

6.4 SHARP PARK

GENERAL DESCRIPTION AND LOCATION

Sharp Park is located in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean and is bisected by Highway 1. The Sharp Park Golf Course and Laguna Salada are on the western side of Highway 1. An archery range and extensive canyon are on the eastern side. Sharp Park Road cuts through the northern edge of Sharp Park, east of Highway 1. Sanchez Creek originates in the upper canyon of Sharp Park and approximately bisects the park in an east-west direction. This park is surrounded by significant open spaces. Mori Point, recently acquired by the Golden Gate National Recreation Area (GGNRA), borders the southwestern edge and the Sweeney Ridge GGNRA borders the park on the southeastern and eastern edges. The northern side of Sharp Park is bordered by undeveloped areas within the cities of Pacifica and San Bruno. At just over 400 acres, Sharp Park is the second-largest park in overall acreage in the San Francisco Recreation and Park Department (SFRPD) system; only Lake Merced is larger. The Natural Areas account for approximately 237 acres within Sharp Park and encompass the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation (Figure 6.4-1). The vegetation of Sharp Park is dominated by invasive forest and a golf course, but also contains with significant areas of wetlands and scrub vegetation.

As one of the largest SFRPD parks that has habitat which supports endangered species, Sharp Park has high natural resource and recreational values that include: a free-flowing creek (Sanchez Creek) and large brackish lake (Laguna Salada); being situated between two regionally significant open spaces (Milagra and Sweeney ridges); regionally important wildlife habitat and connections between habitat; populations of California red-legged frogs (*Rana aurora draytonii*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), mission blue butterfly (*Icaricia icarioides missionensis*), and San Francisco forktail damselfly (*Ischnura gemina*); attractive habitat for resident and migratory birds; significant stands of coastal scrub habitat; large expanse of wetland habitat; and coastal access and views.

GEOLOGY, HYDROLOGY, AND TRAILS

Elevations in the park range from sea level to approximately 750 feet above sea level in the southeastern corner of Sharp Park. The western portion of the park is relatively flat, with most of the elevation change occurring on the east side of Highway 1. Soils in the park have been mapped as the Barnabe-Candlestick complex and Candlestick Variant (loams), with sands along the ocean and disturbed soils (cut, filled, graded) in the golf course area (Brabb and Pampeyan 1983; USDA 1991) (Figure 6.4-2). There are various seeps throughout the park and two major water features. One of the major hydrologic features is Sanchez Creek, which originates on the ridge above Sharp Park and flows through the upper canyon to Arrowhead Lake in the archery club area. Arrowhead Lake is an irrigation reservoir regulated to provide irrigation water in the

dry season. Discharge from Arrowhead Lake flows through the Sharp Park Golf Course to Horse Stable Pond near the ocean. Water is pumped from Horse Stable Pond to the ocean via an automated system installed to maintain a stable elevation in the pond (PWA 1992).

The other major water feature is Laguna Salada. In its original condition, Laguna Salada was similar to other tidal lagoons along coastal California: it trapped winter runoff until the water overtopped the dunes and formed a connection to the ocean (PWA 1992). Construction of the golf course modified this seasonal connection to the ocean and completion of the levee prevented the exchange of tidal water except for rare events when storms breached the levee (PWA 1992). Abandoned golf course fairways on the west side of Laguna Salada have degraded into areas of open sandy soils as the fairway grass was not maintained. An artificial channel has been constructed to drain water from Laguna Salada to Horse Stable Pond. Both bodies of water are slightly brackish.

The trail system in Sharp Park is a mixture of roads, primary, secondary and social trails totaling almost 15,000 feet.

Sanchez Creek and Sharp Park Golf Course

Sanchez Creek is directed through culverts under many of the fairways in the southern portion of the golf course. Apart from golf paths, there are no trails in this area. Exposed creek banks have been reinforced with Sackcrete in this area. Non-reinforced segments of the expansive clay banks frequently exhibit undercutting and exposed roots. West of Highway 1, there is a large bank washout along the fairway for Hole #1 that has exposed roots of cypress adjacent to the channel. One portion of the creek channel appears to have an aggraded channel (a site of sediment deposition). This may be the result of over-dredging. Dredging lowers and flattens a creek bed, resulting in slower water velocity which, in turn, allows gravel deposition. Aggradation could also be the result of dredge spoils re-entering the creek; spoils have been placed in an uncovered pile a few feet away from the creek. All of these loose soils and sediments travel down stream to Horse Stable Pond, where they contribute to the loss of open water habitat.

Archery Club

East of Highway 1, areas of soil creep occur on the cut banks along the north side of the road leading to the archery club; the manicured fairways of the golf course are adjacent to the south side of the road. Approximately one-third of a mile east of the highway, the road passes through an area where household refuse and debris have been dumped for several years. The parking area for the archery club is approximately 200 yards east of the dump, at the base of the canyon walls. Most of the canyon is formed by Franciscan sandstone overlain by approximately 1 foot of gravelly sandy loam. Franciscan greenstone occurs along the northern and eastern boundaries of the park, but not in the area of the archery club. Many of the archery targets are on the slopes around the lower canyon near the club. Stairs cut into the hillsides provide access to the target bales. Some of the stairways are reinforced with plywood and metal stakes, but others are not

supported and soil erosion is evident. A similar network of trails and steps exists for the other target shooting range, which is situated along the road leading up the valley and around the steep meadow area. Slopes in this area are fairly stable where they are covered with vegetation, but recently installed non-reinforced stairways may become erosional problems.

Upper Canyon

The road leading up the valley to the southeast (past the archery club buildings and Arrowhead Lake) is reduced to a brushy trail where an extensive historic landslide deposit rests on the northeastern slope of the valley. The steep grassy meadow to the north of Arrowhead Lake is a soil creep, moving gradually downslope to the west. South and west of Arrowhead Lake is one of the two target ranges for the archery club. Access to this range is via trails and a dirt road, portions of which have been graded with cuts into the hillside. These cuts range from 1 to 5 feet in height and expose the native Franciscan sandstone bedrock. The road cuts seem fairly stable, but small deposits of eroded soil occur at the base of the cuts. At a point approximately 300 feet upslope (east) of Arrowhead Lake the one-way road takes a tight turn to the left (north) and continues uphill. The downslope area adjacent to this turn is an actively eroding gully where roadway and hillside runoff collects and is focused at the head of the slope.

Sharp Park Road Loop

The isolated northern portion of the park, bounded by a loop in Sharp Park Road, contains an extensive eroded area with deep gullies and remnant ridges of earth that have been retained by roots or other vegetation near the original soil surface. The erosion has progressed upslope from an initial nick point at the base of the slope. Runoff collects at the base of the slope and drains to an open, v-shaped, concrete drainage channel. A rough concrete splashguard, intended to transfer runoff directly to the drainage channel from further upslope (thereby protecting the soil at the base of the slope), has been constructed adjacent to the concrete drainage channel. However, the splashguard does not cover a sufficient portion of the slope and is undercut along its sides and lower edge. Runoff continues to erode the soil at the base of the slope as well as further upslope. South of the splashguard and between the drainage channel and the road, another slope reinforcement measure constructed of Sackcrete exhibits erosive undercutting of approximately 1 to 2 inches along its lower edges.

South of the highly eroded area, 25 to 30 rectangular trenches (excavations approximately 6 feet long, 3 feet wide, and 1 foot deep) are scattered across the hillside. The excavations have not been backfilled and there are no barricades around them. Excavated and native soil material is eroding into the trenches and the upslope walls of the trenches are beginning to collapse. Aside from the deeply eroded area, and the area of trenches, most of the canyon wall within the loop of Sharp Park Road is thin gravelly sandy loam overlying Franciscan sandstone.

VEGETATION

The vegetation of Sharp Park was classified into 29 series (Table 6.4-1; Figure 6.4-3). Of the total 237.1 acres of Natural Areas at Sharp Park, approximately 64 percent of the area is non-native forest; 18 percent is native and non-native scrub; 5 percent is grassland (annual and perennial) and herbaceous series; 9 percent is wetland; and 4 percent is classified as “other” (open beaches, open water, roads, and other developed areas).

Forest

Four forest series were mapped at Sharp Park and they account for over half of the Natural Areas’ total acreage. The majority of the area was mapped as blue gum forest and mixed exotic forest covering approximately 66.07 and 70.72 acres, respectively, primarily east of Highway 1. Slightly less than 12 acres of cypress forest were mapped, primarily along the edges of the golf course on the western side of Highway 1.

Scrub

The Natural Areas at Sharp Park support a wide array of scrub habitats. Most of these are located in the upper canyon area east of Highway 1. Of the 10 types of scrub habitats mapped at Sharp Park, nine are dominated by native species. The willow (7.23 acres), dogwood (1.86 acres), and thimbleberry (0.46 acres) scrub series are found in the lower canyon along the creek. Oceanspray (10.07 acres) and red elderberry (3.57 acres) series are scattered midway up the slopes throughout the canyon. The California sagebrush (4.19 acres) and most of the coyote brush (11.49 acres) series are found on the upper slopes of the canyon. A small patch of California blackberry scrub (0.20 acres) is in the marsh area of Laguna Salada. The only non-native scrub formation mapped at Sharp Park is French broom scrub (4.25 acres) that is scattered through the eastern portion of the park.

