with deeply incised erosion rills. Pampas grass often becomes established in seeps and it is possible that the thickets of pampas grass on the south-facing slopes were once vegetated with native wetland and transitional wetland vegetation. Further evaluation of these areas would be necessary to confirm that they are not seasonal seeps that could be State or federal jurisdictional waters, but this appears unlikely based on initial observations.

III.D. HABITAT CONNECTIVITY

As noted previously, protecting habitat on an ecosystem-level is essential to sustaining native plant and animal populations. The open space lands and the three remaining undeveloped parcels currently provide largely unobstructed opportunities for wildlife movement on Sign Hill. Human activity and the exposed, barren, disturbed conditions along existing trails and the roadway along the ridgecrest do contribute to some level of disruption to native wildlife, depending on the width of the barren conditions, time of day, weather conditions and other variables. Uncontrolled dog activity most likely exacerbates the level and extent of disturbance to wildlife along the existing trails. Dogs tend to flush and pursue wildlife instinctively unless controlled, but this could be addressed to some degree through sufficient signage and increased enforcement.

The extent of urbanization on the valley floors and lower elevations of the Sign Hill ridgeline limit the opportunities for most land mobile species. Birds and even insects could disperse between the Sign Hill ridgeline and the open space lands of San Bruno

Mountain. And coyotes are known to occasionally disperse through the Sign Hill Park site, presumably moving along streets through existing development along Hillside Boulevard. And evidence indicates that mission blue butterflies are known to disperse up to 0.25 mile within habitat units and could be blown at higher elevations between San Bruno Mountain and Sign Hill ridge during gusts of strong wind if not sheltering at onset of the gusts, which would allow for at least some limited genetic exchange at some point. But the extent of residential development on the valley floor along Hillside Boulevard creates a physical separation of 0.25 mile or more to the closest undeveloped areas along the lower, northern edge of the private parcels on Sign Hill. If these properties were to develop in the future, they could further isolate the subpopulations of mission blue butterfly and callippe silverspot butterfly on Sign Hill from the larger population on the undeveloped lands of San Bruno Mountain by increasing the separation of undeveloped lands by another 0.25 mile, depending on future development plans.

IV. SUMMARY OF KEY ISSUES, CONSTRAINTS AND OPPORTUNITIES

The Sign Hill Park site provides open space and passive recreational opportunities for residents of and visitors to South San Francisco. Access for recreational use must be balanced with adequate controls and proper land management to protect the remaining highly sensitive natural resources, particularly the remaining native grasslands and essential habitat they provide for mission blue butterfly, callippe silverspot butterfly, and other native wildlife. The entire Sign Hill ridgeline was once dominated by high quality native grasslands, and large swaths of these remain on the public parklands and adjacent private undeveloped parcels. However, the majority of the native grasslands on the public lands have been converted to non-native cover, and the remaining native grasslands remain under threat from on-going human disturbance and trampling, competition and replacement by invasive species, and succession to scrub as a result of curtailment of past grazing and wildlife controls.

The biggest threat to the remaining grasslands is from the continued spread of invasive plant species. These include a variety of problematic groundcover species as well as the blue gum, blackwood acacia, Monterey pine, and Monterey cypress trees that were originally planted to enhance the park-user experience on the Sign Hill Park site but now pose a serious risk to the remaining grassland habitat. The introduced tree species are now spreading through naturalization, and converting the adjacent grasslands to dense stands of tree cover with little groundcover, or allowing the spread of undesirable invasive groundcovers like Bermuda buttercup, iceplant, English ivy, and other non-native species.

Numerous non-native tree species were also planted along the crest of Sign Hill ridge, presumably to provide aesthetic interest and possibly screen the water tank and tower facilities. But these tree plantings are shading out high quality native grasslands as they mature, and the shaded conditions under these trees is allowing for the establishment of the same suite of invasive groundcover species that can then spread into the adjacent remaining native grasslands. Removing these ornamental tree plantings along the Ridge Trail and Sign Hill ridge, except where necessary for screening, should be a priority

treatment activity of the City, together with developing and implementing a plan to contain and eventually reduce the extent of the larger tree plantings stands on the south-facing slopes of the Sign Hill Park site. The native grasslands are a highly valuable natural resources which should be protected and enhanced. The practice of installing non-indigenous trees and shrubs on the Sign Hill Park site should stop, because these plantings will ultimately lead to further replacement of the remaining grassland habitat. The public should be educated about the sensitivity and value of these grasslands, which should be celebrated as part of the natural history of Sign Hill.

