
**INITIAL STUDY and
PROPOSED MITIGATED NEGATIVE DECLARATION
for**

*SERPENTINE PRAIRIE RESTORATION PLAN,
REDWOOD REGIONAL PARK, CALIFORNIA*



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1.0 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

The East Bay Regional Park District (District or EBRPD) has prepared a restoration site plan to describe proposed resource management actions for the serpentine prairie located in Redwood Regional Park. The purpose of this Initial Study (IS) is to determine whether implementation of this restoration project could result in potentially significant effects to the environment, and, if so, to incorporate mitigation measures to eliminate or reduce the project's potentially significant adverse effects to less-than-significant levels.

If, after consideration of this IS, and any comments received during the public review period, the District finds no substantial evidence that the proposed project would have a significant adverse effect on the environment, then a Mitigated Negative Declaration (MND) would be submitted for adoption by the EBRPD Board of Directors, as provided in the California Environmental Quality Act (CEQA), Section 21064.

1.2 LEAD AGENCY

The District is the CEQA Lead Agency and has prepared this Initial Study to provide agencies and the public with information about the proposed project's potential impacts on the local and regional environment. This document has been prepared in compliance with CEQA (1970) as amended and the State CEQA Guidelines, California Administrative Code, Title 14, Division 6, Chapter 3.

1.3 PURPOSE

The purpose of this document is to evaluate the potential environmental effects of the proposed *Serpentine Prairie Restoration Plan for Redwood Regional Park*. Mitigation measures have also been incorporated into the project to eliminate any potentially significant impacts or reduce them to a less-than-significant level.

1.4 SUMMARY OF FINDINGS

Chapter 3 of this document contains the IS Checklist which identifies the potential environmental impacts (by resource area) and provides a brief discussion of each impact resulting from implementation of the proposed project. Based on the IS and supporting environmental analysis provided in this document, together with the incorporation of mitigation measures, the proposed Restoration Plan would eliminate or result in less than significant impacts for the following issues: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems.

In accordance with §15064(f) of the CEQA Guidelines, a MND shall be prepared if the proposed project would not have a significant effect on the environment after the inclusion of mitigation measures in the project. Based on the available project information and the environmental analysis presented in this document, there is no substantial evidence that, after the incorporation of mitigation measures, the proposed project would have a significant effect on the environment. It is proposed that a MND be adopted in accordance with the CEQA Guidelines.

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

The EBRPD is proposing to implement a serpentine prairie restoration plan within Redwood Regional Park. This plan is intended to provide information that would assist in evaluating options for serpentine habitat restoration through:

- Experimentation as set forth through an adaptive management program
- Development of a more robust assessment of serpentine resources, most notably the state and federally listed Presidio clarkia (*Clarkia franciscana*)
- Implementation of a range of science-based techniques.

Activities involved in implementing the proposed project include:

- Tree and duff removal
- Protective fencing
- Spring mowing and thatch treatment (raking)
- Soil pile removal, decompaction and revegetation
- Decommissioning, realigning and repairing existing recreation trails within the restoration area
- Prescribed burning
- Grazing

The Initial Study for the proposed project has been prepared in conformance with specifications of CEQA, and the State CEQA Guidelines. Compliance with CEQA is required due to state and local jurisdiction over the proposed project.

EBRPD would assume the lead agency role under CEQA, with California Department of Fish and Game (CDFG), acting as local and state responsible, interested, or trustee agency.

2.2 PROJECT LOCATION

The 1,836-acre serpentine prairie is contained wholly within Redwood Regional Park, which is located in the Oakland Hills, approximately five miles east of downtown Oakland. (USGS Oakland East Quad, Section 34, T1S, R3W, Latitude N. 37.8 degrees, Longitude W 122.162 degrees). The park is contained within Alameda County (approximately 1,102 acres) and Contra Costa County (approximately 734 acres), while the project activities are contained wholly in Alameda County (APNs 085-001-006-001, 085-001-014 and 037A-3150-061-001). Project activities would occur along a portion of the western perimeter of the park near the intersection of Skyline Boulevard and Joaquin Miller Road east of the Richard C. Trudeau Center. This area of the park lies within the jurisdictional boundaries of the City of Oakland and Alameda County (see *Figure 1 - Project Location*).

2.3 PROJECT PURPOSE; GOALS AND OBJECTIVES

Purpose. The purpose of the *Serpentine Prairie Restoration Plan for Redwood Regional Park* is to: 1) restore the vitality and botanical diversity of the serpentine prairie; 2) manage the site to ensure survival of special status species associated with the prairie; and 3) provide for the enjoyment and appreciation of the park users.

Goals and Objectives. With this purpose in mind, the goal established for this adaptive management program is to enhance habitat for State and federally listed endangered Presidio clarkia (*Clarkia franciscana*) and other native grassland species (e.g., Ruby Chalice *clarkia*, *C. rubicunda*; Tiburon buckwheat, *Eriogonum luteolum* var. *caninum* - listed by the California Native Plant Society [CNPS])

Figure 1 – Project Location



as List 1B.2). The program aims to achieve this goal by increasing the percent cover and total number of native species, while reducing the cover and number of non-native species.

The goal established at the outset of the adaptive management plan for the *Serpentine Prairie Restoration Plan for Redwood Regional Park* to meet this primary purpose and the overriding project objective is to:

“Maintain a population of at least 3,000 Clarkia franciscana individuals at the serpentine prairie in Redwood Regional Park from 2009 to 2011.”

This threshold would be reassessed in three years based on monitoring, collection and analysis of site experimental data.

2.4 PROJECT BACKGROUND AND SETTING

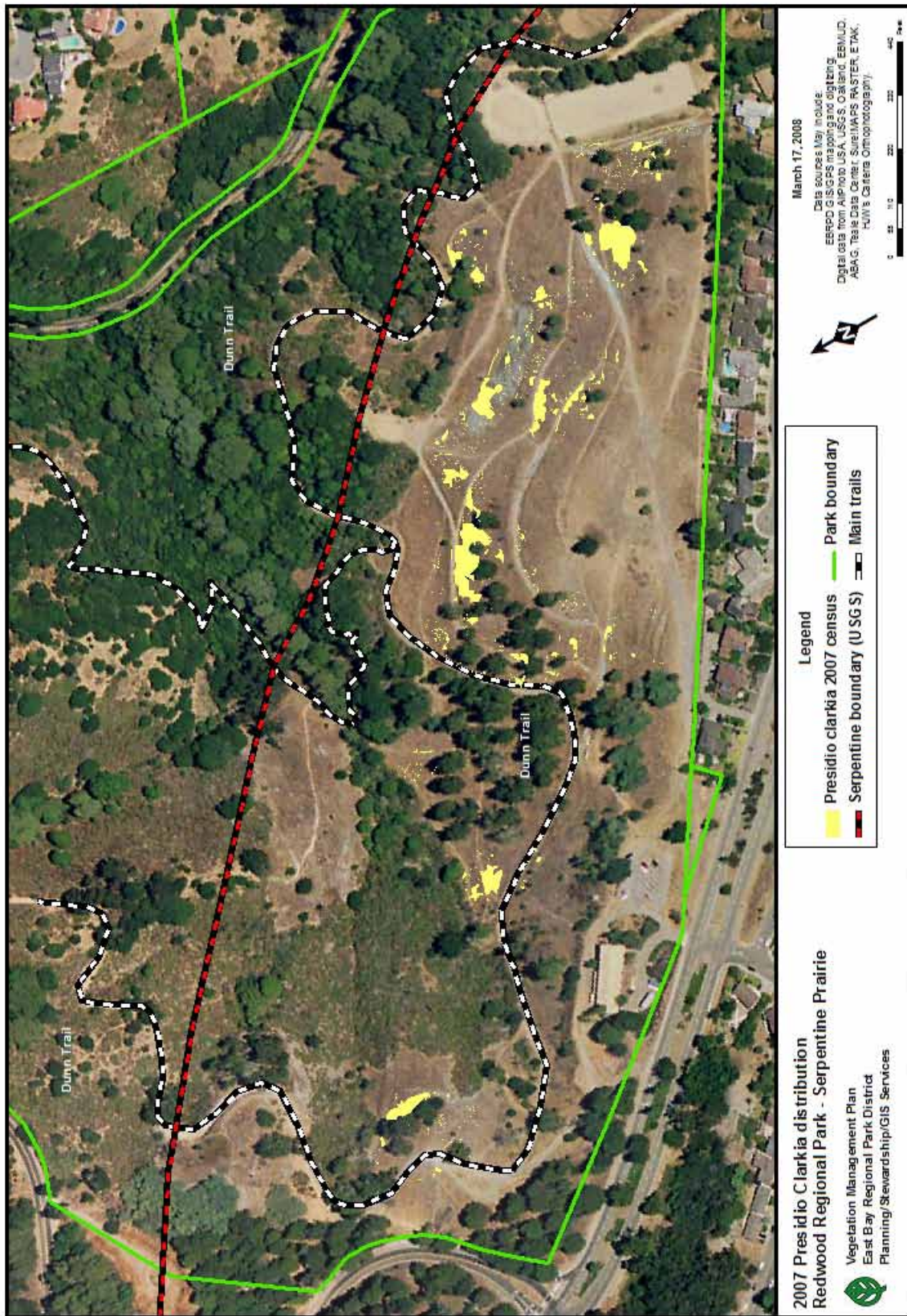
The Serpentine Prairie. The serpentine prairie, as part of the larger Redwood Regional Park, has been under the management of the East Bay Regional Park District since 1935. Redwood Regional Park consists of 1,836 acres with elevations ranging from approximately 1,020 to 1,100 feet above sea level. The project site comprises approximately 46 acres of the overall park acreage. Within the overall project area tree removal activities would occur on approximately 6.25 acres and approximately 29 acres of the 46-acre project site would be actively managed for enhancement of Presidio clarkia (*Clarkia franciscana*), a State and federally listed species, under the adaptive management program. Within this 29-acre area, approximately 22,000 Presidio clarkia plants were counted and estimated on a subset of 0.82 acres of ground (Legard 2007).

The Presidio clarkia was first discovered in the East Bay in 1980 by Katherine Culligan within the Redwood Regional Park serpentine prairie. Today the Redwood Regional Park serpentine prairie is the largest undeveloped outcrop of a much larger expanse of exposed serpentine soils in the Oakland Hills that once extended southwest of Redwood Regional Park to the Warren Freeway (Highway 13) and northwest into Joaquin Miller Park. This serpentine prairie is one of only two localities known to contain Presidio clarkia. It also provides habitat for the State and Federal-listed Threatened Alameda whipsnake (*Masticophis lateralis euryxanthus*).

The Redwood Regional Park serpentine prairie is one of the most diverse native grasslands in the San Francisco Bay Area. Of the 230 plant species recorded in the prairie, 165 species (75 percent) are native. In addition, the largest population of the endangered Presidio clarkia in the East Bay this prairie may also have the greatest concentration of native grass species for any individual site this size in the state (Edwards 1984, 1990). Nineteen native grasses have been documented including slender wheatgrass (*Elymus trachycaulus*) and one of the largest stands of Idaho fescue (*Festuca idahoensis*) in the East Bay area. Additionally, it is home to the Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*), which is on CNPS list 1B.2. Other plants found in this grassland more common throughout California, but considered locally rare and unusual include: curl-leaf eared buckwheat (*E. nudum* var. *auriculatum*), sickle-leaf onion (*Allium falcifolium*), seaside dandelion (*Agoseris apargiodes*), sticky rosinweed (*Calycadenia multiglandulosa*), brownie thistle (*Cirsium quercetorum*), and Douglas monkey flower (*Mimulus douglasii*). Figure 2 - 2007 Presidio Clarkia Distribution illustrates the extent of the Presidio clarkia based on the spring 2007 and 2008 surveys. Included in this map is the extent of the serpentine soil type (Graymer 2000)]. Also refer to Appendix A - Annotated List of Plants Found at the Site for an annotated list of the plants.

Historic Use. When the East Bay Regional Park District obtained Redwood Regional Park in 1935 the grassland summit area southeast of the headquarters, known locally as “Hunt Field,” and now referred to

Figure 2 - 2007 Presidio Clarkia Distribution



as part of the serpentine prairie, was used as a competitive equestrian course. This course included riding trails, jumps, and obstacle courses for competitive riding events. A large portion of the site was also fenced and utilized as horse pastures. The site was managed by the Metro Horsemen's Association (MHA).

In 1962, the District chose the western edge of the serpentine prairie as the site for its new headquarters. Concurrent with the establishment of this facility a variety of native and exotic trees (primarily Monterey pines and acacias) were planted in scattered locations throughout the prairie, including areas with stands of native Idaho fescue, and on the slopes below the new building. During this period grazing was curtailed.

In the 1970s, new trails and flats were bulldozed into the slopes of the hillsides and several piles and mounds were incorporated into the course to add jumping obstacles. Impacts on this area increased until the 1980s when official equestrian events ceased, though the area below the new headquarters was still fenced for horse grazing.

The District moved its main headquarters away from the serpentine prairie in the early 1990s, but retained the original building for use as a special training facility named the "Richard C. Trudeau Center." This action made the parking lot more available to the public. As a result, there has been increasing recreational activity including concentrated off-leash dog use on the relatively flat summit area of Hunt Field.

Overtime these changes in land use have led to:

- Soil compaction of most of the level areas on the prairie which is severely compromising the health and vigor of the perennial grassland
- Expansion of scrub vegetation to where it now covers almost double the area it occupied before 1950
- Gradual reduction of the native stands of perennial grasses and wildflowers throughout the prairie and the increasing domination of exotic annual grasses.

Another factors that may be contributing to the decline in the vitality and botanical diversity of the serpentine prairie include: Atmospheric Nitrogen Deposition a complex process by which reactive nitrogen (N) – nitrogen oxides (NO_x), ammonia (NH₃), and their reaction products – are deposited onto surfaces and enter ecosystems as N-fertilizer threatening biodiversity in many California ecosystems through enhanced annual grass and broadleaf weed invasions.

Surrounding Land Uses. Redwood Regional Park forms part of an almost continuous open space corridor that extends the length of the Oakland-Berkeley Hills with Chabot Regional Park to the south, Joaquin Miller, a City of Oakland Park, to the west and Sibley, Huckleberry, Tilden and Wildcat Regional District parks to the north. Together these parks serve a variety of wildland and recreation purposes, while providing a visual backdrop from the adjacent urban communities.