Grassland, Herbaceous, and Open Water

The open water of Laguna Salada, Horse Stable Pond, and Arrowhead Lake comprise approximately 4 acres of the Natural Areas. Of the eight grassland/herbaceous series, iceplant (*Carpobrusus edulis*) (1.45 acres), purple false brome grassland (3.00 acres), and orchard grass grassland (5.45 acres) account for the majority of area covered by the grassland and herbaceous series.

Wetland

Seven wetland series were mapped at Sharp Park, more than any other Natural Area within the system. All of these can be found around and within Laguna Salada. The bulrush/cattail wetland (18.11 acres) around Laguna Salada is the most important of these wetland habitats. Over the last several decades the extent of this vegetation has increased, replacing the open water. A small

wetland around Laguna Salada contains salt-tolerant marsh species, which may be relicts from the time when the lagoon was connected to the ocean.

Sensitive Plant Species

The California Natural Diversity Data Base (CNDDDB) reports the occurrence of a single sensitive plant species from Sharp Park (Table 6.4-2). San Francisco spineflower (*Chorizanthe cuspidata* var. *cuspidata*) was reported from the Laguna Salada area in 1925 (CNDDDB 2005). Vegetation surveys conducted for the *Laguna Salada Enhancement Plan* (PWA 1992) and for this project found no sensitive plant species within Sharp Park; therefore, this plant is presumed extirpated from this site.

Invasive Plant Species

Invasive vegetation cover accounts for over 161 acres of the land within the Natural Areas at Sharp Park. Of this area, almost 150 acres is invasive forest, mostly in the eastern portion of the Natural Area. These areas with dense eucalyptus canopy prevent light from reaching the earth and introduce chemicals to its surroundings that prevent establishment and survival of other species. The remaining area is entirely invasive grasslands and other herbaceous series. Areas dominated by iceplant, orchard grass grassland, and stands of French broom scrub can be found through the Natural Areas.

WILDLIFE

Birds

The variety of habitats at Sharp Park provide suitable foraging, nesting, and roosting habitat for a number of species. The forest habitat of Sharp Park provides potential nesting habitat for raptors and owls. Both red-tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*) are known to breed within Sharp Park. The complex of scrub habitats in the upper canyon provides habitat for resident and migratory songbirds including dark-eyed junco (*Junco hyemalis*), California towhee (*Pipilo crissalis*), Western scrub-jay (*Aphelocoma californica*), and American robin (*Turdus migratorius*) (Appendix C-4). The wetland habitats surrounding Laguna Salada provide habitat for marsh species such as Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), red-winged blackbirds (*Agelaius phoeniceus*), and others. A list of bird species that occur at Sharp Park is presented in Appendix Table C-1.

Sensitive Bird Species and Important Bird Habitat

Twenty species of special-status birds are reported from Sharp Park (Table 6.4-2). Of these, four species are thought to breed within the Natural Area. The forest habitat of Sharp Park provides potential nesting habitat for both red-tailed hawk and red-shouldered hawk. Common yellowthroats (*Geothlypis trichas*) have been observed singing on territory at Laguna Salada in 1991 (PWA 1992). They were documented to have bred there in 1975 (Foster 1977). Other

observations and those of EIP biologists indicate that there are common yellowthroats present at Laguna Salada throughout the year (PWA 1992; EIP field visit, December 8, 2000). The other two breeding species are American goldfinch (*Carduelis tristis*) and Swainson's thrush (*Catharus ustulatus*). The goldfinch prefers to nest in open areas with abundant shrubs to provide cover. The areas around Laguna Salada and the scrub communities in the upper canyon are both suitable nesting habitat for this species. Swainson's thrush will use the wooded areas where there is dense understory vegetation like that found in much of the upper canyon. Of the other 16 species, it is likely that some also nest at Sharp Park, but the focused survey work to document such activities has not been conducted.

Seven areas within the Sharp Park Natural Area have been identified as important bird habitat. Two of these include Horse Stable Pond and Laguna Salada and the wetland and riparian areas associated with these two features. The wetland features provide habitat for birds such as grebes, rails, ducks, and red-wing blackbirds. On the east side of Highway 1, two areas of important bird habitat encompass the scrub and grassland vegetation of the lower canyon. These areas provide habitat for sparrows, flycatchers, and jays, among others. In the middle of the canyon, the area surrounding Arrowhead Pond and a nearby patch of willow scrub have been mapped as important bird habitat. These areas provide nesting, roosting, and foraging habitat for swallows, flycatchers, thrushes, and other birds that prefer to use dense riparian scrub or forests closely associated with water. The final area is in the upper canyon where a mosaic of scrub and forest create nesting habitat for raptors and owls, and the grasslands provide habitat for sparrows, meadowlarks, and other birds that prefer open grasslands.

Mammals

The diversity of habitats, especially the upper canyon areas, likely supports a relatively wide array of small mammals. A California meadow vole (*Microtus californicus*) was observed near Laguna Salada (EIP field visit, April 12, 1999). Species that likely are present include dusky-footed woodrat (*Neotoma fuscipes monochroua*), raccoon (*Procyon lotor*), striped striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) (*Didelphis virginiana*). Review of relevant reports indicates that native gray fox (*Urocyon cinereoargenteus*) and the introduced red fox (*Vulpes fulva*) are common through the area (PWA 1992). Unlike other parks within the system that are isolated within an urban environment, the Sharp Park Natural Area is adjacent to high-quality natural habitats. This connection may allow the park to support populations of black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus californicus*), common porcupine (*Erethizon dorsatum epixanthum*), coyote (*Canis latrans*), and the occasional mountain lion (*Felis concolor californicus*). Free-roaming domestic cats have been observed on site and are relatively common. Feral pigs have been observed in the nearby Crystal Springs watershed and may be found in the upper canyon at Sharp Park.

Reptiles/Amphibians

The Laguna Salada area has been the subject of specific amphibian and reptile surveys. These efforts have documented the presence of California slender salamanders (*Batrachoseps attenuatus*), Pacific chorus frog (*Pseudacris (Hyla) regilla*), California red-legged frog, western yellow-bellied racers (*Coluber constrictor mormon*), and coast garter snake (*Thamnophis elegans terrestris*). Pacific rubber boa (*Charina bottae bottae*) and rough-skinned newt (*Taricha granulosa granulosa*) have been reported from Sharp Park (EIP field visit, April 12, 1999; PWA 1992). The wetlands surrounding Laguna Salada and Sanchez Creek provide important habitat for these species. Other species that are likely to occur in Sharp Park but have not been documented include western fence lizard (*Sceloporus occidentalis*), California alligator lizard (*Elgaria multicarinata*), and western toad (*Bufo boreas*).

Sensitive Reptile/Amphibian Species

Breeding of the federally threatened California red-legged frog has been documented at Laguna Salada (PWA 1992). During survey work conducted in the early 1990s, juvenile California red-legged frogs were common around the Horse Stable Pond and the connecting canals. For unknown reasons California red-legged frog were more common in areas around the Horse Stable Pond than Laguna Salada itself or Sanchez Creek. Some California red-legged frogs have been observed in the lower reach of Sanchez Creek (Figure 6.4-4). Surveys conducted in 1999 resulted in observations of two adults and nine egg masses, indicating that a breeding population of California red-legged frogs remains at Laguna Salada and the Horse Stable Pond (L. Wayne, pers. com. 2005). Surveys for California red-legged frog egg masses have continued and in 2003, 44 egg masses and two adults were observed. In 2004, 52 egg masses were found. In 2005, 14 egg masses were found. The operation of the pumps that drain down the water in Horse Stable Pond has in the past stranded egg masses above the water line. In addition to pump operation, off-leash dogs have been observed running through the wetland. On April 13, 2004, the U.S. Fish and Wildlife Service (USFWS) proposed critical habitat for the California red-legged frog; however, no portion of Sharp Park is included in this proposal (FR 2004).

Surveys for San Francisco garter snakes started at Sharp Park in the mid-1940s indicated that relatively large numbers of these snakes could be found in the Laguna Salada area at this time (PWA 1992). The population had declined by 1979 when 37 snakes were observed in the wetland adjacent to the Horse Stable Pond and 46 were observed on Mori Point (Barry 1978). Extensive trapping efforts in the mid to late 1980s resulted in the capture of only two San Francisco garter snakes (PWA 1992). During surveys conducted from 1990 to 1992, three San Francisco garter snakes were observed at Mori Point, but none within Sharp Park itself (PWA 1992). San Francisco garter snake were observed at Horse Stable Pond in 2005 (Campo 2005). Also, surveys conducted by the California Department of Fish and Game (CDFG) in 2004, using traplines, found San Francisco garter snake in wetlands around Laguna Salada. The quality of habitat available at Laguna Salada, the Horse Stable Pond, and the adjacent wetlands remains

excellent. The adjacent upland habitat at Mori Point likely provides the required estivation areas for San Francisco garter snakes. Additionally, a suitable prey base (primarily frogs) is available for this species in the area. For these reasons, it seems highly likely that this species continues to use the Laguna Salada, Horse Stable Pond, and adjacent wetlands areas as feeding grounds.

Invertebrates

Sensitive Invertebrate Species

A population of San Francisco forktail damselfly was discovered in association with the wetlands of Sharp Park in 1988 (PWA 1992) (Figure 6.4-4). At the time of its discovery, this was the only known coastal population. Survey work conducted in 1990 and 1991 indicated that a low- to moderate-density population persisted at the wetland habitats (PWA 1992). Surveys have not been conducted since 1992; however, the habitat conditions remain suitable to support this species and therefore it is presumed to be present. The adult phase of this species prefers sunlit areas of low vegetation from which to forage and mate. Eggs are deposited into aquatic vegetation in shallow water habitats where naiads (the damselfly's aquatic nymph life-stage) are afforded some protection from flows and predators.