The historic sign also continues to attract a high volume of pedestrian foot traffic, which has resulted in a number of informal trails, trampling around the letters, and localized erosion. The routine weed-whacking performed around the historic sign has had mixed effects on the remaining native grasses on this slope, which could be better managed to improve the native species component in this location while still allowing the sign letters to be visible. Dumping of slash at the base of each row of letters creates conditions that favor the continued spread of coyote brush and other woody vegetation on this slope, rather than the grasslands which once characterized the area.

Several trail segments could be improved and better maintained to reduce the likelihood of short-cutting, which tends to leave barren slopes and ideal disturbed conditions for invasive groundcover species. Of particular concern is the series of switchbacks along the east end of the Ridge Trail, which could be addressed through installation of interpretive signage discouraging trail users from short-cutting, removal of non-indigenous plantings and unused irrigation piping, and possibly through placement of brush slash across the short-cut areas to further discourage their continued use. Any brush slash placement should be arranged and possibly anchored to prevent it from rolling onto the actual trail segment, and some further adjustments to the trail alignment may be appropriate where users would tend to short-cut regardless of any signage and/or barriers. This could include creating longer runs to each switchback in the trail system so the links are less close together, and short-cutting would be less likely.

Given the similarity in habitat conditions and management challenges between Sign Hill and the open space lands on San Bruno Mountain, the *San Bruno Mountain Habitat Management Plan* (San Mateo County Parks Department, 2007) provides useful management practices that could be applied to the Sign Hill Park site as well. The 2007 *Habitat Management Plan* serves as an implementation plan for the habitat management and monitoring activities authorized under the San Bruno Mountain Habitat Conservation Plan, and was based on lessons learned from habitat management activities conducted over more than 25 years. These efforts served to protect core habitat areas of the mission blue, callippe silverspot, and San Bruno elfin butterfly populations where they have been threatened to be overtaken by infestations of invasive species, including many of the same species of concern on Sign Hill ridge as well. The 2007 *Habitat Management Plan* defines appropriate habitat management methods used to protect and maintain essential butterfly habitat. These include recommendation for cultural, mechanical and chemical treatment methods to control invasive species, depending on the habitat threats, biological constraints, and funding availability. Treatment methods include: handwork,

controlled herbicide application, selective grazing, burning/flaming, mowing, and brush/tree clearing. For successful habitat maintenance or restoration, the 2007 *Habitat Management Plan* acknowledges that it is often necessary to utilize several treatment methods in specific locations. And volunteer participation has been essential to accomplishing much of the handwork, as has been the case on the work performed at the Sign Hill Park site.

The following are management recommendations intended to provide for necessary protection of sensitive biological resources and inform on-going and future management of the open space lands at Sign Hill Park. This will presumably be expanded into site-specific recommendations as part of a habitat management plan focused on Sign Hill Park.

Identify, Protect and Restore Essential Habitat for Special-Status Species

- Identify and protect suitable habitat for special-status plant species and listed invertebrate species, including mission blue butterfly, callippe silverspot butterfly, and possibly San Bruno elfin butterfly.
- Conduct supplemental surveys to confirm presence or absence of special-status species, including systematic surveys for special-status plant species and periodic surveys to confirm status of mission blue butterfly and callippe silverspot butterfly, and to determine presence or absence of San Bruno elfin butterfly and other invertebrate species of concern.
- Coordinate future sign maintenance, trail construction and decommission, and other improvements with resource agencies to ensure compliance with the State and federal Endangered Species Acts.
- Pursue funding and implement habitat restoration to improve conditions for special-status species, including invasive species control and eradication, public access controls, and native revegetation and habitat restoration.

Protect and Restore Native Grasslands

- Identify, protect and restore native grasslands as a sensitive natural community type with higher biological resource values.
- Ensure future trail construction and other improvements are designed to avoid and minimize adverse impacts on remaining native grasslands.
- Pursue funding and implement habitat restoration to replace native grasslands damaged and lost as a result of past disturbance, trampling from informal trail use, and stands of invasive species.
- Evaluate options and implement appropriate treatment options to address the effects of natural succession from grassland to scrub vegetation that is occurring as a result of wildfire suppression and absence of natural grazing pressure, including possible use of controlled grazing, brushing, flaming, and other techniques.