The western facing slopes along Skyline Boulevard opposite of Redwood Regional Park form the edge of the urban interface. Immediately adjacent to the prairie are a number of private homes developed in the 1960s. The Skyline Ranch equestrian facility is located along the park's eastern boundary.

Populations of Presidio Clarkia in the Surrounding Area. Today there are six locations where the Presidio clarkia can be found among the homes and vacant lots in the surrounding area. The largest population is along Chadbourne Drive just below Skyline Boulevard where more than 1,600 plants survive on a slope with scattered trees. The next largest population is found on Crestmont Drive which has largely been developed. Currently, there are between 700 and 1,000 plants in this area. The third largest population of Presidio clarkia is found between a tennis court complex and the Assisted Living

Center, where approximately 160 plants can still be found. A strip of ground along old Redwood Road has a small population of about 200 plants. Finally, adjacent to Colget Drive and Kimberlin Heights Drive there is a small population numbering less than 100 plants that are surviving in pockets between planted trees. All of these sites are within a ten block area down slope from Skyline Boulevard opposite Redwood Regional Park serpentine prairie. These populations have been periodically monitored over the years by members of the California Native Plant Society (Kanz 2007).

2.5 PROJECT DETAILS

The project details contained in this section of the project description address the recommendations and actions contained in the restoration plan (referred to collectively as the “project”) that would result in physical changes to the baseline environmental conditions at this regional park. Additional details relating to these recommendations contained in the *Serpentine Prairie Restoration Plan* and the project specifications are incorporated by reference in this document.

2.5.1 RESTORATION PROGRAM

Serpentine Prairie Vegetation Restoration and Management

The restoration work would be multi-phased over a period of three to four years and would include tree removal and disposal, curtailing use of severely impacted areas, trail restoration, prescribed burns, interpretive signage, and planting of endemic native species. Staff would use an adaptive management model, making adjustments or changes based on physical responses to restoration treatments and future impacts determined by monitoring the project site using protocols established in the *Serpentine Prairie Restoration Plan*. A description of each of the restoration activities follows.

Tree and Duff Removal. The proposed project would include the removal of up to approximately 500 trees consisting primarily of pine, acacia, cypress and coast live oak volunteer seedlings and saplings, as well as other exotic and native tree species as part of a long term plan to restore and enhance approximately 29 acres of unusual and sensitive serpentine prairie grasslands that contain the endangered Presidio clarkia.

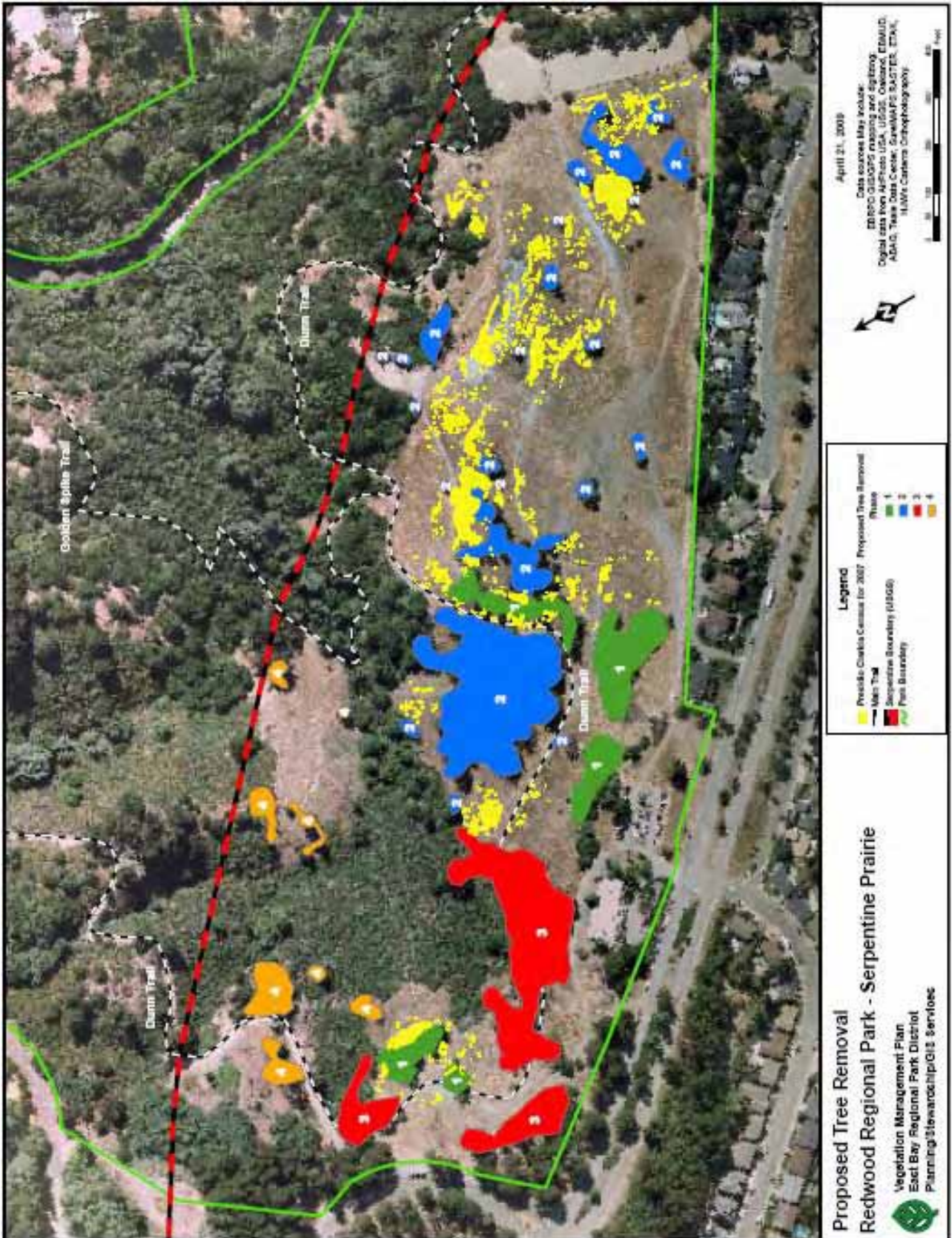
The tree removal plan calls for removal and disposal of all the identified trees in several separate operations in the late summer (August to October) over a period of three to four years. Within the 46-acre site Phase I work would occur in approximately 1.2 acres, Phase II 2.5 acres, Phase III 2 acres and Phase IV 0.6 acres.

The schedule is tentative and would be dependent on many factors, including budget constraints and site conditions (e.g., weather and the presence and sensitivity of adjacent bird, and Alameda whipsnake populations in the area). A daily construction schedule, including specific work times and length of work day would be determined prior to the initiation of each of the tree removal operations. This would be accomplished through implementation of the measures described below.

Pre-treatment Monitoring. Recent spring Presidio clarkia distribution surveys were conducted in May-June 2007 and 2008 by a District botanist. Prior to each tree removal operation, a spring Presidio clarkia distribution survey (May-June) would be conducted by the District’s Botanist. Presidio clarkia near and among the trees would be mapped with a GPS unit and marked with flags prior to tree removal to minimize disturbance in those areas. Tree removal would start after the District Botanist has determined that Presidio clarkia plants have dropped their seeds. *Figure 3 – Tree Removal Phasing* shows the 2007 Presidio clarkia population overlaid on the tree removal phases.

Access. Tree removal equipment and hauling trucks would enter and exit through from Skyline Boulevard via an access road north of the Richard C. Trudeau center and the Skyline parking lot south of the Center.

Figure 3 – Tree Removal Phasing



From the parking lot, hauling trucks and equipment would be able to cross the fenced area through gates into a temporary debris collection area adjacent to the equestrian arena. From the northern route, the trucks and equipment would be able to access Dunn Trail to reach the trees located in the central and northern section of the prairie. The debris from this area would be removed via the same route. Access routes would be required to remain unblocked during non-work hours (before 8a.m. and after 5p.m. weekdays, weekends and District holidays). Refer to *Figure 4 - Tree Removal Routes and Chipping Location* to view these routes. During the tree removal operation the roads and trails would be wetted down to suppress dust, and the work area would be closed off to visitors with signs, temporary fencing, and monitors with handouts to explain the operation. At the end of each day's work the large equipment would be moved off the recreation trail and visitors would be allowed into the area.

Construction Equipment. Due to the narrow width and tight turns of the main haul routes, the size and type of equipment would be limited. To minimize introduction of nuisance plant species, the Contractor would be required to pressure wash the equipment prior to entering the site. Construction equipment would be stored on site at a location agreed upon by the Contractor and the District Representative prior to the commencement of work. Under no circumstances would any equipment be allowed off the main haul roads, except the rubber tired skidder and the bobcat, which would only be used for minor earth moving associated with removing a few of the non-serpentine soil piles in Hunt Field. The following types of equipment are anticipated:

- A track-mounted, heel boom log loader or truck mounted crane - for removing cut material within the "log loading" area
- A rubber-tired mobile, whole tree chipper with a grapple or self-loader
- Maximum 40 yard capacity 3-axle trucks (8' wide) chip trucks
- Rubber tired skidder with a swing grapple and winch
- Bobcat, small track tractor, a small disk or harrow for minor earth moving

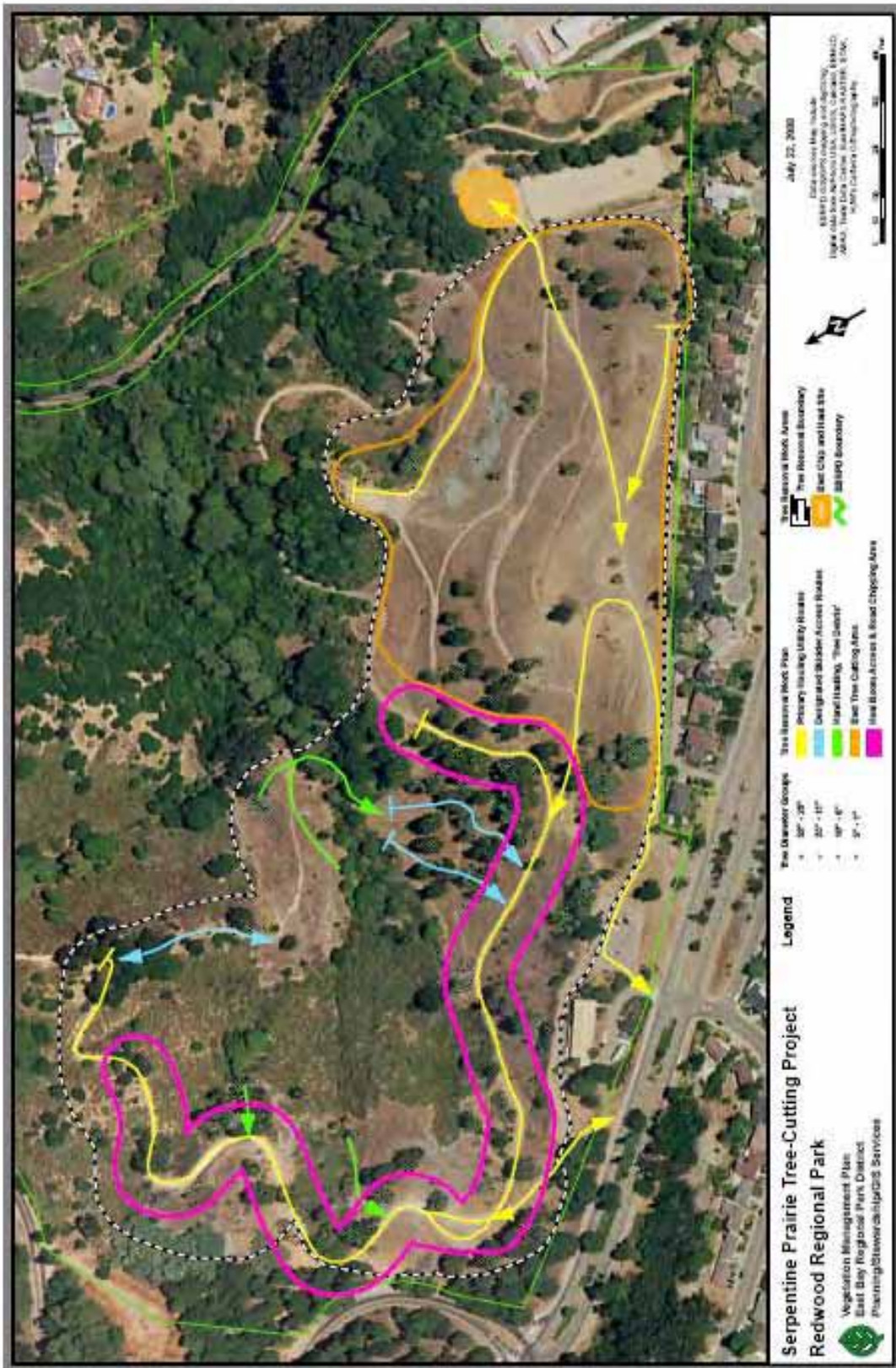
Felling and Removing Trees. In the central part of the serpentine prairie the trees would be cut and removed with the aid of a heel boom hydraulic truck crane with a working range of 100 feet. These trees would be cut, lifted, and processed on the main Hunt Trail road and removed from the site with minimum disturbance to the soil. At least 40 percent of the trees can be cut and lifted to the road with the assistance of the crane. The orange polygon in *Figure 4 - Tree Removal Routes and Chipping Location* shows the area on the trail where the heel boom crane would transfer the trees to a whole tree chipper that would chip the trees directly into covered chip trucks for immediate transport to designated disposal sites via the two main routes.

The outlying trees would be cut into smaller logs, branches, or rounds and hauled to the chipping truck by hand and with the aid of an all-terrain, rubber-tired tree skidder with a hydraulic grapple. The smaller branches, rounds, and debris would be removed by hand labor.

In the southern part of the serpentine prairie in the old Hunt Field vicinity where the pine trees are not as numerous they would be cut, bucked, and hauled on existing wide trails to the large round open debris processing area just east of the equestrian arena. From this processing area the chip trucks would transport the chips along the existing main trail to the main parking lot exit to be transported to an approved disposal site.

The removal operation is not anticipated to disturb more than five percent of the soil surface in the area where trees are removed. Tree stumps would be cut as close to the surrounding soil level as practical leaving the tree roots in the soil to decompose naturally thereby maintaining an undisturbed soil profile. Refer to *Figure 4 - Tree Removal Routes and Chipping Location* for the locations of the proposed site operations.