Mission blue butterflies potentially occur within the boundaries of Sharp Park. This species has been reported as recently as 1998 from just north of the Natural Area along Gypsy Hill Road (CNDDDB 2005). Mission blue are presumed to occur within the upper portions of Sharp Park. A small area of suitable habitat can be found in the extreme northeastern corner of Sharp Park. Larval host plants for this species are relatively common (various lupines) (Garth and Tilden 1986).

San Bruno elfin butterflies (*Incisalia mossii bayensis*) potentially occur within the boundaries of Sharp Park. This species was sighted as recently as April 2005 from adjacent Milagra Ridge (Warner 2005). The sole larval host plant for this species is stonecrop (*Sedum spathulifolium*).

The California Natural Diversity Data Base (CNDDDB) (2005) also reports the occurrence of bumblebee scarab beetle (*Lichnanthe ursina*), a federal species of concern, within Sharp Park. According to the database, specimens were collected from the dunes near Laguna Salada, although the exact collection date is unknown and the literature reference in the CNDDDB is 1980. This population is presumed extant.

MANAGEMENT AREAS

Management Areas (MAs) within the Natural Area at Sharp Park fall into three general categories: the wetlands associated with Laguna Salada and Horse Stable Pond, grassland and scrub areas, and the urban forests of the canyon (Figure 6.4-5). Three MA-1 areas are designated in the upper canyon and three in the Laguna Salada Area. Surrounding each MA-1 in the upper canyon is an MA-2 which may also contain sensitive species and habitats, but which provides a

buffer between the extensive urban forests and the MA-1 areas. Many of the MA-2 areas in the upper canyon also support diverse assemblages of scrub vegetation that provides important structural diversity. In general, these MA-2 buffer areas are active restoration areas where the public is most likely to see changes in the park landscape, such as tree and shrub removal and native planting. The MA-3 areas at Sharp Park include most of the areas that are dominated by invasive trees but that are lacking the understory complexity found in the MA-2 areas. The following text presents issues and recommended management actions by Management Area. Management recommendations from previous planning efforts for Sharp Park, specifically *Master Plan Recommendations for Sharp Park* (WESCO 1993b) and the *Laguna Salada Enhancement Plan* (PWA 1992), were reviewed and incorporated where appropriate.

Site Improvements - Implementation of management recommendations at Sharp Park would result in:

- possible expanded public access to the upper canyon and linkages to neighboring open spaces;
- increased and more sustainable populations of sensitive plant species;
- enhanced habitats for California red-legged frog and San Francisco garter snake;
- restoration of coastal scrub and creek riparian habitat in the canyon;
- improved wildlife habitat;
- protection of sensitive habitats and species at Laguna Salada;
- creation of a buffer zone between the wetlands and the golf course fairways;
- reduction in erosion; and
- protection of endangered San Francisco garter snake and red-legged frog habitat by restricting access to Horse Stable Pond, Laguna Salada, and Arrowhead Pond.

Sharp Park occupies a unique position amongst the Natural Areas. Not only is it located outside of the City proper, but it is bordered by designated open spaces (Sweeny and Milagra Ridges). Because this Natural Area is located among other large regional natural areas, Sharp Park contains a larger functional habitat that can support larger animals such as bobcats and mountain lions. The improvement in coastal scrub and riparian habitats within the canyon east of Highway 1 that will result from implementation of the following recommendations will create an area of diverse habitats comparable to that in Sweeny Ridge or the nearby Crystal Springs Watershed. Removal of debris and stabilization of water levels in Horse Stable Pond will result in improved reproductive success of red-legged frogs and better habitat for the San Francisco garter snake.

ISSUES AND RECOMMENDATIONS

Vegetation

Issues relating to vegetation management at Sharp Park focus on the protection of sensitive species and habitats, typically through the control of invasive plants (GR-1) and management of

sensitive species and vegetation series of limited distribution (GR-2). Management of the urban forests at Sharp Park will follow the general urban forest management practices (GR-15). In addition to these general recommendations, the following site-specific issues should be addressed.

Issue SP-1: Wetlands (including Sanchez Creek), rare habitat types (e.g., California sagebrush and oceanspray scrub) and populations of sensitive plant species are at risk of diminishing or going extinct within Sharp Park because of habitat loss and invasive species. Invasive vegetation (blue gum eucalyptus (*Eucalyptus globulus*), French broom (*Genista monspessulana*), European grasslands, and Himalayan blackberry (*Rubus discolor*), etc.) occurs throughout Sharp Park and threatens the long-term survival of its scrub habitats, as well as sensitive species that persist there.

Recommendation SP-1a: Woody and herbaceous invasive plants such as French broom, iceplant, hemlock, Cape ivy, radish, European grasses, mustard in areas shall be reduced in all MA-1 and MA-2 areas (Figure 6.4-5). Understory plants in MA-3 urban forests may also be reduced in order to improve tree health and wildlife habitat (see Urban Forest Recommendations in GR-15). Within MA-3 areas, some invasive plants may remain in place and tree recruitment may occur (in MA-3a only); however, these areas shall be monitored to ensure that they are not encroaching on sensitive habitats (MA-1 and MA-2), and managed accordingly.

Recommendation SP-1b: In order to enhance the sensitive species habitat that persists in the urban forest understory and at the forest-grassland ecotone, invasive blue gum eucalyptus trees will be removed in select areas. Coastal scrub communities require light to reach the forest floor in order to persist. Dense eucalyptus canopy prevents light from reaching the earth and introduces chemicals to its surroundings that prevent establishment and survival of other species. Approximately 15,000 of an overall 54,000 trees within the Sharp Park Natural Area would be removed from MA-1 and MA-2 areas (Appendix F). Not all trees in MA-1 and MA-2 areas will be removed. Some scattered large individuals will remain in order to minimize large-scale disturbance and disruption to wildlife and to promote a gradual conversion to native scrub habitats. In MA-1 areas, an average of 50 to 100 square feet of basal area per acre will be retained. In MA-2 areas, between 100 to 200 square feet of basal area per acre will be retained. Invasive tree species in all MA-1, MA-2, MA-3b, and MA-3c areas will also be prevented from establishing. The short- and long-term impacts of tree removal are discussed in Appendix F. Urban forest management (MA-3 areas) is not considered here (see GR-15). Below is a description of where tree removal would occur (see also Figure 6.4-5):

- trees will not be removed (MA-1a-1f, MA-2b, MA-3b-e);
- remove approximately 200 trees (MA-2c);
- remove approximately 50 trees (MA-1c);

- remove approximately 50 trees (MA-2a);
- remove approximately 50 trees (MA-2d);
- remove approximately 50 trees (MA-2e); and
- thin eucalyptus trees by approximately 50 percent (approximately 4,000 trees) (MA-2f, and MA-2k)
- Thin eucalyptus trees by approximately 75 percent (approximately 10,700 trees) (MA-2g-2j).

SFRPD staff will work with representatives of the City of Pacifica to carry out the proposed tree removal in compliance with all applicable local and state laws. SFRPD will seek legal council from San Francisco City Attorney's office regarding the applicability of Ordinance 636-C.S. which limits logging activities within the City of Pacifica. Should the City of Pacifica require a permit for development of a trail, issuance of approvals for tree removal may be sought concurrently. Most tree removal will occur in the upper canyon. This area is outside the Coastal Zone and therefore a coastal development permit is not required.

Recommendation SP-1c: In MA-1 and MA-2 areas where invasive plants have been removed, revegetate using appropriate native plants. Existing wetlands, creek grasslands, and coastal scrub habitat areas shall be enhanced and diversified as appropriate. The creek in the upper canyon (MA-2d) is of particular conservation value and should be restored as such. Using diversity, cover, and density targets generated from reference sites within and around San Francisco, plant native grassland, creek and scrub species (see Appendix B). In MA-3 areas plant the understory and forest gaps in accordance with the recommendations of the Urban Forest Management Plan (GR-15).

Recommendation SP-1d: In order to prevent extinction of existing rare or uncommon grassland plant species at Sharp Park, such as yellowtinge larkspur (*Delphinium decorum*) and California larkspur (*Delphinium californicum*), augment populations by direct seeding or planting in all MA-1 areas.

Recommendation SP-1e: In order to reduce the potential for local extinction of sensitive species in the San Francisco peninsula, consider reintroduction of San Francisco spineflower and beach layia (*Layia carnosa*) in MA-1 and MA-2 areas as appropriate.

Wildlife

Wildlife issues at the Sharp Park Natural Area focus on habitat. Vegetation management during the breeding season can impact nesting birds (GR-4); however, vegetation management also can provide materials to create artificial habitat for ground-dwelling birds, small mammals, and reptiles (GR-9). Artificial nesting structures may benefit some species, especially cavity nesters such as titmice, chickadees, and woodpeckers (GR-6). Installation of the appropriate plant

species could provide important habitat for sensitive butterfly species (GR-10) (especially within MA-1a, MA-1c, MA-2e, MA-2h, and MA-2i). Finally, reduction in predation pressures will benefit all animals within the Natural Area (GR-7). In addition to these general recommendations, the following site-specific issues should be addressed.