Provide on-going treatment of Invasive Plant Species

- Monitor and treat invasive plant species that would otherwise compromise natural habitat values. Problematic invasive species currently include sweet fennel, yellow star-thistle, and non-native tree species.
- Target invasive species may change over time and include other species rated as having a “high” risk to natural habitat by the California Invasive Plant Council.
- Use a combination of available treatment practices to control and eradicate invasive species, while ensuring protection of sensitive biological resources including essential habitat for special-status species and occurrences of sensitive native grasslands.

Balance Retention of Non-Native Trees with Native Habitat Restoration

- Control further spread of non-native trees given their effect on the remaining sensitive native grasslands and essential habitat for special-status species
- Consider removing non-native trees in selected locations where important for restoring native grasslands and suitable habitat for special-status species

V. REFERENCES

A. PEOPLE RESPONSIBLE FOR REPORT PREPARATION

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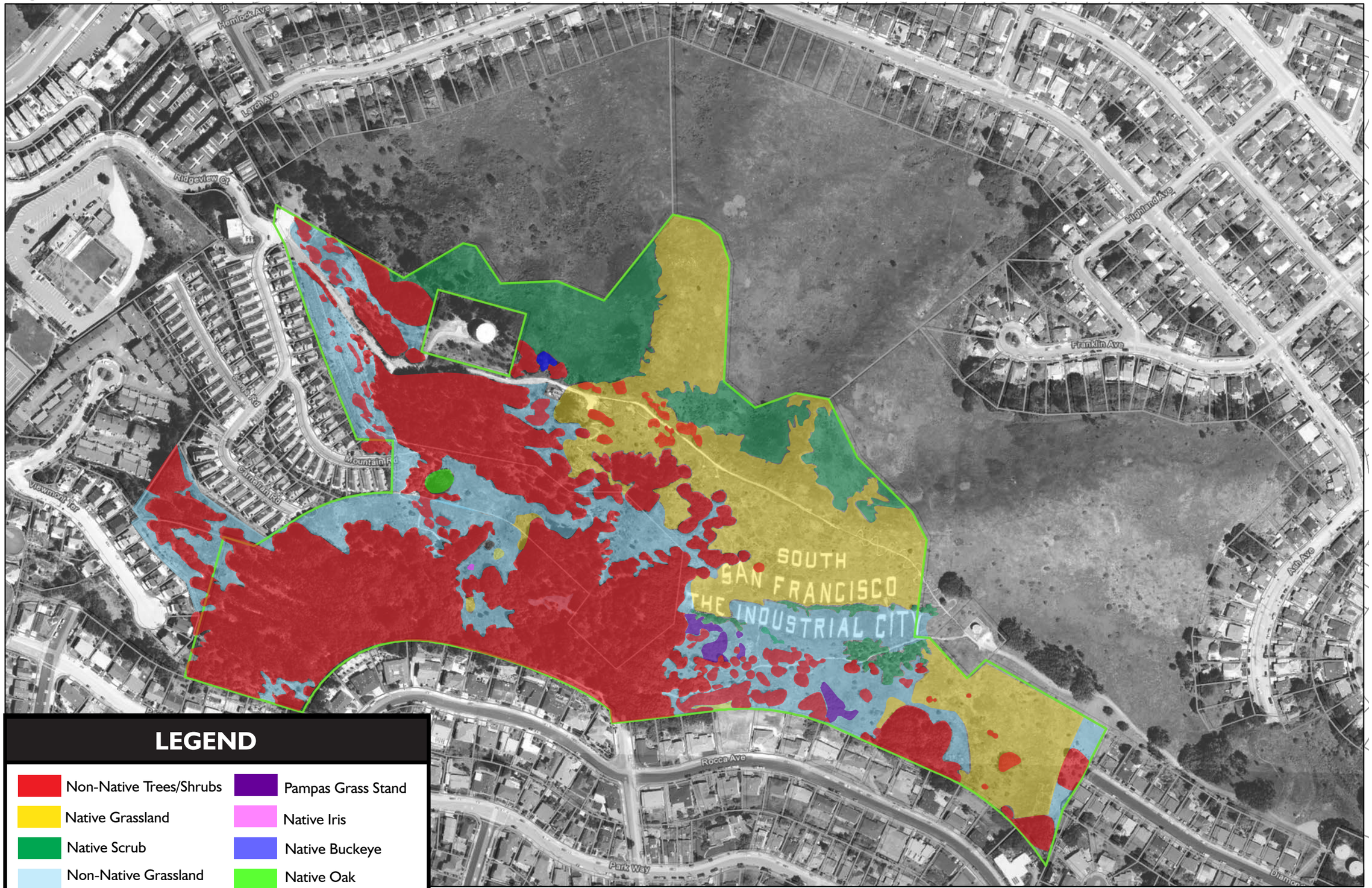
Figure 1. Vegetation Map