Figure 4 - Tree Removal Routes and Chipping Location



After tree removal, a crew of laborers would pick up and remove branches or other tree debris (greater than one and one-half-inch diameter or three feet in length) and rake up excess organic material (the litter layer and duff from years of pine needle deposition). The tree material (cut trees and associated slash and woody debris greater than one and one-half-inch diameter or three feet in length) would be chipped into chip trucks at the designated chip/haul sites and disposed of offsite by the contractor in a legal manner to a site pre-approved by the District. This process would mitigate a significant amount of the long term fertilization effect of the tree litter deposition during this initial treatment. All work would be done with on-site guidance and supervision from the District Stewardship staff to reduce damage to desirable native prairie species.

Treating Tree Stumps. The cut stumps of the hardwood tree species would be treated topically 100% PathfinderII herbicide (Garlon 4 with surfactant) and colorant within one hour of tree removal. At the Contractor's discretion either the District would provide the Contractor Pest control specifications with a detailed prescription on methods and means for treating the stumps after cutting or the Contractor would secure a pest control specification from a licensed integrated pest management advisor. No broadcast spraying would be employed. Trees re-sprouting within six months of the initial treatment would require retreatment at the contractor's expense.

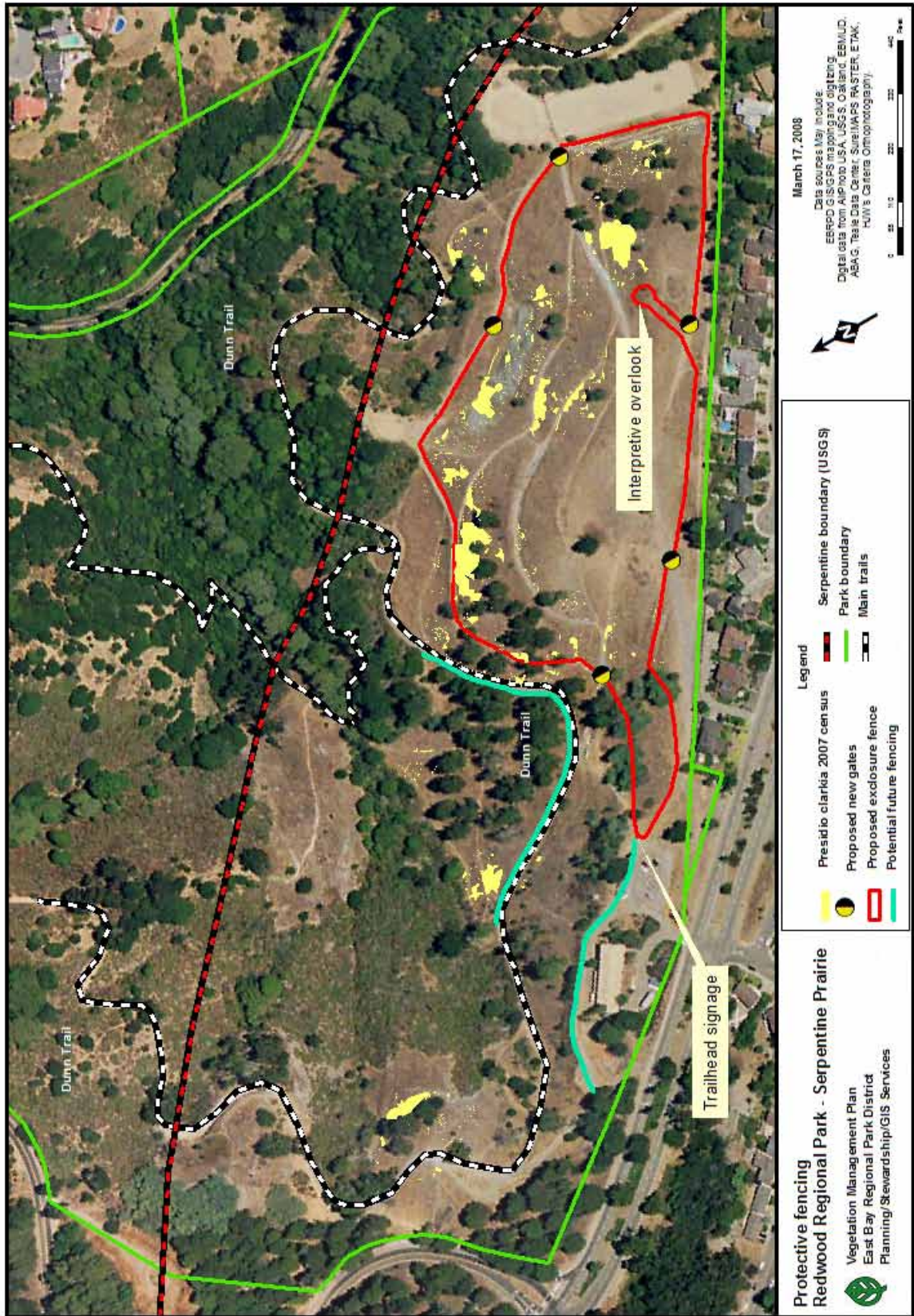
Site Restoration. All roads, skid trails and landings would be required to be left clear of debris and in good repair after the project is completed (site repair). Site repair work would include: 1) correcting potential erosion problems; 2) picking up and removing branches or other tree debris; and 3) raking up excess organic material. This work would be performed with on-site guidance and direction from the District Representative to reduce damage to desirable native prairie species.

All material from declared host trees (Toyon, *Heteromeles arbutifolia*, coast live oak, *Quercus agrifolia*, coast redwood, *Sequoia sempervirens*, and California bay laurel, *Umbellularia californica*) collected during the tree removal and site restoration activities that are known to carry the fungus *Phytophthora ramorum* which causes sudden oak death (SOD), would be required to be disposed of within Alameda and Contra Costa Counties per the California Department of Food and Agriculture 455.1 Plant Quarantine Manual 09-06-07 for oak mortality disease control (CDFA 2007). Similarly, all material from declared host trees (acacias, oaks, pines, redwoods, eucalyptus) that are known to serve as a food source for the Light Brown Apple Moth (LBAM) would be required to be disposed of within the quarantine area pursuant to California Code of Regulations 3434 and the Federal Domestic Quarantine Order *Epiphyas postvittana*, Light Brown Apple Moth DA-2007-18. Additionally, the District and the contractor may be subject to further CDFA stipulations upon issuance of quarantine compliance agreements for both SOD and LBAM.

Protective Restoration Fencing. A permanent resource protection fence would be installed around the perimeter of the most heavily impacted area of Hunt Field (See Map). Additionally, if the unfenced areas adjacent to the Dunn Trail are shown to be negatively impacted, either by increases in dog use, trampling and social trails, or significant decreases in *Presidio clarkia* when compared to fenced plots (e.g., a decrease of twenty-five percent or greater), then additional fencing would be installed to protect the lower field within the central portion of the prairie. Retention or removal of the protective fencing would be determined as the success of the site's restoration is determined as part of the adaptive management process. Refer to *Figure 5 - Protective Fencing* for the configuration of the proposed fence.

Pretreatment Monitoring. A pre-construction survey for the Alameda whipsnake, and all CEQA protected plants would be performed prior to fence installation. Should a protected plant or animal be encountered that had not previously been known or recognized, work would be stopped for the period necessary to either evacuate or protect the specimen(s) encountered.

Figure 5 - Protective Fencing



Treatment. Work will not begin until it has been determined that all the Presidio clarkia have dropped their seeds. The Serpentine protection fence would be installed in August immediately after the Phase I tree removal work has been completed, main trail access to the Dunn Trail has been located near the parking lot has been rerouted and improved, and the serpentine overlook has been constructed.

The fence would be installed using hand held tools; no heavy equipment would be permitted. The fence would be a 39-inch high, 39-inch woven wire “field fence” manufactured with rectangles six inches wide with graduated heights from three inches to eight inches from top to bottom to allow mammals such as rabbits to cross under the fence. The fence would be braced at the corners and on either side of gates.

Between the braces the fence would be supported by steel T-posts driven ten feet apart. Where the fence line makes a gradual turn, a three and one-half inch galvanized support/stress post would be driven (or cemented) into the ground. If the fence makes a turn over 30 degrees the support post would be supported by a leg brace.

Where the ground is rocky and solid, the pipe holes and some T-posts would be drilled and driven into the rock thereby minimizing the use of concrete. In areas with softer soils, the upright pipe braces and the diagonal leg brace would be cemented into place a minimum of three inches below the ground level. This technique would allow the pipes to be cut off and remain below the ground level, thereby minimizing ground disturbance when the fence is removed.

Five access gates would be made out of a lighter gauge material and covered with the same field fence wire material to minimize access to the enclosure by dogs. These gates would be positioned to allow access to the area for: a) guided interpretive walks; b) restoration monitoring; c) machinery and trucks as needed to perform restoration program activities. To limit access to these designated uses, the gates would be secured with District locks.

Post-construction Monitoring. The prairie plant community, including, but not limited to Presidio clarkia populations would be monitored both inside and outside the fence, allowing the fence’s effect to be quantified as part of the Adaptive Management Plan. If the fence is shown to have a positive effect, such as an increase in density of native grasses or an increase in native species richness, it would be maintained. If the fence is shown to have a negative effect on the serpentine grasses and Presidio clarkia, removal may be warranted.

Thatch Treatment (Raking). Mowing and raking are flexible management techniques that would be employed during the restoration process. As the effects of mowing are time sensitive with early mowing of annual grass promoting new tiller growth and late mowing spreading viable seed both seasons would be considered as part of this management strategy with optimal timing being determined in the field by the District botanist.

Pretreatment Monitoring. Plant surveys were completed in 1992, 1998, 2002, 2007, and 2008 and have subsequently been documented on the District GIS plant community layers. An additional survey would be completed before mowing and/or raking treatments.

Spring Mowing Treatment. Spring mowing plots would be limited to several large rye grass-dominated areas within the serpentine prairie where Presidio clarkia is absent. Spring mowing would be tested to determine its effect on reducing annual grass and thatch cover, and increasing native forb and wildflower cover. A string cutter would be used so the selected 10x10 meter plots could be treated with precision. Mowing would be completed when the bulk of annual grasses are in the soft dough stage. As this work would be done in areas without Presidio clarkia, no take is expected. If results are favorable, spring mowing may be considered on a wider scale and/or nearer to known Presidio clarkia populations, which may increase the odds of passive Presidio clarkia recruitment.

Fall Mowing (Raking). Fall mowing (raking) would be used to treat thatch buildup that reduces forb germination in areas that were known to have Presidio clarkia in 2006, 2007 and 2008. Raking would be completed after Presidio clarkia seeds have dropped. Accumulated thatch from previous years would be removed from the plots. Because the work would be done in areas without live Presidio clarkia, no take is expected. Any spreading of Presidio clarkia seed within the serpentine prairie is considered acceptable. If found to be successful this treatment could be completed on a landscape scale.

Pile Removal, Decompaction, and Revegetation. Site conditions within the fenced area would be improved by: 1) removing and loosening soils; and 2) employing passive and active revegetation techniques as shown in *Figure 6 - Pile Removal, Decompaction, and Revegetation* and described below.

Soil Pile Removal. There are two mounds of imported non-serpentine soil, broken rock and concrete, which were used as part of the former equestrian jumping course. These dirt mounds, which are currently supporting a variety of weeds (e.g., thistles, mustards, etc.), would be removed off site to a location pre-approved by a District Representative. Other dirt mounds containing serpentine soil would be left in place. Removal of the non-serpentine soil mounds within the fenced area would involve a minor quantity of earth moving by hand or with a bobcat.

Decompaction. The flat area within the protective fence is the most heavily impacted, with high use levels leading to large areas of bare ground and compacted soil. During the first year this area would be allowed to regrow naturally without disturbance from people and their dogs. In subsequent years, the bare compacted areas with no native vegetation (including trails within the fenced area) would be loosened with hand tools to a depth of one or two inches below grade to create micro-sites for native grass and forb seeds.

Alameda Whipsnake Habitat Management

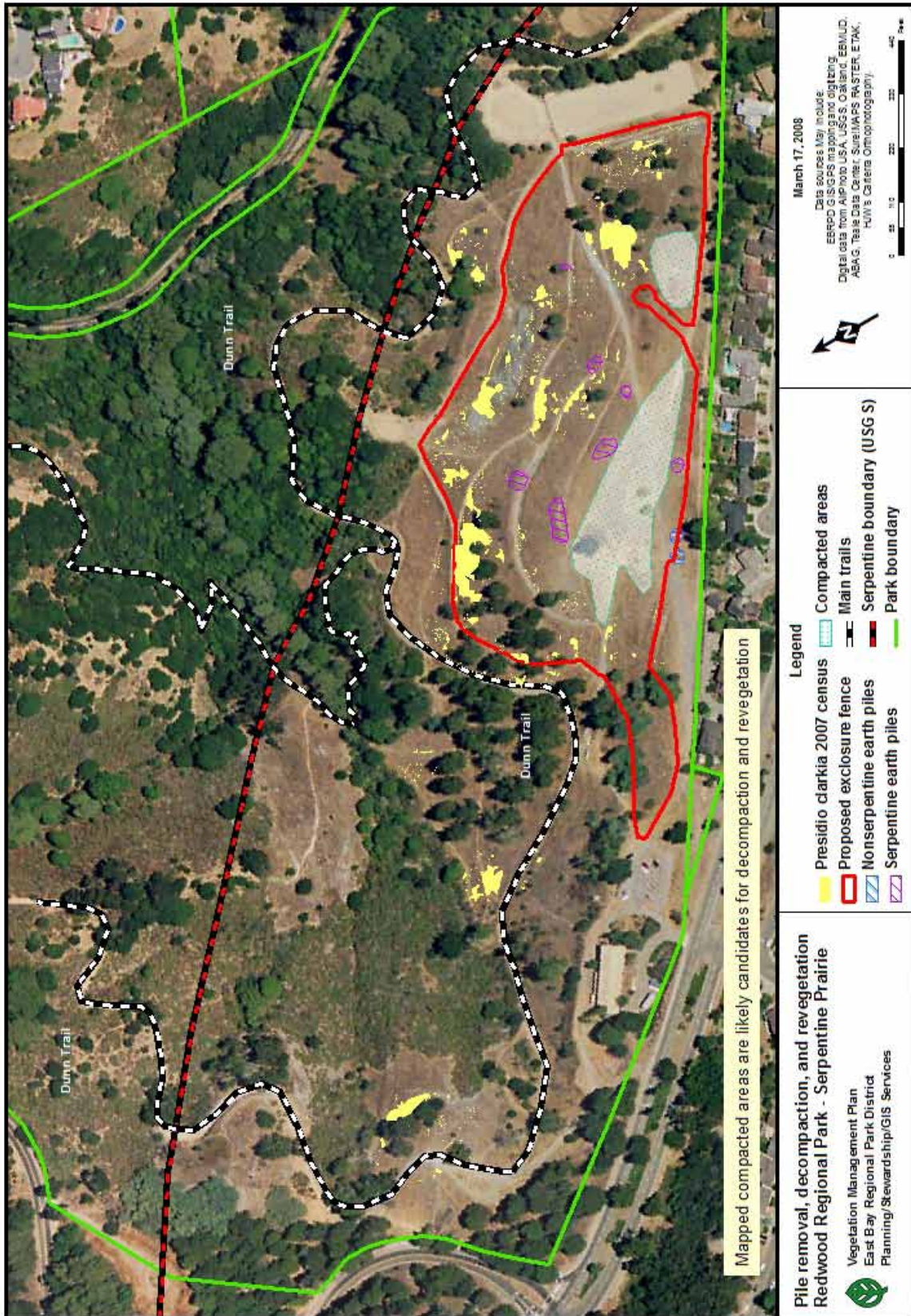
Trapping records from 2008 have documented Alameda whipsnakes (ALWH), a listed federal and state species, in the coyote brush habitat on the serpentine prairie (Swain, pers. comm. 2008). The ALWH is commonly associated with the annual and perennial grasslands and coastal scrub habitat (coyote bush dominated) found within the borders of the serpentine prairie.