Mammals

Issue SP-2: Populations of feral pigs are increasing in natural areas on the San Francisco Peninsula. These animals can be extremely destructive when they invade an area. Currently they are found on the Crystal Springs watershed, just over the inland ridge above Sharp Park.

Recommendation SP-2a: If signs that feral pigs are found in any area of the park, a control program should be immediately implemented by SFRPD and would apply to all Management Areas. This program would be coordinated with stewards of adjacent lands including GGNRA, the City of Pacifica, the San Francisco Public Utilities Commission, and CDFG. Hunting and trapping are the only successful methods of controlling this species.

Issue SP-3: Important elements within natural habitats for survival of small mammals as well as reptiles and amphibians include underbrush, fallen logs, loose rocks, rock outcrops, and springs and seeps. These naturally occurring elements are limited in their distribution and number. Other debris such as lumber, brush piles, and concrete rubble may also fall into this category depending on the material and location. Piles of abandoned lumber may be aesthetically unpleasing but provide important refuge habitat for many species. Removal of these items may reduce available habitat for these animals.

Recommendation SP-3a: The natural or biodegradable (branches, trees, and logs) elements shall be preserved during vegetation management activities or replaced with brush piles (GR-9). Other materials, especially those containing environmental hazards such as creosote-treated wood, car bodies, tires, and painted wood, shall be removed and disposed of properly (MA-1d). Because of the sensitive species in the area, removal activities shall be supervised by a qualified biologist to avoid harming animals. This recommendation applies to all Management Areas at Sharp Park.

Reptiles/Amphibians

Issues related to California red-legged frog and San Francisco garter snake have similar recommendations and are combined in the discussion below.

Issue SP-4: Breeding habitat for California red-legged frog can be found in the connecting canal between Laguna Salada and Horse Stable Pond and within the pond itself. Pumping operations at Horse Stable Pond reduce the water surface elevation in this pond and expose egg masses, thereby reducing reproductive success (PWA 1992). It is important to protect existing breeding

habitat for this federally threatened species. The habitat along Sanchez Creek is generally too shallow and poorly vegetated for California red-legged frog to breed. Within Laguna Salada itself, dense vegetation at the edges, shallow water (< 2 feet), and the presence of predatory fish may limit reproductive success within this area (PWA 1992).

The Laguna Salada area has been described as prime habitat for San Francisco garter snake (PWA 1992). Historically, large numbers of snakes could be found here. Populations at Laguna Salada have declined in recent years, a fact partially attributed to the pet trade, a decline in prey abundance, and destruction of habitat. There are several elements that are required for habitat to be suitable for this species. Foraging typically occurs in a complex array of shallow open water and dense riparian vegetation. Foraging areas should support an abundant frog population, the snake's preferred prey. Foraging habitat should be adjacent to suitable upland estivation habitat, typically rodent burrows, where the snakes can spend the dry summer months. Estivation is the summer equivalent of hibernation.

Recommendation SP-4a: The Laguna Salada Resource Enhancement Plan (PWA 1992) provides the following capital improvements¹ for protection and enhancement of the California red-legged frog and San Francisco garter snake at Laguna Salada (MA-1d to MA-1f):

- Create shallow pools within the existing wetlands areas at Laguna Salada to improve breeding habitat for California red-legged frog, Pacific chorus frogs, and western toads. This activity could include thinning existing stands of tules. This activity would result in an increase in the frog population, which equates to more prey for the San Francisco garter snake.
- Continue monitoring of California red-legged frogs and San Francisco garter snakes.
- Remove tires from Horse Stable Pond following consultation with CDFG.
- Install signage and barriers to keep dogs out of Horse Stable Pond to minimize “take”² of California red-legged frogs and San Francisco garter snakes.
- Separate the small peninsulas within Laguna Salada by small canals from the mainland to create refuge for San Francisco garter snake and red-legged frog breeding habitat.
- Restore Sanchez Creek, including deepening the channel and expanding the creek corridor upstream, creating suitable breeding habitat for frogs, foraging habitat for San Francisco garter snakes, and buffer zones to limit human disturbance (see Issue SP-8 and Issue SP-9).

¹ Currently there are not capital funds allocated for this project.

² The term “take” is defined in Section 3(18) of the Federal Endangered Species Act: “The term ‘take’ means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The term “harm” has been further defined as “An act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.” (United States Congress 1973)

Recommendation SP-4b: Create low mounds, planted with willows, on the western edge of Laguna Salada to serve as a visual barrier to the public, provide snake and frog basking sites, and provide nesting habitat for riparian birds (MA-1f).

Recommendation SP-4c: Reset the pump controls at the Horse Stable Pond to reduce draw-down of the pond during the time that California red-legged frog egg masses are present (December through March). Alternatively, the pump could be set to maintain a stable water level during red-legged frog breeding season. Either of these actions would help avoid “take” of this threatened species (MA-1d).

Recommendation SP-4d: Currently, it does not appear that bullfrogs (*Rana catesbeiana*) have become established in Laguna Salada. If they are discovered here, aggressive efforts shall be made to remove them (MA-1d to MA-1f). This non-native species has been known to prey on other frogs and could extirpate the local population of California red-legged frogs (USFWS 2002) and eliminate the primary food source for San Francisco garter snakes (Chorus frog and California red-legged frog). Because both species would be present if this were to occur, this effort shall only be done under the guidance and with the agreement, support, and participation of CDFG and USFWS.

Recommendation SP-4e: Work with golf course staff to stop all vehicles from using service road from Moose Lodge to Horse Stable Pond. Vehicles should use levee to avoid “take” on endangered species (MA-1d). Educational materials and signage should be developed to inform and educate staff about the damage caused to sensitive habitats and endangered species.

Issue SP-5: The use of pesticides, herbicides, and fertilizers at the golf course could have an impact on water quality within Laguna Salada and a corresponding effect on sensitive species that use this area.

Recommendation SP-5a: The Integrated Pest Management and Natural Areas Program staff shall work with the golf course operations staff to reduce the use of chemicals to the bare minimum. Alternative management methods may be more environmentally appropriate for this location (MA-1d to MA-1f).

Invertebrates

Issue SP-6: The connecting canal between Laguna Salada and Horse Stable Pond, and Horse Stable Pond itself, have been demonstrated to be the best habitat for San Francisco forktail damselfly at Sharp Park (PWA 1992). Management activities routinely remove sediment and emergent vegetation from this channel, thereby creating the habitat conditions favorable for this species. (Vegetation removal may also directly impact forktail damselflies in the area when this work is conducted. See Issue SP-11.)

Recommendation SP-6a: Coordinate with golf course operations to remove aquatic vegetation within the channel twice annually, in spring and fall (MA-1e and MA-1f). Ideally, vegetation shall be removed from half the channel at a time.

Recommendation SP-6b: Remove and trim vegetation along the edges of the channel between Laguna Salada and Horse Stable Pond. The goal is to produce a wide, low margin of short-growing vegetation at the edge of the channel that allows perching within sight of the water (MA-1e and MA-1f).

Soils, Erosion, and Public Use

The erosion and access issues at Sharp Park generally relate to how the public uses this Natural Area. A network of roads and designated and social trails wind through the Management Areas at Sharp Park (Figure 6.4-5). This plan proposes to improve and maintain almost 2,300 feet of trail, retain an additional 11,800 feet of unimproved trails, close approximately 700 feet of social trails, and create almost 1,800 feet of new trails. The issue of erosion and habitat impacts related to trails is addressed through implementation of GR-11 and GR-12. Issues relating to the general safety of visitors and surrounding homes, fire hazards posed by vegetation and trees, and illicit activities must be considered during management of the Natural Areas (GR-13). Interpretive signs regarding the ecosystem of Sharp Park, especially Laguna Salada and Horse Stable Pond, should also be considered (GR-14).

Issue SP-7: Limited access, steep slopes, and poor trails combine to make the upper canyon at Sharp Park inhospitable to the general public. Additionally, the San Francisco Archers have constructed an archery course through this area, making public use potentially hazardous.

Recommendation SP-7a: SFRPD staff shall work with San Francisco Archers to develop a plan for safe public access (potentially including trails outside of the archery club area) to the upper canyon and nearby GGNRA lands (MA-2f, MA-2g, and MA-2k).

Issue SP-8: Off-leash activities of dogs at Laguna Salada may be disturbing sensitive species and damaging sensitive habitats through erosion, predation, trampling, or defecation.

Recommendation SP-8a: Because of the presence of two federally protected species, the following areas will be off-limits to dogs: Arrowhead Pond (MA-1b), Laguna Salada (MA-1f and MA-1e), and Horse Stable Pond (MA-1d). These areas combined cover approximately 33.3 acres. Signage shall be installed to inform users of the local regulations and those regulations will be enforced. Should this prove to not be effective, fencing may be installed to prevent access to sensitive habitats (GR-8). Social trails in the area should be closed (GR-11).

Issue SP-9: Because Sharp Park Golf Course borders on Laguna Salada and the connecting canal runs through the golf course, sensitive species may be disturbed by golf course operations and

use. Sanchez Creek flows into Horse Stable Pond. Although mostly outside the Natural Area, the creek banks are eroding in places and contributing sediment to Horse Stable Pond which degrades wildlife habitat.

Recommendation SP-9a: Create an educational program for all golf course staff. Items that shall be discussed include the importance of protecting California red-legged frog, San Francisco garter snake, and forktail damselfly, and identification of these species and their preferred habitats (MA-1d to MA-1f).