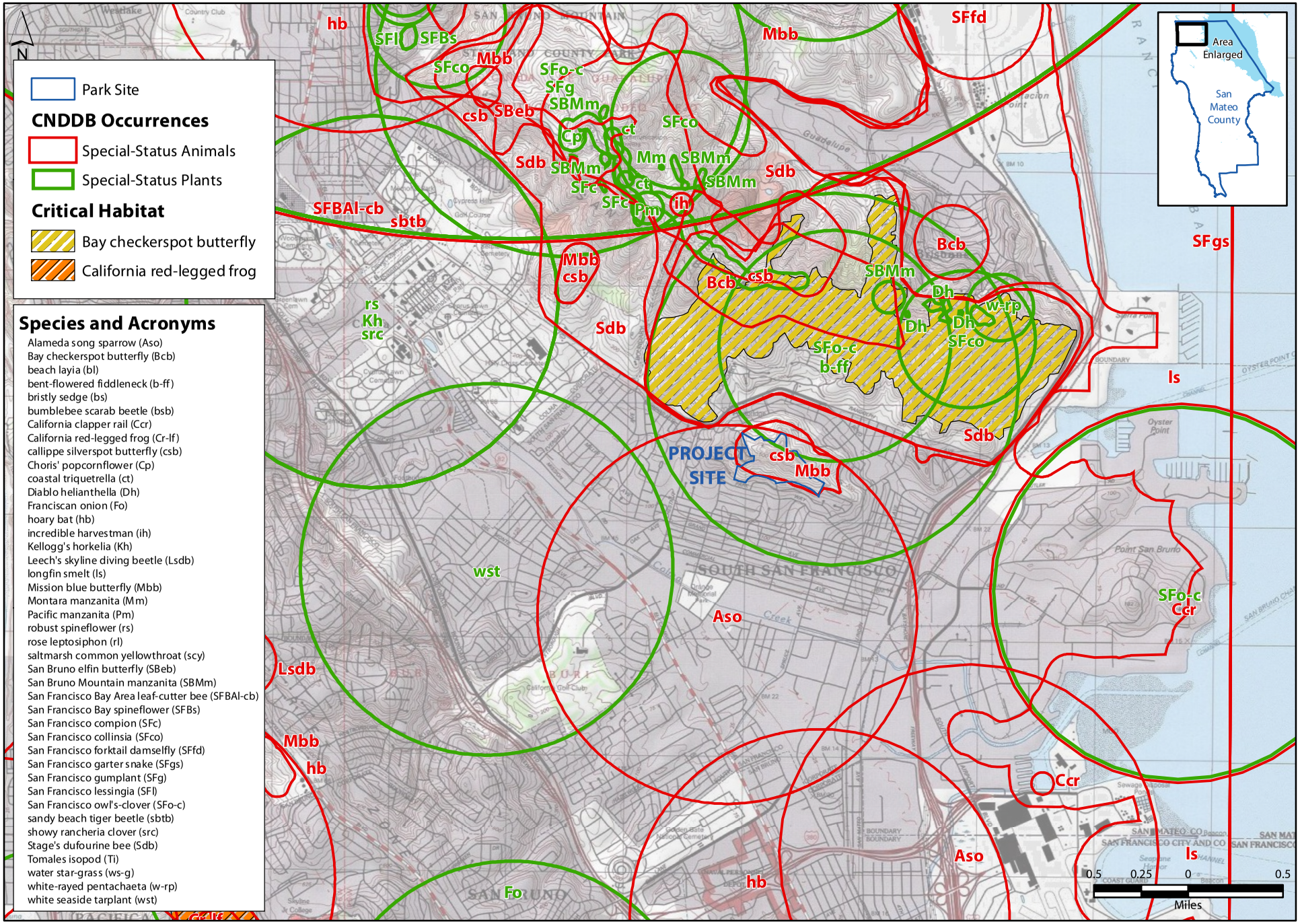
Sign Hill Park Site



Source: Environmental Collaborative 2015

Figure 2. Special-Status Species Records

Sign Hill Park Site



SOURCES: California Natural Diversity Database accessed on Nov 21st, 2014; USFW Critial Habitat Database accessed on Nov 21st, 2014, USGS base map. Map produced by www.digitalmappingsolutions.com on 2015-03-16.

APPENDIX A

Representative Photographs of Cover Types and Conditions