Pre-project Survey. A pre-project survey would be conducted to document the potential presence of the Alameda whipsnake before any of the restoration activities commence. The survey would be performed by a permitted biologist during the snake's active period (Spring/Summer 2009). This survey would include installing and running a trap array within and the along the perimeter of the scrub and grassland. Should any snakes be trapped radio transmitters may be installed into adult snakes to monitor their movements during and after project implementation.

Monitoring. Activities proposed to enhance Presidio clarkia and overall prairie community health, including tree removal and control of non-native annual grass and its related thatch would be expected to enhance Alameda whipsnake habitat over the long term, but over the short term there is some potential for take during the proposed tree removal activities, landscape-scale prescribed fire and mowing. To minimize potential take of Alameda whipsnake a permitted biological monitor would be on site to monitor these activities and ensure that no ALWH is harassed, killed, or injured. The biological monitor would have the authority to stop any aspect of the project that may result in the unauthorized take of state or federally-listed species. The biological monitor would also work with the construction crew to minimize vehicle traffic in the project zone.

Additional measures to minimize potential take of ALWH could include: a) an on site permitted Alameda whipsnake biologist who could capture and remove snakes prior to physical disturbance activities; b) developing a crew training and informational brochure to identify the ALWH and key points of its natural history.

Figure 6 - Pile Removal, Decompaction, and Revegetation



Prairie Restoration Management and Recreation Use

The serpentine prairie restoration project would alter current recreation use practices by: a) requiring short-term closures during restoration construction activities; b) altering the physical design of Hunt Field and the trail system around its perimeter; and c) expanding upon the existing serpentine prairie public education and interpretive outreach program (*Figure 7 - New Trailhead and Trail Improvements*).

Short Term Closures. For the safety of visitors' and workers the following trails would be closed to public use from 8am to 5pm Monday through Friday for the duration of each of the tree removal operations (anticipated to be August/September to October over a 3 – 4 year period): a) Dunn Trail between the Skyline Ranch Equestrian facility and the junction with Graham Trail, b) Golden Spike Trail between Dunn Trail and Monteiro Trail; and c) all of the trails in Hunt Field. All of the trails, except those in Hunt Field, would be open non-work hours weekdays, and regular hours (5a.m. to 10p.m.) on weekends and District holidays.

Trail Modifications. Over the long term restoration activities would limit public use in the central portion of Hunt Field, while providing new trail alignments and drainage improvements within the project site as shown in *Figure 7 - New Trailhead and Trail Improvements*.

Hunt Field. Protective restoration fencing would be installed around the perimeter of the Hunt Field (see description above). The intent would be to limit public access within the fenced area to guided interpretive walks while still allowing for public access to an interpretative overlook area. This component of the restoration plan would likely shift some visitor use to unfenced areas and could result in an increased level of use of nearby trails and disturbance in the unfenced areas adjacent to those trails.

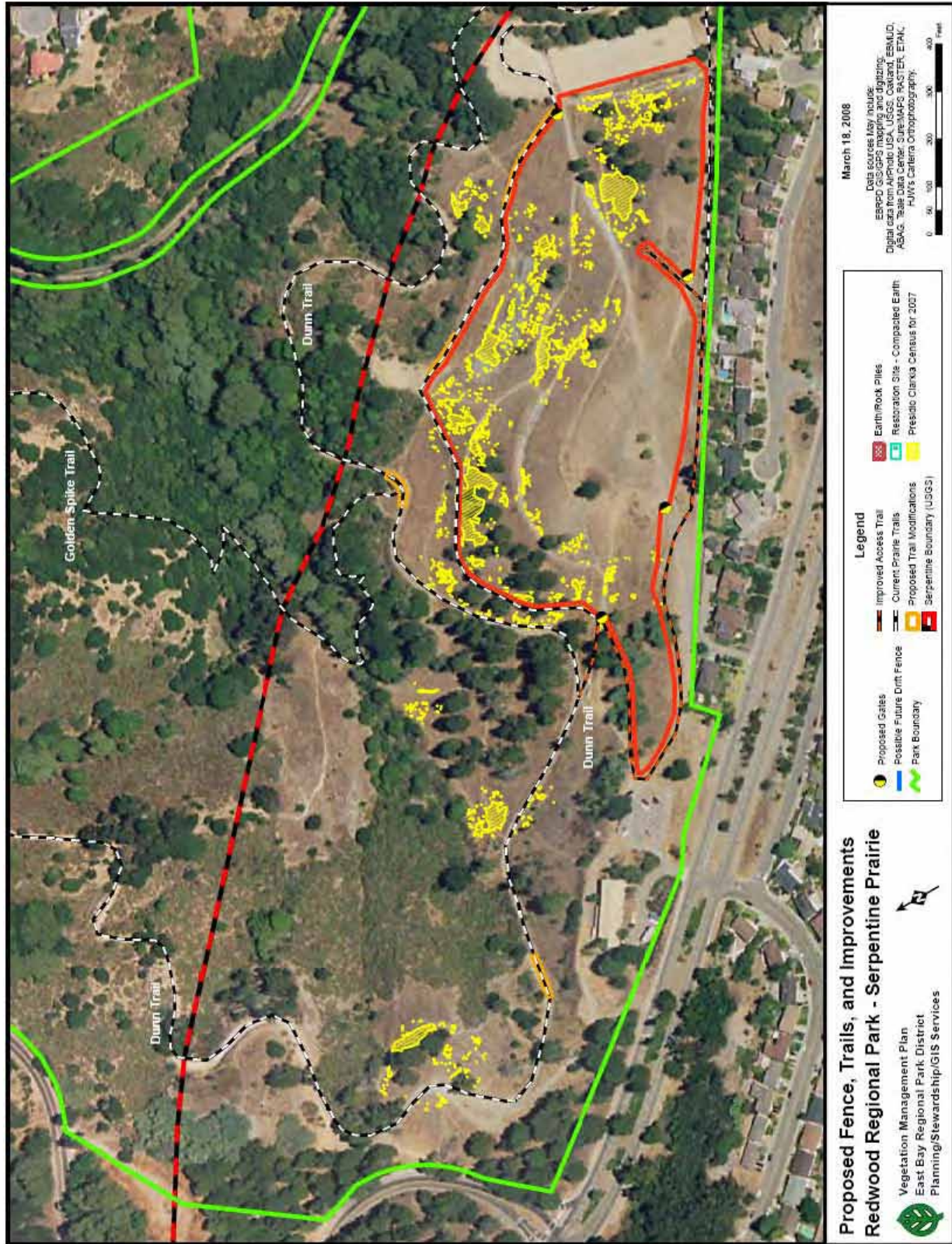
New Trail Construction. Concurrent with the installation of the Hunt Field protection fence, a new trail alignment would be constructed to replace a steep erosive volunteer trail starting at the southeast end of the existing Richard C. Trudeau Center parking lot. Another trail would parallel the protection fence to an interpretive overlook area. The unofficial trail located behind the homes would be retained for emergency fire access (*Figure 7 - New Trailhead and Trail Improvements*).

Dunn Trail Drainage Improvements. To maintain the Dunn Trail for year-round pedestrian, equestrian, and bicycle use drainage improvements would be constructed in four sections. These areas are located outside of Presidio clarkia populations. The focus of the drainage work would be on preventing wet areas from forming in the winter and reducing water flows that could exacerbate erosion. The work would include: a) rocking and hardening one portion of the Dunn Trail; b) improving drainage along existing ditches; c) clearing existing blocked culverts; and d) out-sloping the tread to prevent the water from concentrating on the inside of the trail.

Trail Closures. Unofficial (bootleg) trails in the area located outside Hunt Field would be blocked off with signage and/or barriers.

Public Education. Concurrent with the restoration work, the District would develop and implement an education program for the serpentine prairie. This public outreach component would include: a) augmentation of existing informational panels that explain the history and value of the serpentine prairie; b) informational signs regarding work under progress; c) public meetings; d) press releases; and e) the development of educational programs that would be conducted by District Interpretive staff. Volunteer/docent led tours of the area also may be planned to increase awareness and understanding of the restoration project.

Figure 7 - New Trailhead and Trail Improvements



Post-treatment Monitoring, Analysis and Reporting

To guide proposals for the next season's activities the adaptive management program would include ongoing monitoring, and annual data analysis and reporting as described below.

Monitoring and Analysis. Vegetation monitoring would incorporate the following methods: photo points, aerial mapping, line transects, and seedling counts. A single permanent 100 by 300 meter macro plot would be installed to capture a majority of *Presidio clarkia* individuals (as surveyed in 2006 and 2007) within the Redwood Regional Park serpentine prairie (Refer to *Figure 8 – Macro-plot Configuration for Monitoring Presidio Clarkia Population*). During the peak flowering period, density would be counted along 1 by 300 meter transects with a restricted random distribution inside the macro plot.

Collected data would be analyzed statistically as a Before-After Control Impact (BACI) design, within a randomized block ANOVA, using JMPin 4.0 (SAS Institute). This statistical data analysis combined with the District's expertise with experimental manipulations at other serpentine sites would be used to judge the benefit of each management technique.

Reporting Results to Regulatory Agencies and Stakeholders. Per the District's biological opinion (BO) and California Department of Fish and Game's (CDFG) Memorandum of Understanding (MOU), annual reports would be developed and submitted for review and discussion by the Wildland Vegetation Manager. As part of the adaptive management plan follow up discussions within each year's report would be focused on determining whether the treatments undertaken meet the project's objectives, or whether additional experimental treatments should be initiated. The annual report would include descriptions of activities completed and monitoring data for both experimental treatments and the *Presidio clarkia* population. Proposals for the next season's activities would also be included in the report.

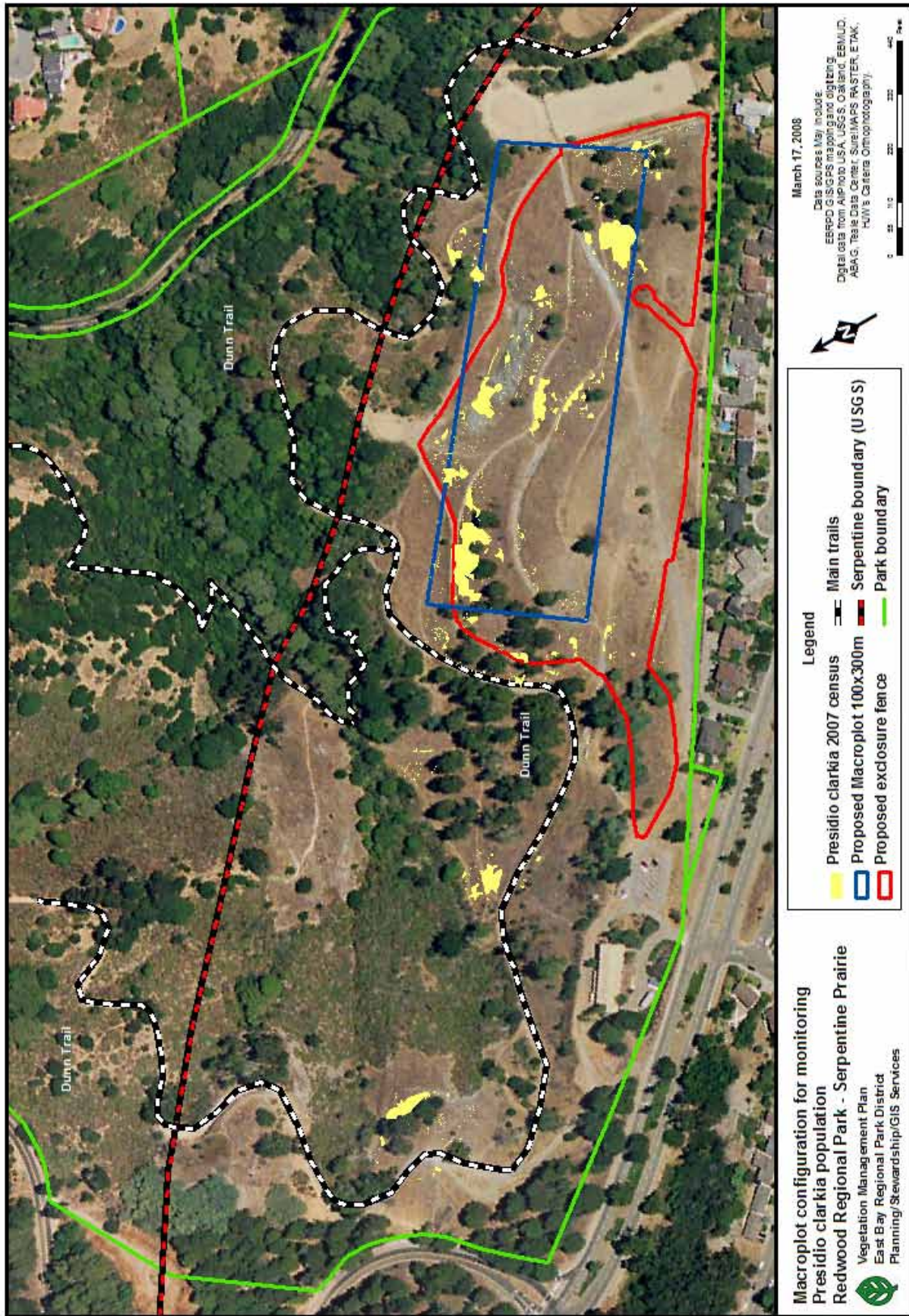
2.3.2 POTENTIAL FUTURE TREATMENTS

Per the adaptive management model, treatments that increase the risk of take, but are likely to enhance overall habitat, may be considered in the future. While many potential treatments could be expected to enhance *Presidio clarkia* habitat (Refer to Table 2.1 of the 2008 *Serpentine Prairie Restoration Plan*) future activities that may be tested as the adaptive management program evolves includes: 1) a prescribed fire program, and 2) a seasonal grazing program.