Recommendation SP-9b: Work in coordination with golf course maintenance staff, CDFG, and USFWS to establish a vegetation management plan for the canal connecting Laguna Salada and Horse Stable Pond that would allow channel maintenance without affecting the forktail damselfly, California red-legged frog, or San Francisco garter snake (MA-1d to MA-1f).

Recommendation SP-9c: Create a buffer zone between the Laguna Salada wetlands and the golf course fairways (MA-1e and MA-1f). This could be as simple as developing a wider rough, an unmowed strip of native grasses, or installing upper marsh vegetation to narrow the fairways. Any of these options would help protect these sensitive habitats and species from human disturbance and provide greater wildlife value.

Recommendation SP-9d: Natural Areas Program staff should work with golf course maintenance staff to incorporate native plants within bank stabilization efforts along Sanchez Creek where it flows through the golf course. This would help educate staff and reduce sediment inputs to Horse Stable Pond (MA-1d), thereby maintaining and improving habitat for sensitive species of wildlife.

Issue SP-10: An area of disturbed soil exists on the north side of Sharp Park Road (MA-2a and MA-3a, designated 5 on Figure 6.4-2). In this area there are 25 trenches that are 6 feet by 3 feet and approximately 1 foot deep. The spoils from these excavations are piled on the slope nearby. Although the origin of these trenches is unclear, they represent an erosion and safety hazard.

Recommendation SP-10a: When capital funds are made available, the trenches shall be backfilled with the nearby loose soil. The exposed soil surfaces shall then be replanted with appropriate native vegetation. These areas may need to be covered with weed-free straw or erosion control netting to protect them from direct erosion depending on their exposure.

Issue SP-11: The isolated northern portion of the park bounded by the loop in Sharp Park Road contains an extensive area of eroded badlands with deep gullies and remnant ridges of earth that have been retained by roots or other vegetation near the original soil surface (MA-3a, also designated 1a on Figure 6.4-2). Continued erosion on this slope could encroach into MA-2a and threaten natural resources. An attempt has been made to limit the ongoing erosion in this location

by installing a splash guard intended to transfer runoff directly into the storm drain system. This is only partially effective and the slope continues to erode. Just east of this location up Sharp Park Road, a Sackcrete wall installed as slope protection is being undercut and ultimately could fail.

Recommendation SP-11a: Develop and implement a comprehensive plan to control the erosion in this area. Potential solutions include installation of check dams, brush boxes, erosion control matting, and extensive planting of native vegetation. The complex issues at this location can be addressed only by development and implementation of a comprehensive plan and capital funds to support it.

Issue SP-12: The City used to maintain a rifle range in Sharp Park; this facility has been closed for over 10 years. Located near the existing archery club this facility is outside of the Natural Areas at Sharp Park. The site is known to have soils contaminated by lead shot.

Recommendation SP-12a: SFRPD has hired Fugro West to develop a Remedial Action Plan to facilitate clean-up and remediation of this site. The Natural Areas Program should work with other divisions of SFRPD as necessary to assist with this effort.

IMPACTS OF NON-NATIVE FROG CONTROL

The periodic trapping and removal of non-native bullfrogs would have a beneficial effect on the aquatic ecosystem of Sharp Park. Removal of bullfrogs from Laguna Salada, Horse Stable Pond, and Arrowhead Pond would occur only following the observation of bullfrogs at one of these locations. Bullfrogs are aggressive predators that consume juvenile amphibians, amongst other things. So far they do not appear to have invaded any of the water features at Sharp Park. However, if they do find their way into one of these ponds, they would exhibit predatory pressure on the known populations of red-legged frogs, and indirectly on the San Francisco garter snake. If necessary, removal of bullfrogs would benefit the red-legged frog and San Francisco garter snake by reducing competition and predation. Although trapping and removal programs may result in euthanasia of the captured animals, it is also possible to humanely relocate these animals to education facilities that could use bullfrogs for non-lethal classroom purposes. To the extent possible, SFRPD should pursue humane relocation and treatment of these animals.

Table 6.4-1. Vegetation series mapped at Sharp Park.

	Vegetation Series	Total Acreage
Forest	blue gum forest	66.07
	cypress forest	11.81
	mixed exotic forest	70.72
	pine forest	2.20
	Subtotal	150.80
Scrub	California sagebrush scrub*	4.19
	California blackberry scrub*	0.20
	dogwood scrub*	1.86
	coyote brush scrub*	11.49
	French broom scrub	4.25
	oceanspray scrub*	10.07
	poison oak scrub*	0.33
	red elderberry scrub*	3.57
	thimbleberry scrub*	0.46
	willow scrub*	7.23
Subtotal	43.66	
Grassland	ripgut brome grassland	0.38
	purple false brome grassland	3.00
	orchard grass grassland	5.45
	Subtotal	8.84
Other Herbaceous	poison hemlock	0.09
	mixed exotic herbaceous	0.42
	iceplant herbaceous	1.45
	Subtotal	1.96
Wetland	lady fern wetland*	0.04
	bulrush/cattail wetland*	18.11
	horetail meadow*	0.02
	pondweed marsh*	0.67
	rush meadow*	0.02
	saltgrass/pickleweed marsh*	0.75
	silver weed marsh*	1.58
Subtotal	21.20	
Other	open water	3.93
	developed	6.73
	Subtotal	10.67
Grand Total		237.12

* Indicates vegetation type with a significant native species component.

Table 6.4-2. Sensitive species historically and presently known to occur at Sharp Park.

Species	Common Name	Status Federal, State, CNPS	Occurrence Status
ANIMALS			
<i>Euphydryas editha bayensis</i>	Bay Checkerspot Butterfly	FT	Historic records only.
<i>Icaricia icarioides missionensis</i>	Mission Blue Butterfly	FE	Historic records only.
<i>Rana aurora draytonii</i>	California Red-legged Frog	FT	Presently occurs.
<i>Thamnophis sirtalis elegans</i>	San Francisco Garter Snake	FE, SE, SFP	Historically reported, Observed on Mori Point in 1992.
<i>Lichnanthe ursina</i>	Bumblebee Scarab Beetle	FSC	1980 report from dunes near Laguna Salada, presumed present.
<i>Icaricia icarioides missionensis</i>	Mission Blue Butterfly	FE	Reported near Sharp Park in 1998.
<i>Ischnura gemina</i>	San Francisco Forktail Damselfly	-	Not observed since 1989, presumed present.
<i>Carduelis tristis</i>	American Goldfinch	SLC	Presently breeds.
<i>Falco sparverius</i>	American Kestrel	SLC	Presently occurs.
<i>Columba fasciata</i>	Band-tailed Pigeon	SLC	Presently occurs.
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	-	Presently occurs.
<i>Aechmophorus clarkii</i>	Clark's Grebe	SLC	Presently occurs.
<i>Anas strepera</i>	Gadwall	SLC	Winter resident.
<i>Geothlypis trichas</i>	Common Yellowthroat	CSC	Presently occurs, likely breeds.
<i>Bubo virginianus</i>	Great Horned Owl	SLC	Presently occurs.
<i>Picoides villosus</i>	Hairy Woodpecker	SLC	Presently occurs.
<i>Vireo huttoni</i>	Hutton's Vireo	SLC	Presently occurs.
<i>Empidonax difficilis</i>	Pacific-slope Flycatcher	SLC	Presently occurs.
<i>Podilymbus podiceps</i>	Pied-billed Grebe	SLC	Presently occurs.
<i>Carpodacus purpureus</i>	Purple Finch	SLC	Presently occurs.
<i>Buteo lineatus</i>	Red-shouldered Hawk	SLC	Presently breeds.
<i>Buteo jamaicensis</i>	Red-tailed Hawk	SLC	Presently breeds.
<i>Sayornis saya</i>	Say's Phoebe	SLC	Winter resident.
<i>Cyanocitta stelleri</i>	Steller's Jay	SLC	Presently occurs.
<i>Catharus ustulatus</i>	Swainson's Thrush	SLC	Presently breeds.
<i>Tachycineta bicolor</i>	Tree Swallow	SLC	Presently occurs.
<i>Tachycineta thalassina</i>	Violet-green Swallow	SLC	Presently occurs.

Table 6.4-2. Sensitive species historically and presently known to occur at Sharp Park.

PLANTS			
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Spineflower	FSC, CNPS List 1B	Historically reported, current status unknown

Status Key:

Federal Status

- FE* Endangered. Species in danger of extinction throughout all or significant portion of its range.
- FT* Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
- FPE* Proposed for listing as endangered.
- FC* Candidate for listing as endangered. Candidate information now available indicates that listing may be appropriate with supporting data currently on file.
- FSC* Species of Concern. Former Category 2 Candidate for listing as endangered.
- FPD* Proposed de-listing.