Prescribed burning and grazing are discussed here as the next likely treatments with which to experiment because these proposed treatments could most be easily incorporated into the experimental design framework developed for the initial experiments. The determination to develop a burning and/or grazing program would be contingent on results from these experiments, as well as information shared from the *Presidio Project* (Refer to the 2008 *Serpentine Prairie Restoration Plan*). If implemented, these treatments would be tried on a small scale, with intensive monitoring of treatment response of *Presidio clarkia*, annual grasses, thatch, and other functional guides.

Prescribed Fire Program. A prescribed fire program would be expected to reduce the accumulation of exotic annual grass litter and enhance germination of the native wildflowers and perennial grasses. Because development of a burning program is contingent on results from the initial experiments and buy-in from local homeowners, agencies, and District staff, this section includes only a brief description of a future prescribed burn program.

Figure 8 – Macro-plot Configuration for Monitoring Presidio Clarkia Population



Pretreatment Monitoring. During the flowering season prior to when a burn polygon is treated, the District botanists would take a census of the Presidio clarkia and any other sensitive plants that may occur within the proposed burn area.

Development of a Burn Plan. If burning is selected as a treatment, a detailed site specific burn plan would be developed each year prior to the burn. Each Burn Plan would be submitted to the United States Fish and Wildlife Service (USFWS), CDFG, Bay Area Air Quality Management District (BAAQMD) and California Department of Forestry and Fire Protection (Calfire) for review and approval prior to the burn. The plan would include maps identifying the proposed fire breaks in relation to the Presidio clarkia populations and locations of monitoring transects and control plots. Monitoring transects would be established to measure species diversity, cover, height, and animal impacts/ disturbance (e.g., snakes, gophers, etc.). Firebreaks and staging areas would be developed where they would avoid known populations of listed plants. The ideal burn rotation frequency would be dependent upon the results of established monitoring plots, transects, and adjacent control sites which would be monitored for at least two seasons before and after a prescribed fire. Ongoing monitoring of the site would be conducted to control weeds listed by the California Invasive Plant Council (Cal-IPC). Cal-IPC high priority invasive species, or the most invasive species, would be mapped. Invasive species would be removed using Cal-IPC recommended removal techniques that are acceptable within the parameters of the *Serpentine Prairie Restoration Plan* (Cal-IPC 2006).

Treatment Plan. The prescribed burns would be confined to designated areas within the Redwood Regional Park serpentine prairie. The fires would be initiated during fall, a time of year when fires naturally/historically occurred in this habitat and when all the Presidio clarkia has finished distributing its seed. Experimental plots would be incorporated into the experimental design framework, with burning being done inside a burn box. Positive results would lead to implementation of a landscape burn, which would be contingent on clearance from CDFG, BAAQMD and Calfire.

Post-burn Monitoring. Monitoring during and immediately post-burn would include a site walk of the burn area by a field wildlife biologist to search for any animals that were killed or injured during the course of a prescribed fire. Mortalities and/or injuries incurred during the course of a prescribed fire would be documented by the District biologist and notification provided to the Sacramento Fish and Wildlife Office within three working days. During the flowering period the year following the fire, the census would be repeated in the same area. A long term fire and vegetation management strategy would be developed from the information gained from monitoring.

Seasonal Grazing. Grazing with sheep in the summer or early fall could be effective in reducing the buildup of thatch and litter that depresses the establishment and vigor of native perennial grasses and forbs while avoiding impacts to late spring annual wildflowers such as the Presidio clarkia and woody forbs. Cattle would be considered too large to be effectively deployed as grazers on test plots and goats would not be suited as grazers for meeting the objective of benefiting Presidio clarkia because they generally favor woody shrubs and forbs.

Grazing Strategy. This treatment would include limited grazing by sheep on a seasonal basis. Similar to the mowing strategy, winter or spring grazing could also be conducted in areas where Presidio clarkia has not been found in several years. In this regard sheep are more efficient at removing grass thatch than goats or cattle and could be managed effectively for grazing specific areas utilizing a portable electric fence and water set up. The details of the program (e.g., how many sheep, timing) would be determined in future years as part of the adaptive management plan based on the success of the initial experiments. If positive results warrant the risk, grazing trials could be moved closer to Presidio clarkia-occupied areas. Landscape-scale grazing would likely never be appropriate in late winter, spring, and summer when Presidio clarkia plants are actively growing and flowering.

2.4 PROJECT PERMITTING

The following responsible and trustee agencies have jurisdiction over some or all of the proposed project relative to implementing any action that could potentially result in a take of Presidio clarkia (*Clarkia franciscana*) or Alameda whipsnake (*Masticophis lateralis euryxanthus*).

- California Department of Fish and Game (CDFG) - Memorandum of Understanding (MOU) and California Endangered Species Act Research and Management Permit No. 2081(a)-09-01-RP (February 2009)
- United States Fish and Wildlife Service (USFWS) Biological Opinion (BO) (April 2002)
- Bay Area Air Quality Management District (BAAQMD)[Annual permit to be secured in future phases if prescribed burning is deemed appropriate]
- California Department of Forestry and fire Protection (Calfire) [Annual permit to be secured in future phases if prescribed burning is deemed appropriate]

2.5 PROJECT REVIEW AND APPROVAL

In accordance with Section 15073 of the CEQA Guidelines, this Initial Study and Mitigated Negative Declaration are being distributed for review by local, state and federal agencies with jurisdiction over the project site. A notice of availability of the IS/MND has been sent to nearby property owners and other interested parties. The document is available for review at the following locations:

East Bay Regional Park District
Planning, Stewardship and GIS Services Department
P.O. Box 5381
2950 Peralta Oaks Court
Oakland, CA 94605
Web site: www.ebparks.org Phone: (510) 544-2300
Fax: (510) 635-3478

Dimond Library
3565 Fruitvale Avenue
Oakland, CA 94602
Phone: (510) 482-7844

Montclair Library
1687 Mountain Blvd
Oakland, CA 94611
Phone: (510) 482-7810

A public information meeting will be held on Monday, May 11, 2009 at the Richard C. Trudeau Center, 11500 Skyline Boulevard in Redwood Regional Park in Oakland, California from 6:00 PM – 8:00 PM. Interpretive field walks will be conducted on Sunday, May 17, 2009 from 2:00 - 4:00 p.m. and Saturday, June 13, 2009 from 3:00 -4:00 p.m.

The Plan and CEQA document will also be presented at the District Board Executive Committee meeting on Thursday, May 28, 2009 at 12:45 p.m. at the EBRPD headquarters 2950 Peralta Oaks Court in Oakland. . A Public Hearing on the project is tentatively scheduled to be held at the regular District board meeting on Tuesday, July 7, 2009 at 2:00 p.m. at the same location

Written comments on the IS/MND should be submitted in writing to EBRPD prior to the conclusion of the 30-day public comment period (**not later than 5:00 p.m., June 3, 2009**). Comments should be mailed or faxed to the Planning, Stewardship and GIS Services Department, attention: Julie Bondurant, at the above address or fax number.

In reviewing the IS/MND, affected public agencies, organizations and interested citizens should focus on the sufficiency of the document in identifying and analyzing any potential impacts to the environment, and the proposed ways in which any significant effects of the project are to be avoided or reduced.

The District will review and evaluate written comments received during the public review period, and determine whether any substantial new environmental issues have been raised. If there are substantial new environmental issues, not covered in the IS/MND, further documentation, such as an Environmental Impact Report or an expanded IS/MND, may be required. If not, the EBRPD Board of Directors will adopt the Mitigated Negative Declaration and approve the project. The District will then file a Notice of Determination with the Alameda County Clerk's Office within five days following project approval.

3.0 SUMMARY OF PROJECT MITIGATIONS

AESTHETICS

MITIGATION AES-1: To achieve the desired prairie landscape character, tree stumps shall be cut as close to the surrounding soil level as practical and tree roots shall be left in the soil to decompose naturally thereby maintaining an undisturbed soil profile. Approved herbicides shall be applied to the stumps of hardwood tree species to prevent resprouting as determined to be appropriate by the EBRPD Representative.

AIR QUALITY

MITIGATION AIR-1: Best Management Practices per CARB approved Asbestos Airborne Toxic Control measures (2002) for managing dust, pollutants and NOA shall include:

- Regular watering of unpaved surfaces and wetting of work areas using water supplied from a 200-gallon tank stored on site and posted in a highly visible location “Potable Water for Construction Use Only”
- Excavating during calm periods
- Covering all truck beds hauling soil, vegetation and other loose materials
- Reestablishing bare soils with vegetation native to the prairie
- Limiting traffic speed on the unpaved trail /road and fields to less than 15 miles per hour
- Routinely covering stockpiled materials
- Maintaining all equipment engines in good condition, in proper tune (per manufacturer’s specifications), and in compliance with all State and Federal requirements.
- Creating wind breaks or berms where needed to shelter bare areas from wind
- Notifying the local air pollution control or air quality management district prior to the commencement of project activities.

MITIGATION AIR-2: Warning signage shall be installed at the perimeter of project site describing the nature of proposed activities that could release odors and/or pollens which could be viewed as offensive or produce allergens that could be detrimental to visitor’s health.

Prescribed burns

Potential prescribed burn impacts would be covered through the process of developing and approving of a burn plan in cooperation with State and local fire protection districts, and receipt of a burn permit from the BAAQMD.

BIOLOGICAL RESOURCES

MITIGATION BIO-1: Equipment shall be pressure washed prior to entering the project site to minimize the introduction of invasive species onto the site.

MITIGATION BIO-2: In areas where exotic species may exploit disturbed soils and dominate revegetation efforts, evaluate and apply, as appropriate, weed removal treatments, native grass seeding, herbicide applications or combinations thereof to reduce the invasion of exotic species.

MITIGATION BIO-3: Install additional protective fencing along portions of the Dunn Trail if the unfenced areas adjacent to the trail are shown to be negatively impacted by a decrease of 25 percent or more in the density of *Presidio clarkia*, either by increases in trampling and social trails, or significant decreases in *Presidio clarkia* when compared to fenced plots. Likely locations for this potential future fencing are marked on *Figure 5 – Protective Fencing*.

MITIGATION BIO-4: Restore existing oak woodland habitat within the 1,836-acre Redwood Regional Park through the continuation of the French broom (*Genista* sp.) removal programs so as to encourage the restoration of native chaparral and woodland habitats in areas where coast live oak trees will be likely to thrive (communication Mary Ann Showers, CDFG September 4, 2008).

MITIGATION BIO-5: A wildlife biologist shall perform pre-project biological surveys; conduct a crew training identification program for Alameda whipsnake (ALWH) and Cooper's hawk prior to vegetation removal; and maintain on-site monitoring during tree removal, landscape-scale prescribed fire and mowing activities to monitor for the presence of these animals. In addition for ALWH the following measures shall be undertaken prior to commencing construction activities: a) install and set a trap array within and along the perimeter of the scrub and grassland to document any whipsnake presence; and b) install drift fences to prevent animals from entering the project construction zone. If either Alameda whipsnake (ALWH) or Cooper's hawk are found to be present, an appropriate buffer zone shall be developed by the biologist and construction activities shall be suspended in this zone until future surveys indicate that the snake is no longer in the area (or snakes have been captured and removed) or that the chicks have fully fledged (left the nest). Survey results shall be valid for a period of 21 days from the date of the survey. Should work fail to be conducted within this timeframe, an additional biological survey shall be undertaken within three weeks of commencement of construction activities.

MITIGATION BIO-6: All "specimen" trees designated for protection shall be clearly marked by the District Representative and these trees shall be identified in the field at a pre-construction meeting with the Contractor. The Contractor shall be notified and become liable to the District in the amount of \$300.00 for each protected specimen tree damaged by the Contractor for liquidated damages and not as a penalty.

CULTURAL RESOURCES

MITIGATION CULT-1: EBRPD representative shall monitor ground-disturbing activities to ensure there are no impacts to prehistoric or historic resources, and comply with District Cultural Resources Policy (EBRPD Board Resolution 1989-4-124) if resources are encountered.

MITIGATION CULT-2: In the event that prehistoric, archaeological or paleontological artifacts or remains are encountered during project construction, all ground disturbing activities shall be halted within at least 50 feet and artifacts shall be protected in place (in accordance with EBRPD Board Resolution No. 1989-4-124 and State and federal law) until the find is evaluated by a monitor/ archaeological consultant, and appropriate mitigation, such as curation, preservation in place, etc., if necessary, is implemented.

MITIGATION CULT-3: In the event of accidental discovery of human remains, the County Coroner shall be notified, and, if the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) would be notified to identify the Most Likely Descendant (MLD), in accordance with State and federal law. The disposition of the remains shall be coordinated between EBRPD, the County Coroner, NAHC, MLD and the archaeological consultant.

GEOLOGY AND SOILS

MITIGATION GEO-1: All roads, skid trails and landings shall be left clear of debris and in good repair after the construction work (e.g., tree felling, trail construction and deconstruction) is completed. Such repair shall include correcting potential erosion problems, soil ruts, and soil disturbance, including compaction. The EBRPD Representative shall halt site remediation activities if site damage becomes excessive. Project activities shall not resume until the ground conditions are sufficient to minimize site damage.

MITIGATION GEO-2: The amount of disturbed land shall be minimized and any unnecessary slope disturbance shall be avoided. Activities shall be scheduled to occur during dry periods when the soil is hard. All portions of the project site that are affected by the work shall be rehabilitated including: areas with tire or track marks, collateral tree damage, and disturbed slopes requiring slope stabilization measures.

MITIGATION GEO-3: The contractor shall implement appropriate Best Management Practices for minimizing potential erosion and sedimentation and controlling potential release of pollutants shall be implemented on skid trails and other locally disturbed, bare areas within the project area. These measures shall include, as appropriate to the site conditions: conducting activities during the dry season; using dikes, basins, ditches, straw, erosion control fabric and other temporary measures (e.g., water bars, fiber rolls); installing catchments for source pollutants; and providing for a sufficient vegetated buffer between park facilities and wetlands, creeks and drainages.

MITIGATION GEO-4: The contractor shall exercise a due standard of care and judgment to protect environmental values and shall stop work when adverse weather or anticipated rainfall has made or would make access inadvisable, or that continued vehicular travel would cause unacceptable land, road, landing, or skid trail damage. In any event, rain in the amount of one inch or more in a seventy-two hour period shall result in a postponement of operations.

HAZARDS & HAZARDOUS MATERIALS

MITIGATION HAZ-1: The transport and use of potentially hazardous materials shall conform to the following provisions:

- All equipment shall be inspected for leaks immediately prior to the start of project activities, and regularly inspected henceforth until equipment is removed from the premises.
- i. The contractor(s) shall prepare an emergency spill response plan prior to the start of the project and maintain a spill kit on-site throughout the duration of the proposed project. In the event of a spill or release of any chemicals during activities associated with the proposed project, on or adjacent to park property, the contractor shall immediately notify the appropriate EBRPD Representative (e.g., project manager or supervisor). Emergency containment procedures shall be initiated immediately to prevent contamination.
- ii. Equipment shall be refueled, cleaned and repaired outside park boundaries or within a contained area on site, except during emergency situations. All contaminated water, spill residue, or other hazardous compounds shall be disposed of outside park boundaries at a permitted or authorized location.

MITIGATION HAZ-2: All weed/pest control activities shall be performed in accordance with the District pest management policies and practices which require contractors and/or subcontractors applying any herbicide or pesticide to District lands to comply with procedures listed below in accordance with “Agricultural Use” sites (Sec. 11408 Food 4 Agriculture Code). The Contractor or subcontractor may seek pest management advice from, and coordinate activities with, the District Integrated Pest Management Specialist prior to initiating work. Applicable requirements include, but are not limited to the following:

- Pesticide application(s) shall be performed by a licensed pest control operator (PCO) who is registered to perform such services in the County where application would take place. At the Contractor’s discretion either: 1) the District shall provide the Contractor pest control specifications with a detailed prescription on methods and means for treating the stumps after cutting; or 2) the Contractor shall secure a pest control specification from an independent licensed integrated pest management advisor.
- Application shall be made by applying a stream of herbicide/blazon mix to the entire circumference of the exposed cambium area on the cut trunk.
- Pest Control Operator shall be responsible for posting on-site pesticide application signs in District-approved format. These signs shall be prominently displayed after the pesticide application. Signs shall be posted 24 hours prior to initiating weed/pest control activities and during at each work site each day of herbicide application. The signs shall remain posted in place for 24 hours after the application. Signs shall be located to maximize visibility.
- The Pest Control Operator shall provide the District with a written accounting of the total amount of raw concentrate pesticide applied.
- The Pest Control Operator (contractor or subcontractor) shall submit a report of pesticide usage to the respective County Agricultural Commissioner.

(Copies of the District Pest Management Guidelines are available upon request.)

MITIGATION HAZ-3: A safety plan shall be developed by the contractor and reviewed by all District project staff prior to the start of any work, including the following measures to reduce fire hazards:

- Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers shall be required for all heavy equipment.
- Work crews shall be required to park vehicles away from flammable vegetation, such as dry grass and brush. At the end of each workday, heavy equipment shall be parked over mineral soil, asphalt, or concrete at a location agreed upon by the Contractor and District Representative prior to project commencement.
- Park staff shall be required to have a District radio on-site, which would allow for direct contact to Calfire and the centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire. Fire suppression equipment (i.e., fire extinguishers) shall also be available at the project site.

MITIGATION HAZ-4: Prior to conducting a prescribed burn for a particular site, the EBRPD Fire Department shall prepare a burn plan which is to be reviewed and approved by the District’s Operations and Planning and

Stewardship Departments, Calfire, CDFG, and the BAAQMD. This plan shall incorporate, but not be limited to the following provisions:

- All prescribed burns shall be conducted under controlled conditions during weather that is conducive to smoke dispersal.
- Each plan shall include a detailed project description containing: the fuel type to be burned, required weather prescription, detailed site map, firing techniques, smoke management plan, list of fire department resources needed during the burn day, and public notifications and safety considerations.
- Prior to burning, existing fire control lines, such as paved and fire roads shall be enhanced with temporary control lines.
- Personnel used to supervise the burn, perform the actual firing, staff the fire engines, and control and extinguish the flames shall be fully trained and briefed.
- Smoke production and weather conditions shall be continuously monitored throughout the burn, and all burning material shall be completely extinguished at the end of each day.

HYDROLOGY & WATER QUALITY

MITIGATION HYDRO-1: The Contractor shall not fell, load, skid, or haul logs or trees across or through any streams or watercourses, whether perennial or intermittent.

NOISE

MITIGATION NOISE-1: Hours of work shall be Monday through Friday, 8:00 a.m. until 5:00 p.m. Requests to work off-hours, on weekends and District holidays shall be at the discretion of the District's Representative.

MITIGATION NOISE-2: Internal combustion engines used on the project site shall be equipped with a muffler type recommended by the manufacturer. Equipment and trucks shall utilize the best available noise-control techniques (e.g., engine enclosures, shrouds, intake silencers, ducts, etc.) whenever feasible and necessary.

PUBLIC SERVICES

MITIGATION SERV-1: District shall post warning signs to stay clear of work area and provide alternative parking/access areas during periods of active construction. Contractor shall install temporary construction fencing around the work areas prior to each phase of construction and retain until each phase of work is completed. Additionally, the District project representative shall alert District fire response teams prior to each phase of construction and burn activities and maintain work alert and adhere to fire risk reduction practices until each phase of work is complete.

RECREATION

MITIGATION REC-1: The District shall develop a noticing and outreach component to inform the public about scheduled closures, alternative access and the need for protecting the biological values of the prairie. Prairie noticing and outreach shall include the following components:

- The District shall post notices at key access points in Redwood Regional Park that detail the proposed project's construction schedule, including the timing and duration of planned road or trail closures, and include a map of alternative access points and trails which would remain open to the public;
- The District shall post a large visible sign along Skyline Boulevard in proximity to the project site warning the public of ongoing construction activities and likely disruption of recreational access off of Skyline Boulevard
- The Richard C. Trudeau Center reservation staff shall be informed of the project site preparation and tree felling activities and briefed as to potential construction related disruptions (e.g., added noise and dust in a normally tranquil setting, occasional traffic disruptions, potential reduction in available parking as part of the parking area may be occupied by contractor employees)
- The District shall provide public access and interpretive exhibits along the perimeter of the restoration areas to provide park visitors visual access to this unique California landscape resource
- The District shall provide notice of the project on its website
- All construction activities shall be prohibited on weekends and on District holidays
- A flagger shall be provided as needed to ensure safe public access to this facility and along Skyline Boulevard

during the tree felling and other construction activities involving the use of heavy construction equipment (e.g., trail construction and deconstruction, removal of dirt mounds).

TRANSPORTATION/TRAFFIC

MITIGATION TRAF-1: Traffic control would be the sole responsibility of the Contractor. A lookout shall be posted on all roads and trails to ensure the safety of park users during all felling operations. All traffic control measures required by the City of Oakland for road closure shall be adhered to as a condition of this project including at a minimum:

- Hours of work shall be Monday through Friday, 8:00 a.m. until 5:00 p.m. Requests to work off-hours, on weekends and District holidays shall be at the discretion of the District Representative. Normal flow of traffic shall not be hindered between 7:30 a.m. and 9:00 a.m., nor shall traffic be hindered between 3:00 p.m. and 5:00 p.m.
- Flaggers shall wear highly visible orange, yellow-green, or fluorescent-colored garments and shall use advance warning signs, cones, and STOP/SLOW paddles.
- No existing roadways or fire roads shall be altered, except as pre-approved by District Representative in the field, as needed for equipment to access the project site.
- Heavy equipment shall be stored on park property for the one to three month seasonal duration of the project at a location pre-determined by the District Representative and the contractor.

UTILITIES AND SERVICE SYSTEMS

MITIGATION UTL-1: All cut trees and associated slash and woody debris (greater than 1.5-inch diameter or 3 feet in length), soil and debris shall be removed and disposed of offsite by the contractor in a legal manner at a site approved by the District. The contractor shall be responsible for making all arrangements for the disposal of such materials in a manner that shall comply with federal, state, and local statutes and regulations pertaining to solid waste, green waste and SOD and LBAM quarantine compliance agreements.

MITIGATION UTL-2: All tree felling machinery and equipment including, but not limited to trucks, tree pruning and removal equipment, chipping machinery, shall be prohibited from moving from the project area until the machinery and equipment has been cleaned and treated to the satisfaction of the District's representative.

4.0 INITIAL STUDY CHECKLIST

PROJECT INFORMATION	
1. Project Title:	<i>Serpentine Prairie Restoration Plan, Redwood Regional Park</i>
2. Lead Agency Name & Address:	East Bay Regional Park District, 2950 Peralta Oaks Ct., P.O. Box 5381, Oakland, CA 94605-0381
3. Contact Person & Phone Number:	Julie Bondurant, (510) 544-2323
4. Project Location:	Redwood Regional Park, Alameda County CA
5. Project Sponsor Name & Address:	East Bay Regional Park District, 2950 Peralta Oaks Ct., P.O. Box 5381, Oakland, CA 94605-0381
6. Plan Designation:	Regional Park
7. Zoning:	Recreation and Resource Management Uses
8. Description of Project:	The purpose of the <i>Redwood Regional Park Serpentine Prairie Restoration Plan</i> is to restore the health and vitality of the serpentine prairie by enhancing habitat for State and federally listed endangered Presidio clarkia (<i>Clarkia franciscana</i>) and other native grassland species (e.g., Ruby Chalice <i>clarkia</i> , <i>C. rubicunda</i> ; Tiburon buckwheat, <i>Eriogonum luteolum</i> var. <i>caninum</i> - listed by the California Native Plant Society (CNPS) as List 1B.2). Refer to Section 2 for further details.
9. Surrounding Land Uses & Setting:	Refer to Section 2 - Background and Setting and Section 3.9 of the Checklist - <i>Land Use Planning</i>)
10. Approval Required from Other Public Agencies:	Refer to Section 2.4 - Permitting

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklists in this section.

x	Aesthetics		Agricultural Resources	x	Air Quality
x	Biological Resources	x	Cultural Resources	x	Geology/Soils
x	Hazards & Hazardous Materials	x	Hydrology/Water Quality		Land Use/Planning
	Mineral Resources	x	Noise		Population/Housing
	Public Services	x	Recreation	x	Transportation/Traffic
	Utilities/Service Systems	x	Mandatory Findings of Significance		(None of the Above.)

DETERMINATION

An Initial Study has been prepared under the direction of the East Bay Regional Park District's Planning, Stewardship and GIS Services Department, in which the environmental effects of the proposed project have been evaluated. On the basis of this Initial Study, a copy of which is attached, the District has found that, although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project and incorporated mitigation measures have reduced all impacts to a less-than-significant level. Therefore, the proposed project does not require the District to prepare an Environmental Impact Report. On the basis of this initial evaluation:

<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Prepared by: Julie Bondurant, Senior Park Planner


Signature

4/27/09
Date

Approved: 
Signature, Brian Wiese

4/27/09
Date

Chief, Planning, Stewardship & GIS Services Department

4.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, c) **Less Than Significant with Mitigation Incorporated.** The Redwood Regional Park serpentine prairie offers the park visitor panoramic views of Redwood Regional Park and Mount Diablo to the northeast and limited views of the San Francisco Bay and East Bay communities to the west. The proposed project would not obstruct any of these scenic vistas, but limited views of vegetation management activities associated with the restoration activities may be available from the public roads that provide access to the park, as well as some of the trails within Redwood Regional Park.

The Redwood Regional Park serpentine prairie, the largest undeveloped outcrop of a much larger expanse of exposed serpentine soils that once existed in the Oakland Hills, is one of the most diverse native grasslands in the Bay Area with over 230 plant species recorded, of which 165 species (75 percent) are native. The visual character of this prairie has been steadily evolving over the last 73 years since the District purchased the land as parkland. As far back as 1935, the level area at the top of Hunt Field was used as a small horse boarding facility and showed signs of heavy use from grazing and riding. Then, concurrent with the establishment of the District headquarters, a variety of native and exotic trees (primarily Monterey pines and acacias) were planted in scattered locations throughout the prairie. Over the past 45 years many of these trees have reached maturity developing a closed canopy that has enabled other native and exotic trees, shrubs, and annual grasses to become established in open grassland areas. In the last 15 years as older trees have begun to die, many new seedlings, saplings, and young trees have established. As a result, the area of brush and scrub vegetation has almost doubled within prairie substantially altering the landscape character of the project site.

Project restoration activities include: 1) felling and removing trees; 2) establishing protective fencing around the most disturbed areas of the site; 3) decommissioning trails that traverse Hunt Field and removing mounds of imported soil that formerly served as equestrian jumps; 4) building new perimeter trails and improving drainage in wet areas along the Dunn Trail; 5) mowing and raking away thatch to reduce competition of annual grasses to increase the area of

suitable habitat for *Presidio clarkia*; and 6) reestablishing native serpentine grassland habitat using passive and active revegetation techniques. Tree removal and earthmoving activities would disturb existing vegetation exposing new bare areas, reduce the overhead canopy and create new use and viewing patterns within the prairie. Installation of a 39-inch high protective open wire fencing would introduce a structure not previously present into the landscape, though this fence would not obstruct views of the grasslands nor intrude on panoramic views to the hills beyond the prairie.