California State Status

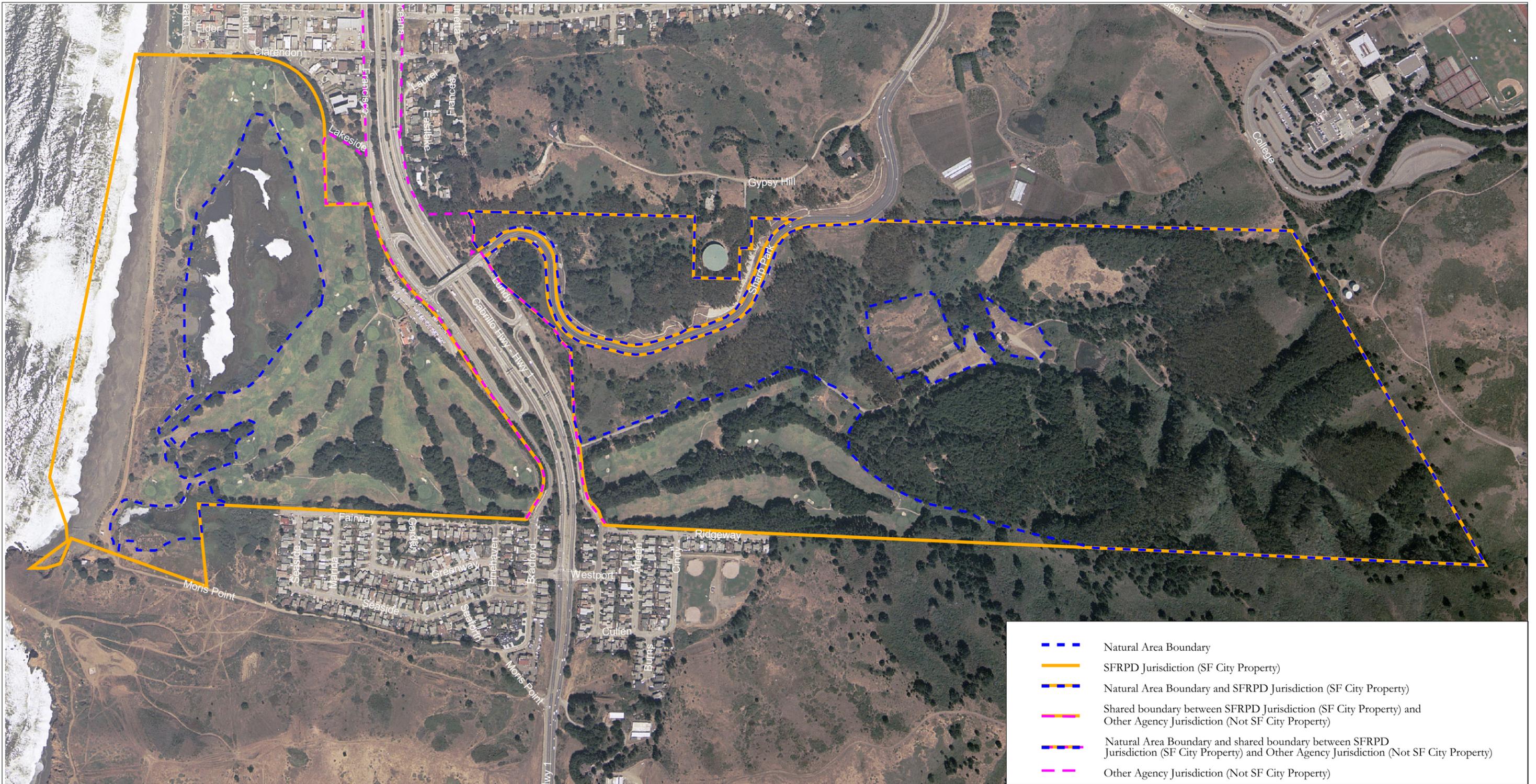
- SE* Endangered. Species whose continued existence in California is jeopardized.
- ST* Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
- SSC* Species of Concern.
- SFP* State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
- Sens* Considered a sensitive species by the California Department of Forestry.

California Native Plant Society

- 1A* Plants presumed extinct in California
- 1B* Plants that are rare or endangered in California and elsewhere.
- 2* Plants that are endangered in California, but more common elsewhere.
- 3* Plants about which more information is needed.
- 4* Plants of limited distribution (a watch list).
- LS* Locally Significant.

Golden Gate Audubon Society

- SLC* Species of Local Concern



Source: Aerial photography by HJW for San Francisco Department of Recreation and Park Department, Natural Areas Program (NAP), 1995; 2-foot pixels, California State Plane Zone 3, NAD 83; natural area boundary determined by NAP, 2002; property boundary created by NAP from information provided by San Francisco Department of Public Works, 2001; contour lines provided by San Francisco Department of Conservation.

Created by Debra Dwyer, San Francisco State University Institute for GISc, May 6, 2002, revised October 12, 2005.

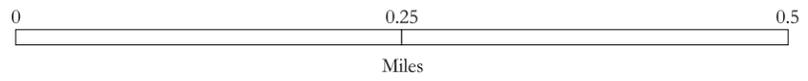
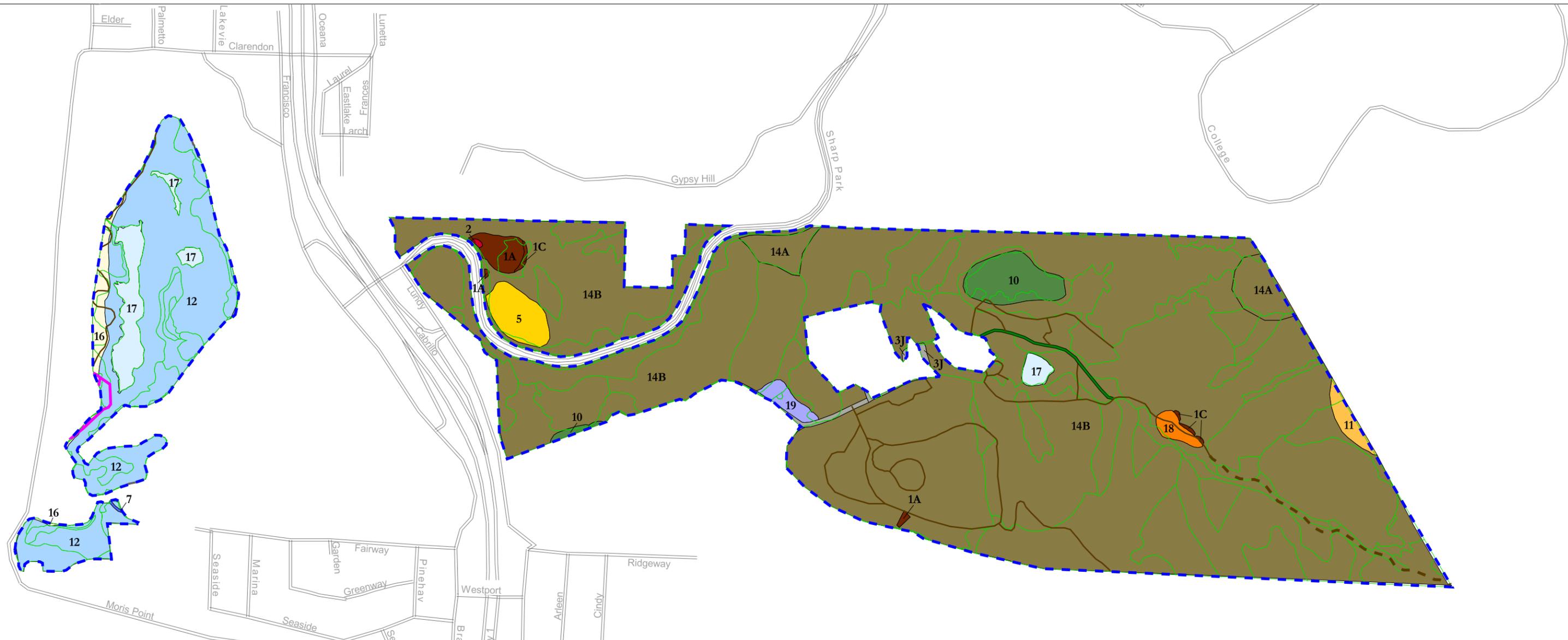


FIGURE 6.4 - 1
AERIAL PHOTOGRAPH, PROPERTY BOUNDARIES, AND NATURAL AREAS
Sharp Park
 Significant Natural Resource Areas Management Plan
 San Francisco, California





Soils, Land Features, and Trails

- | | | | | | | | |
|----|-----------------------|----|---------------------------|-----|---|--|----------------------------|
| 1A | slope | 7 | drainages, creeks | 14A | Thin rocky soils over Franciscan greenstone | | earthen road |
| 1C | escarpment | 10 | soil slip/earth flow | 14B | Thin rocky soils over Franciscan sandstone | | asphalt or gravel road |
| 2 | erosion control areas | 11 | fill slope | 17 | pond/lake | | secondary earthen trail |
| 3J | parking lot | 12 | wet/seepage or marsh area | 18 | landslide deposit | | proposed trail |
| 5 | bare ground | 16 | sandy soil | 19 | fill/dump on level ground | | closed trail |
| | | | | | | | Natural Area boundary |
| | | | | | | | vegetation series boundary |



Source: Soils and land features data collected by EIP Associates, 1999-2002; trail data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP) 2005, digitized by San Francisco State Institute for GISc; vegetation data collected by NAP, San Francisco State University Biology Department and EIP Associates, 1999 - 2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by SFSU IGIS, 2000 - 2002; natural area boundary created by SFSU IGIS based on a determination by NAP, 2005; streets data excerpted from ArcView StreetMap 2000, copyright 1998-2000, Environmental Systems Research Institute, Inc., (ESRI).

Created December 3, 2002, revised December 11, 2005 by Debra Dwyer, San Francisco State University, Institute for GISc.