During the tree removal and fencing installation activities temporary closures would limit public access to existing viewsheds. Heavy equipment would operate within the prairie, the Richard C. Trudeau Center parking lot and along portions of the Dunn Trail. The open prairie area and new areas of bare ground resulting from downed trees and earth moving activities, various construction signs, flags, fencing and heavy equipment would be visible along a short stretch of Skyline Boulevard, from vantage points of the Dunn Trail and from the residences immediately adjacent to the prairie during periods of construction.

After construction ceases, all equipment, tree materials, and construction related signs would be removed. Existing panoramic views may be expanded as a result of the proposed tree removal activities that would reduce much of the overhead canopy within the prairie, while opportunities for framing and enclosing more intimate and protected views would be reduced. Areas of bare earth from decommissioned jumps and trails would be reestablished as part of the prairie which would reduce scarring and provide a larger contiguous prairie area over the long term. These actions would likely enhance views of the ground plane as the prairie fills in with serpentine species native to the area.

Future activities may include burning and/or grazing which would also have an effect on the soil and the type and density of vegetation. The effects of prescribed burns would likely be more noticeable as the fires would generate smoke and alter the visual character of the landscape as small plots of vegetation and soils are scorched rendering portions of the site unattractive to park users over the short term. The visual effects of grazing sheep would be limited to temporary fencing used to corral the sheep with the sheep themselves being the most noticeable effects of this management tool.

While the proposed restoration activities would substantially alter the existing visual character or quality of the site and its surroundings, the long term effect would be to: 1) restore the vitality and botanical diversity of the prairie; and 2) manage the site to ensure survival of special status species associated with a unique feature of the native California landscape character. This result would create a landscape that would provide more diversity and a higher volume of wildflowers through the spring and summer months, a landscape characteristic generally valued by park visitors. Refer to *Figure 9- Visual Evolution of the Serpentine Prairie* to view landscape characteristics of the prairie prior to tree planting, as it looks now and how it will look once all tree cutting phases have been completed. Implementation of Mitigations **AES-1**, **BIO-2**, **BIO-6**, and **REC-1** would reduce potential adverse impacts to a less than significant level.

MITIGATION AES-1: To achieve the desired prairie landscape character, tree stumps shall be cut as close to the surrounding soil level as practical and tree roots shall be left in the soil to decompose naturally thereby maintaining an undisturbed soil profile. Approved herbicides shall be applied to the stumps of hardwood tree species to prevent resprouting as determined to be appropriate by the District Representative.

- b) Less than Significant Impact.** The project site is not located within the vicinity of a designated State scenic highway and no views from a scenic highway would be directed toward the site. Nor

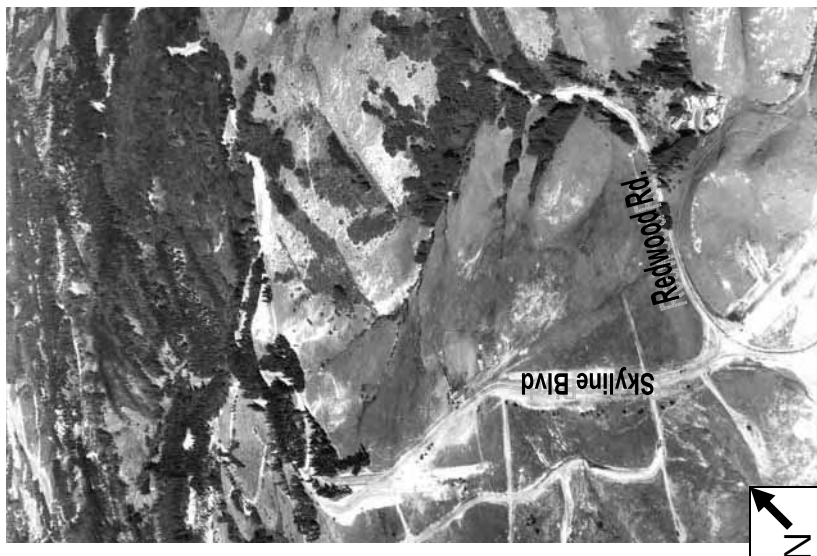
Figure 9 — Visual Evolution of the Serpentine Prairie



Serpentine Prairie – Proposed project



Serpentine Prairie - Existing



Serpentine Prairie - 1935

would the project site provide views looking out toward a state scenic highway. Therefore, the project would not have impact on scenic resources located within a State scenic highway.

However, as Skyline Boulevard forms the southwesterly and northwesterly boundaries of the serpentine prairie within the jurisdiction of the City of Oakland. City of Oakland Policy OS-10.1 calls for the “[Protection of] the character of existing scenic views in Oakland, paying particular attention to: (a) views of the Oakland Hills from the flatlands; and (d) panoramic views from Skyline Boulevard, Grizzly Peak Road, and other hillside locations. Within this context the project could be perceived as having a short-term adverse impact on a local scenic roadway. While the project would alter views from within the prairie expanding panoramic views oriented toward the northeast, views from Skyline Boulevard into the prairie would be limited. Due to the bowl-shaped terrain of the project area most of the project site is below the roadway and vegetation and structures located along the perimeter of the site obstruct views into the site from many vantage points along Skyline Boulevard. Therefore, this impact would be less than significant. **Mitigation:** None required.

- d) **No Impact.** Restoration work within the serpentine prairie would not introduce new sources of light or materials that would induce glare. The new trail sections would be natural materials and the protective wire fencing would have minimal reflective surfaces. Construction would occur only during daylight hours so no construction lighting would be required. Therefore, no long- or short- term lighting or glare impacts would occur as a result of the project. **Mitigation:** None required.

4.2 AGRICULTURE RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a, c) No Impact.** The serpentine prairie is not located on Prime Farmland, Unique Farmland or Farmland of Statewide Importance, and is not under a Williamson Act contract (California DOC 1999). The serpentine prairie is located within a regional park designated for long term, natural open space. No agricultural activities occur within the prairie or along the access roads and trails. The surrounding area is comprised of single-family residential, the Skyline equestrian facility, which would continue to have direct access into and use of the park, and City and District-owned regional parklands. The proposed project would not conflict with existing agricultural zoning nor facilitate conversion of agricultural land in areas adjacent to the project site to a non-agricultural use. **Mitigation:** None required.
- b) No Impact.** Neither Redwood Regional Park, nor any of the land adjacent to the parks are zoned for agricultural use; therefore, implementation of the Plan would not conflict with existing zoning for agricultural uses or Williamson Act contracts. **Mitigation:** None required.

4.3 AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a b, c, d) Less Than Significant with Mitigation Incorporated. In 1970 the U.S. Environmental Protection agency (USEPA) established national ambient air quality standards for six “criteria pollutants”: nitrogen dioxide (NO₂), ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), lead, and particulate mater less than 10 micrometers in diameter (PM_{2.5}). Areas where the monitored concentration of a pollutant exceeds the federal standards are classified as “nonattainment” for that pollutant. If the monitored concentration is below the standard, the area is classified as “in attainment.” (URS 2003)

The study area for the proposed project is within the jurisdiction of Bay Area Quality Management District (BAAQMD) and is classified as being in attainment of all federal standards except for O₃ (California Air Resources Board 1999).

The construction phase of the restoration project would include operation and idling of heavy equipment, temporarily increasing emissions associated with tree removal and minor earth moving over the short-term tree removal and minor construction periods. Vehicle trips for the proposed project activities would occur along Skyline Boulevard, which is paved and the Dunn Trail and throughout Hunt Field on and off trails. These areas are not paved. Future activities may include limited prescribed burns confined to small plots within the serpentine prairie.

Dust and Exhaust Emissions. Construction activities from the proposed project would intermittently generate dust and equipment exhaust emissions. To minimize dust the contractor would be required to regularly water access routes and construction areas associated with tree removal and trail work using a water source which would either be self-propelled or attached to a vehicle. This water source would have a capacity of a minimum of 200 gallons of water and 250 feet of 1-inch hose and would be required to be on site all times during operation. Furthermore, implementation of Mitigation **AIR-1** would reduce off-site impacts associated with the release of dust and loose debris off-site of project area to a less than significant level.

A significant increase in vehicular traffic and associated air pollutant emissions would not occur after implementation of the Plan, as the activities associated with the proposed fuel reduction activities would not lead to an increase in recreational facilities and park visitors.

Naturally Occurring Asbestos (NOA) in Serpentine Habitat. The dominant soil within the project area is comprised of serpentinite. Rock substrates closely related to serpentinite are likely to contain chrysotile asbestos, naturally occurring fibrous minerals.

Construction activities, including grading of serpentine soils, would generate dust and possibly release naturally occurring asbestos into the air. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. Asbestos may be released to the atmosphere as a result of heavy equipment traffic on unpaved service roads and trails, during ground disturbance activities associated with trail development and trail drainage improvements, when the rock is broken, crushed or drilled, and during soil disturbance associated with scarifying soils to decommission trails. Natural weathering and erosion processes can also act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

The proposed project is a restoration program with a goal of reestablishing an existing grassland prairie. The net project result would not increase vehicle trips and should reduce that area of bare land that would be subject to wind generated dust emissions. Proposed construction and restoration activities would not emit air contaminants at a level that, by themselves, would violate any air quality standard, or contribute to a permanent or long term increase in any air contaminant. Future short-term impacts associated with potential prescribed burn activities would be covered through the process of developing and approving of a burn plan in cooperation with State and local fire protection districts, and receipt of a burn permit from the BAAQMD.

Implementation of the California Air Resources Board (CARB) approved the Asbestos Airborne Toxic Control Measures (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations (2001), which provides enhanced dust suppression measures aimed at reducing the release of NOA during construction would reduce potential short-term impacts associated with NOA dust and exhaust emissions to a less than significant level. Applicable best management practices are identified in Mitigation **AIR-1**.

Potential for affecting climate change. Heavy equipment engines generate heat during work. However, these sources of heat are shielded by equipment covers protecting nearby objects from high heat, and the effects of residual heat diminish rapidly within a short distance of the equipment and after the equipment work ceases.

The removal of approximately 500 trees over the course of the project would allow increased sun into the site and may increase soil temperatures on the soil surface. However, these micro climate changes should have a beneficial effect on the plants that the project is intending to promote within the serpentine prairie. The long term result should be a reduction in bare soil and an

increase in biomass on the ground plane. Therefore, the restoration project would not adversely affect local air temperatures, or regional or global climate.

MITIGATION AIR-1: Best Management Practices for managing dust, pollutants and NOAs shall include:

- Regular watering of unpaved surfaces and wetting of work areas using water supplied from a 200-gallon tank posted in a highly visible location “Potable Water for Construction Use Only”
- Excavating during calm periods
- Covering all truck beds hauling soil, vegetation and other loose materials
- Reestablishing bare soils with vegetation native to the prairie
- Limiting traffic speed on the unpaved trail /road and fields to less than 15 miles per hour
- Routinely covering stockpiled materials
- Maintaining all equipment engines in good condition, in proper tune (per manufacturer’s specifications), and in compliance with all State and Federal requirements.
- Creating wind breaks or berms where needed to shelter bare areas from wind
- Notifying the local air pollution control or air quality management district prior to the commencement of project activities.

Prescribed Burning. Prescribed burning is a vegetation management technique that may be recommended in future years to promote reestablishment of serpentine vegetation in limited areas within the serpentine prairie. Prescribed burning requires the development and approval of a burn plan, cooperation with State and local fire protection districts, and receipt of a burn permit from the Bay Area Air Quality Management District (BAAQMD). The BAAQMD allows prescribed burning to reduce fire hazards, for management of forest and rangelands, and to train fire protection personnel. However, the implementation of this technique carries the potential for additional air pollution resulting from fuel combustion. Implementation of Mitigations **HAZ-3** and **HAZ-4** would reduce the potential effects of prescribed burns to a less than significant level.

- d, e) Less Than Significant with Mitigation Incorporated.** The proposed project would not result in long term generation of odors. Project-related emissions may result in short-term generation of odors emitting from construction equipment such as diesel exhaust, fuel vapors, and evaporative emissions and from smoke associated with prescribed burns that might be objectionable to park visitors and nearby residents. Odors emanating from the wood residue and pollens associated with various allergens may be released as a result of the tree removal activities. Park visitors, local residents and employees may consider such emissions offensive. Because construction activities would be short-term, odorous emissions would dissipate rapidly in the air, decreasing with increasing distance from the source. Visitor and resident exposure to these odors would be limited and of short duration. Implementation of Mitigations **AIR-1** and **AIR-2** would reduce the potential effects of offensive odors to a less than significant level.

MITIGATION AIR-2: Warning signage shall be installed at the perimeter of project site describing the nature of proposed activities that could release odors and/or pollens that could be viewed as offensive or produce allergens which could be detrimental to visitor’s health.

4.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, b) Less Than Significant with Mitigation Incorporated. The biological resources of the serpentine prairie are proposed to be managed for the enhancement of Presidio clarkia and associated plant and wildlife species in accordance with the restoration program set forth in the *Redwood Prairie Serpentine Plan* and accepted in the California Department of Fish and Game (CDFG) Memorandum of Understanding (MOU) and California Endangered Species Act Research and Management Permit No. 2081(a)-09-01-RP (February 2009) and the United States Fish and Wildlife Service (USFWS) Biological Opinion (August 2002).

Three sensitive natural communities occur on the 46-acre project site: serpentine, which is the focus of this project restoration effort; oak woodlands; and riparian habitat.

The proposed project would involve construction activities associated with restoration work within a serpentine prairie which is considered a sensitive natural community by the CDFG and the USFWS. This serpentine prairie contains several species within the proposed project area that are identified as sensitive, candidate, or special status species (Refer to *Table 4-1 Regional Context for Sensitive Species*).

The proposed project area is characterized by terrestrial flora and fauna found in serpentine prairie habitat. It is one of the most diverse native grasslands in the Bay Area with over 230 plant species recorded, of which 165 species (75 percent) are native. The project area is one of only two localities in the Bay Area where Presidio clarkia (*Clarkia franciscana*) grows and in both these locales it is restricted to serpentine soils (Lewis and Raven 1958). Within proximity to the project site Presidio clarkia is found on the summit of the Oakland hills in and near Redwood Regional Park. The other area where Presidio clarkia is found is the Presidio in San Francisco.