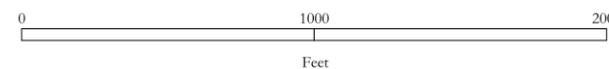
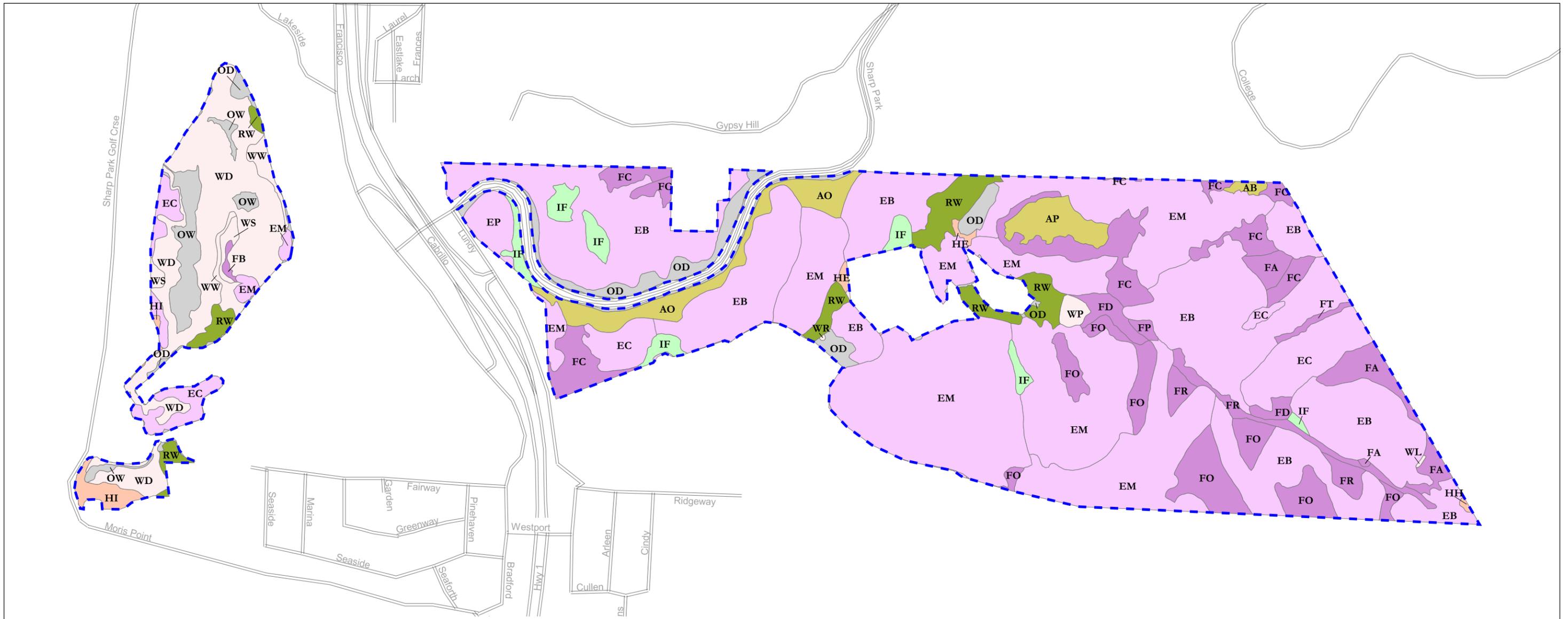


FIGURE 6.4 - 2
SOILS, LAND FEATURES,
AND TRAILS

Sharp Park

Significant Natural Resource Areas
Management Plans

San Francisco, California



Vegetation Subformation and Series

Annual Grassland

- AB** ripgut brome grassland
- AO** orchard grass grassland
- AP** purple false brome grassland
- AW** wild oat grassland

Perennial Grassland

- PB** blue wildrye prairie
- PP** purple needlegrass prairie

Northern Franciscan Coastal Scrub

- FA** California sagebrush scrub
- FB** California blackberry scrub
- FC** coyote brush scrub
- FD** dogwood scrub
- FO** oceanspray scrub
- FP** poison oak scrub
- FR** red elderberry scrub
- FT** thimbleberry scrub

Wetland

- WD** bulrush/cattail marsh
- WH** horsetail meadow
- WL** lady fern marsh
- WP** pondweed marsh
- WR** rush meadow
- WS** saltgrass/pickleweed
- WW** silverweed marsh

Other Herb

- HE** mixed exotic herbaceous
- HH** poison hemlock
- HI** iceplant

Other

- OD** development
- OS** sand
- OW** open water

Non-native Scrub

- IF** French broom scrub

Non-native Forest

- EB** blue gum forest
- EC** cypress forest
- EM** mixed exotic forest
- EP** pine forest

Central Coast Riparian Scrub

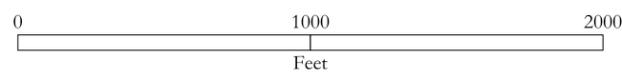
- RW** willow scrub

- - - - - Natural Area boundary



Source: Vegetation data digitized by Geotopo, Inc. from data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP), EIP Associates, and San Francisco State University Department of Biology, 1999-2000; vegetation shapefile edited by San Francisco State University Institute for GISc, 2000-2002; natural area boundary created by SFSUGIS from data provided by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created December 4, 2001, revised June 10, 2005 by D. Dwyer, San Francisco State University Institute for GISc.

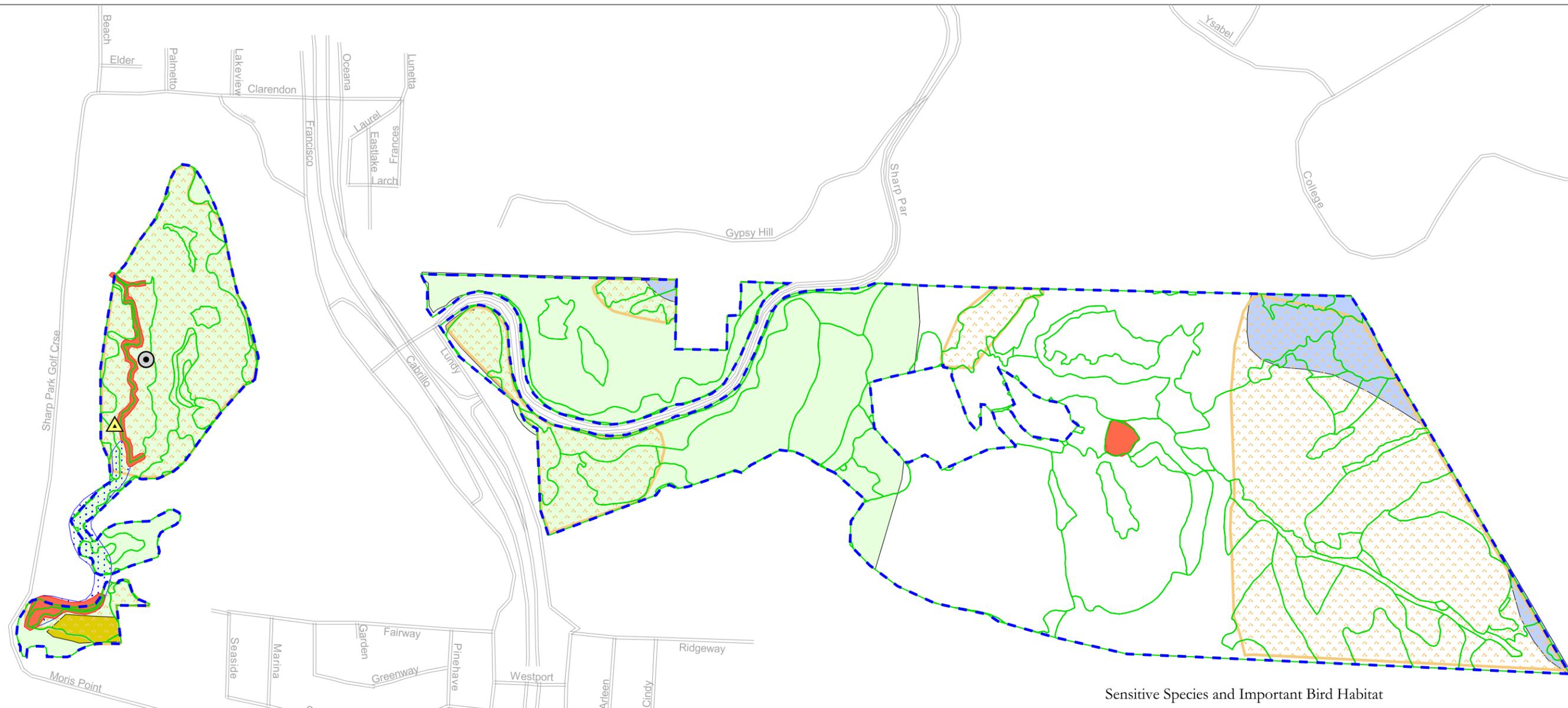


**FIGURE 6.4 - 3
VEGETATION**

Sharp Park

Significant Natural Resource Areas
Management Plans

San Francisco, California



Sensitive Species and Important Bird Habitat

- Natural Area boundary
- Black-crowned Night Heron ¹
- ▲ Common Yellowthroat ^{1,2}
- Bumblebee Scarab Beetle Habitat
- California Red-legged Frog Habitat ²
- Mission Blue Butterfly Habitat
- San Francisco Forktailed Damselfly Habitat ²
- San Francisco Garter Snake Habitat
- Important Bird Habitat
- vegetation series boundary



Source: Except where noted otherwise, sensitive species data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP), 1998-2002; Mission blue butterfly and Bumblebee scarab beetle data from the California Natural Diversity Database, CA Dept of Fish and Game, 2002; vegetation data collected by NAP, San Francisco State University Biology Department, and EIP Associates, 1999 - 2000; data layers digitized by Geotopo, Inc., 2000, edited and corrected by San Francisco State University Institute for GISc (SFSU IGIS), 2000 - 2002; important bird habitat data layer created by EIP Associates, 2005; natural area boundary created by SFSU IGIS based on a determination by NAP, 2005; streets data excerpted from ESRI's StreetMap 2000 data, copyright ESRI 1998-2000.

¹ EIP Associates, 2000. December 8th field visit. Northernmost common yellowthroat siting only.
² Phillip Williams & Associates Ltd. 1992. Laguna Salada Resource Enhancement Plan. Prepared for the City of San Francisco and the State of California Coastal Conservancy. Southernmost two sitings of common yellowthroat only.

Created December 4, 2001, revised August 20, 2005 by Debra Dwyer, San Francisco State University Institute for GISc.

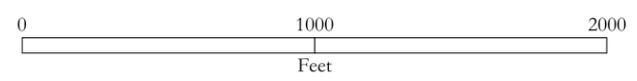
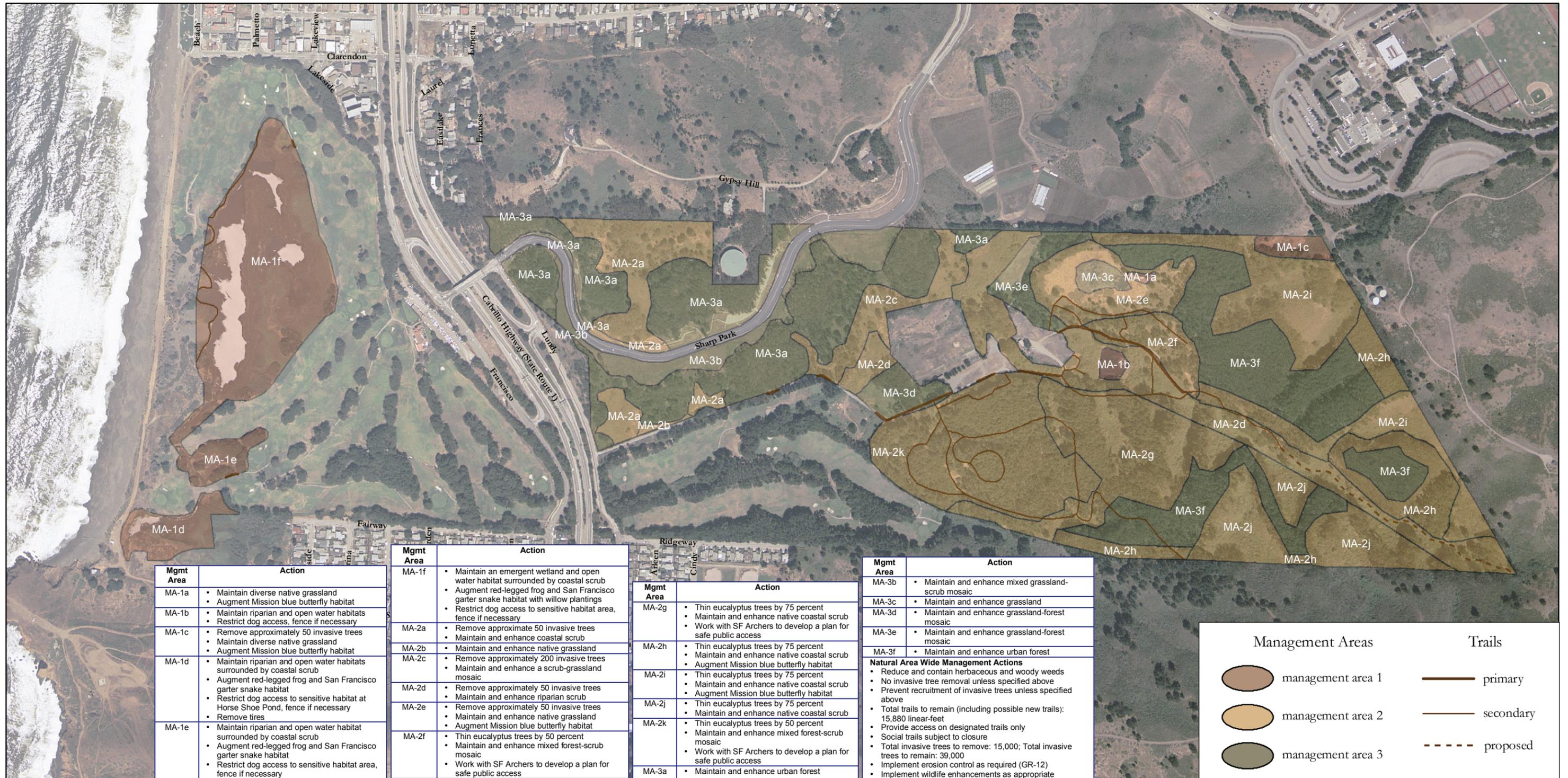


FIGURE 6.4 - 4
SENSITIVE SPECIES AND
IMPORTANT BIRD HABITAT

Sharp Park
 Significant Natural Resource Areas
 Management Plans
 San Francisco, California



Mgmt Area	Action
MA-1a	<ul style="list-style-type: none"> Maintain diverse native grassland Augment Mission blue butterfly habitat
MA-1b	<ul style="list-style-type: none"> Maintain riparian and open water habitats Restrict dog access, fence if necessary
MA-1c	<ul style="list-style-type: none"> Remove approximately 50 invasive trees Maintain diverse native grassland Augment Mission blue butterfly habitat
MA-1d	<ul style="list-style-type: none"> Maintain riparian and open water habitats surrounded by coastal scrub Augment red-legged frog and San Francisco garter snake habitat Restrict dog access to sensitive habitat at Horse Shoe Pond, fence if necessary Remove tires
MA-1e	<ul style="list-style-type: none"> Maintain riparian and open water habitat surrounded by coastal scrub Augment red-legged frog and San Francisco garter snake habitat Restrict dog access to sensitive habitat area, fence if necessary

Mgmt Area	Action
MA-1f	<ul style="list-style-type: none"> Maintain an emergent wetland and open water habitat surrounded by coastal scrub Augment red-legged frog and San Francisco garter snake habitat with willow plantings Restrict dog access to sensitive habitat area, fence if necessary
MA-2a	<ul style="list-style-type: none"> Remove approximately 50 invasive trees Maintain and enhance coastal scrub
MA-2b	<ul style="list-style-type: none"> Maintain and enhance native grassland
MA-2c	<ul style="list-style-type: none"> Remove approximately 200 invasive trees Maintain and enhance a scrub-grassland mosaic
MA-2d	<ul style="list-style-type: none"> Remove approximately 50 invasive trees Maintain and enhance riparian scrub
MA-2e	<ul style="list-style-type: none"> Remove approximately 50 invasive trees Maintain and enhance native grassland Augment Mission blue butterfly habitat
MA-2f	<ul style="list-style-type: none"> Thin eucalyptus trees by 50 percent Maintain and enhance mixed forest-scrub mosaic Work with SF Archers to develop a plan for safe public access

Mgmt Area	Action
MA-2g	<ul style="list-style-type: none"> Thin eucalyptus trees by 75 percent Maintain and enhance native coastal scrub Work with SF Archers to develop a plan for safe public access
MA-2h	<ul style="list-style-type: none"> Thin eucalyptus trees by 75 percent Maintain and enhance native coastal scrub Augment Mission blue butterfly habitat
MA-2i	<ul style="list-style-type: none"> Thin eucalyptus trees by 75 percent Maintain and enhance native coastal scrub Augment Mission blue butterfly habitat
MA-2j	<ul style="list-style-type: none"> Thin eucalyptus trees by 75 percent Maintain and enhance native coastal scrub
MA-2k	<ul style="list-style-type: none"> Thin eucalyptus trees by 50 percent Maintain and enhance mixed forest-scrub mosaic Work with SF Archers to develop a plan for safe public access
MA-3a	<ul style="list-style-type: none"> Maintain and enhance urban forest

Mgmt Area	Action
MA-3b	<ul style="list-style-type: none"> Maintain and enhance mixed grassland-scrub mosaic
MA-3c	<ul style="list-style-type: none"> Maintain and enhance grassland
MA-3d	<ul style="list-style-type: none"> Maintain and enhance grassland-forest mosaic
MA-3e	<ul style="list-style-type: none"> Maintain and enhance grassland-forest mosaic
MA-3f	<ul style="list-style-type: none"> Maintain and enhance urban forest

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 15,880 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 15,000; Total invasive trees to remain: 39,000
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary
- proposed



Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography from HJW for NAP, 1995, 2-foot pixels; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 24, 2005.

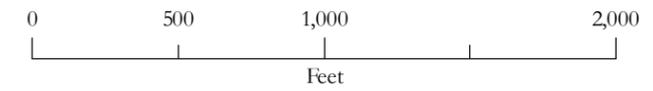


FIGURE 6.4-5
MANAGEMENT AREAS AND TRAIL PLAN
 Sharp Park
 Significant Natural Resource Areas Management Plan
 San Francisco, California