In its range Presidio clarkia grows adjacent to populations of the more robust Ruby Chalice clarkia (*C. rubicunda*). The Presidio clarkia is usually found in sunny locations outside of the shading influence of the planted trees, although individuals have been found in both sunny and shaded areas in extremely dry years. It is considered to be a pioneer plant, thriving in open and slightly disturbed areas. At the serpentine prairie, the Presidio clarkia generally begins flowering in early May and is finished by the end of May, with some annual variability due to rainfall and temperature.

The restoration effort involves a number of site preparation activities to improve habitat conditions for Presidio clarkia. These activities include: 1) tree and duff removal; 2) protective fencing; 3) thatch treatment (raking); and 4) spring mowing with thatch treatment in serpentine areas with no surveyed Presidio clarkia. These treatment options were selected specifically to avoid or minimize Presidio clarkia take, though they would involve the removal of some tree species native to Redwood Regional Park, but not naturally indigenous to serpentine prairie habitat. These species include coast live oak (*Quercus agrifolia*), California coast redwood (*Sequoia sempervirens*) and California bay (*Umbellularia californica*). Tree removal, fencing, and raking activities would be undertaken when the Presidio clarkia is dormant as seed. The spring mowing plots would be limited to areas where Presidio clarkia is absent, based on Park District GIS layers derived from 1992, 1998, 2002, 2006, 2007, and 2008 botanic surveys.

Per the adaptive management model, treatments that increase the risk of take, but are likely to enhance overall habitat, may be considered in the future. Such future activities may include burning and/or grazing which would also have an effect on the soil and vegetation.

Use of heavy equipment associated with tree removal and trail construction could cause soil erosion or soil compaction, especially if work would occur in the rainy season. Soil compaction greater than approximately 80 percent could prevent the growth of vegetation. Excessive soil compaction could also destroy the mycorrhizal fungi that native plants rely on for establishment and growth (URS 2003). Alternatively, freshly disturbed ground created by heavy equipment during tree removal activities and minor grading during trail decommissioning and construction may provide habitat for the introduction of exotic, invasive weedy plant species. Heavy equipment may also introduce exotic weedy species or spread existing seed into the landscape.

Installation of protective fencing in Hunt Field to curtail use in an area currently heavily used for recreating, especially with dogs, has the potential to shift pedestrian, equestrian and off-leash dog use patterns to new areas of the prairie creating the potential to disturb habitat areas not currently disturbed.

Specific measures in place to minimize take for proposed initial and potential future treatments include:

- Avoidance where possible
- Flagging areas of known populations of listed species by various colors or other means in advance of construction work
- On-site mandatory pre-construction education program for all persons working on the project led by the District biologist
- Work stoppage for the period necessary to either evacuate or protect the specimen(s) encountered should a protected plant or animal be encountered that had not previously been known or recognized
- Undertaking tasks after seeds have dropped and plants have gone dormant (e.g., late summer tree removal, fall raking)

Table 4-1 - Regional Context for Sensitive Species

Species	Scientific Name	Protected Status	Regional Context	Take Expected
Presidio clarkia	<i>Clarkia franciscana</i>	State and federal endangered	Found in San Francisco Presidio, and in six metapopulations along the summit of the Oakland Hills. The largest Oakland metapopulation is at the serpentine prairie.	Approximately 1200 clarkia individuals have been identified (2007 GIS layer) as "vulnerable to disturbance" (Serpentine Prairie Plan) - Habitat enhancements would mitigate temporary impacts
Alameda whipsnake	<i>Masticophis lateralis</i> ssp. <i>euryxanthus</i>	State and federal endangered	Found mainly in Contra Costa and Alameda Counties, also in San Joaquin and Santa Clara Counties. ALWH has been documented on site (2008)	Take of individual snakes not anticipated; habitat may be temporarily modified
Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	CNPS list 1B.2	Known from Marin County and the Oakland Hills. The population at the serpentine prairie is the largest in the Oakland Hills.	None expected. Treatments used for the Presidio clarkia are expected to enhance the Tiburon buckwheat
Cooper's hawk	<i>Accipiter cooperii</i>	State Bird of Special Concern	Resident species in the Bay Area. Nests in mature trees. Pre construction surveys will be performed prior to tree cutting in July.	None expected.
Callippe silverspot	<i>Speyeria callippe</i> ssp. <i>callippe</i>	Federal endangered	Known from San Bruno Mountain in San Mateo County. The taxonomy of small populations in the East Bay hills remains unclear with intergrades occurring in the Pleasanton-Livermore valley. The CNDDDB reports occurrence also being on Redwood Regional Park (CNDDDB 2001). Not known if population is still extant. No silverspot host plants are present in the serpentine. (per. com. J. DiDonato and R. Arnold 03/2009)	None expected.

As discussed in *Section 2.3 - Project Purpose; Goals and Objectives*, the *Serpentine Prairie Plan for Redwood Regional Park* proposes to use an adaptive management model to restore the vitality and botanical diversity of the serpentine prairie and manage the site to ensure survival of special status species associated with the prairie by enhancing habitat for State and federally listed endangered *Presidio clarkia*) and other native grassland species (e.g., Ruby Chalice *clarkia*; Tiburon buckwheat, *Eriogonum luteolum* var. *caninum* - listed by the California Native Plant Society [CNPS] as List 1B.2). The program aims to achieve this goal by increasing the percent cover and total number of native species, while reducing the cover and number of non-native species. The initial threshold for the first three years is to maintain a population of at least 3,000 *Clarkia franciscana* individuals at the serpentine prairie in Redwood Regional Park between 2008 and 2010. This threshold of 2,000 plants was determined to be attainable in light of 2007's banner crop of *Presidio clarkia*, as well as expected increases due to restoration efforts. This threshold would be reassessed in three years based on monitoring and experimental data. Until research determines otherwise, recovery should target securing populations containing a minimum of 2,000 plants each (but preferably more). The probability of population persistence over the long term is expected to be higher for larger populations because large size decreases the likelihood of reduced viability or population extirpations due to random demographic or genetic events (Barrett and Kohn 1991, Ellstrand and Elam 1993 – USFWS, Pacific Region 1998).

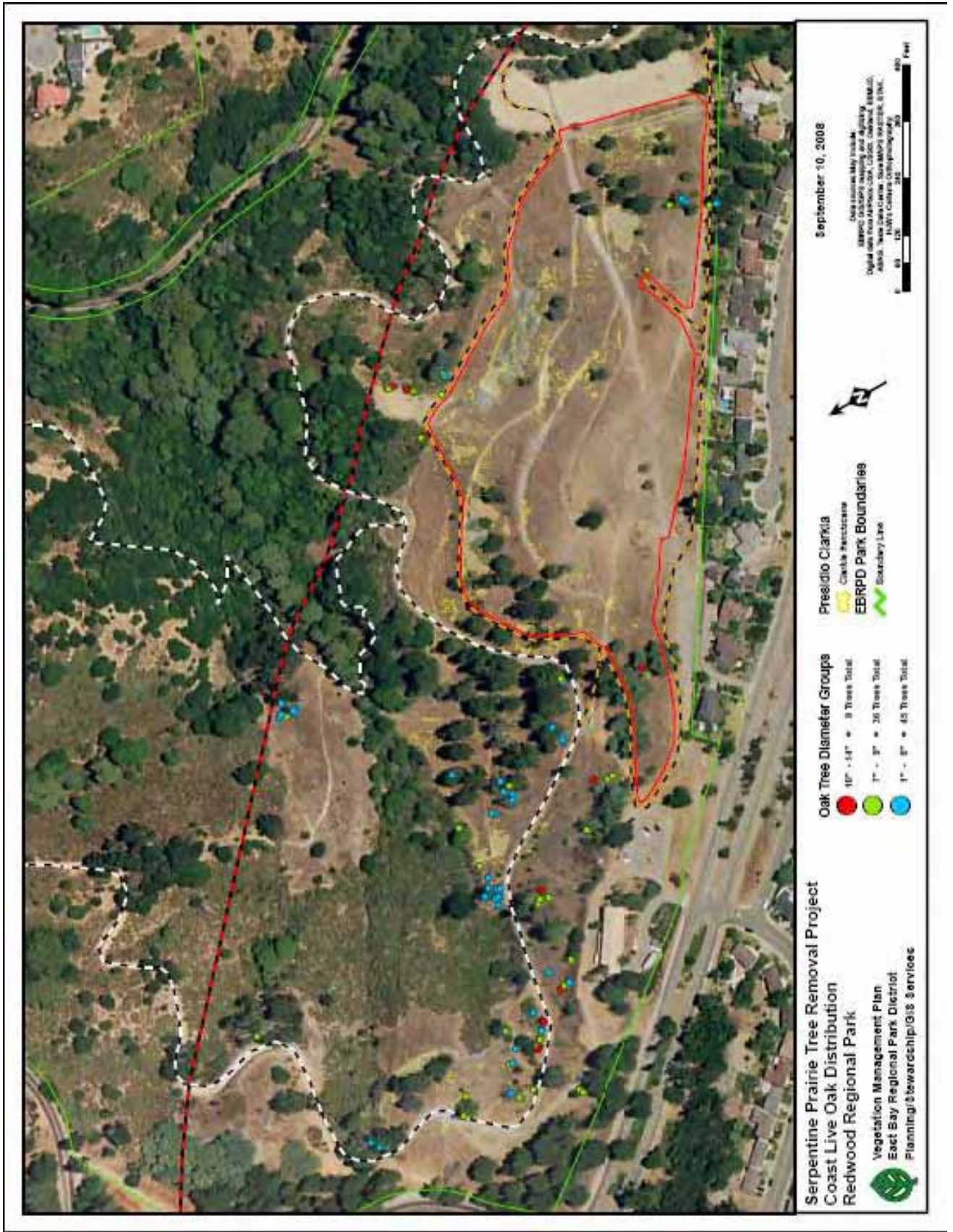
The management actions proposed in this plan to enhance the prairie habitat are expected to benefit the locally rare and unusual species over the long term, although the potential for invasion of non-natives into *Presidio clarkia* habitat could negate recovery without proactive weed management. Most of the pines that would be removed are mature and dying; if left in place, they would increase the fire hazard of the project area by the addition of dry timber and dead needles.

Further, the trees within the serpentine prairie shade out native grassland species, thereby diminishing species diversity. Opening the canopy and removing competitive, exotic species and the underlying vegetative litter that inhibits understory vegetation would aid in reestablishing native serpentine prairie species, providing cover and forage areas for avian and small animal populations.

Additionally, though oak woodlands are an important component of Alameda County's landscape and conservation of this resource is promoted under PRC 21083.4, the many oak seedlings and small saplings that have become established in the serpentine prairie are considered an opportunistic, successional landscape that would not have normally been able to establish on serpentine soils. These opportunistic saplings have established under the closed canopy of Monterey pines which were planted in the prairie during the 1960s. The resulting microclimate of shade and fog condensation, which increases the amount of moisture that collects and deposits on the prairie, along with buildup of a litter layer under these trees, has suppressed the native bunchgrasses and is nursing up Monterey pine and coast live oak seedlings and saplings, some of which are now small, shrubby trees.

To ensure the successful restoration of the serpentine prairie and those species within the proposed project area that are identified as sensitive, candidate, or special status species including *Presidio clarkia* and perennial grassland habitat, the planted, introduced tree species, as well as the live oak seedlings, saplings and small trees along with various other native tree seedlings (e.g., California bay) and scattered shrubs (coyote brush, poison oak, etc.) that are establishing in the understory, would need to be removed. Of the approximately 131 oaks proposed for removal within the 29-acre area of active restoration, approximately 45 would be removed during the initial Phase I program. Refer to *Table 4-2 - Coast Live Oak Species* and *Figure 10- Coast Live*

Figure 10- Coast Live Oak Tree Distribution



Oak Tree Distribution showing the total number of oaks that would likely be removed as part of the restoration project.

Table 4-2 – Coast Live Oak Trees within the 29-acre Area of Active Restoration

>9" dbh		9" to 5" dbh		< 5" dbh		Total to be Removed	Total to be Retained
Remove	Retain	Remove	Retain	Remove	Retain		
13	18	44	0	56	0	113	18

Removal of these trees would not result in the conversion of an existing oak woodland within the project area as these trees do not provide a canopy closure representing over 10 percent and do not occur in a soil type where oak woodlands would be expected to occur. Additionally, the removal of these trees would not result in fragmentation of existing woodlands, loss of understory species diversity, nor contribute to urban expansion into natural areas.

Moreover, there are ongoing French broom (*Genista* sp.) removal programs within the 1,836-acre Redwood Regional Park that encourage the restoration of native chaparral and woodland habitats in areas where coast live oak trees will be more likely to thrive. These programs, which are overseen by the District with support from many local volunteers, have included the planting of redwoods, huckleberry and other native canyon plants along Redwood Creek and over 25 oak trees along the ridges where broom (an exotic, invasive plant) has been removed over the last five years. In upcoming years additional revegetation efforts are expected to continue (dependent on available staffing and monetary resources) parallel with ongoing broom removal efforts (personal communication Di Rosario, Redwood Regional Park Supervisor, March 10, 2009).

The proposed restoration of the serpentine prairie, which includes the removal of numerous young oak and pine trees, is consistent with the 1977 Redwood Regional Park Land Use Plan which states that *“the area near the administration building (Richard C. Trudeau Center) contains an unusually rich stand of native grasses. This area of serpentine rock has resisted encroachment by exotic grass species... Native grassland in California is relatively rare and should be protected; it is therefore proposed to eliminate further disturbance to this area..”* The plan further notes the uniqueness of native grassland on serpentine soil and *“emphasizes maintaining the natural vegetation and proposes to eliminate exotic plantings where they are inappropriate and where their removal is feasible, and to maintain grassland, which is threatened by brush encroachment.”*

Riparian – oak woodland habitats exist within the Redwood Regional Park associated with non-serpentine soils. The proposed project does not include any construction or prairie restoration activities within these habitat zones. Riparian habitat in proximity of project site would be identified and protected during the construction portion of the restoration project. Oak trees contained within this habitat zone would not be removed as part of the restoration project.

Mitigations **BIO-1, BIO-2, BIO-3, and BIO-4** and **GEO-1, GEO-2, GEO-3, GEO-4** would further minimize potential habitat impacts and take of listed species to a less than significant level.

MITIGATION BIO-1: Equipment shall be pressure washed prior to entering the project site to minimize the introduction of invasive species onto the site.

MITIGATION BIO-2: In areas where exotic species may exploit disturbed soils and dominate revegetation efforts, evaluate and apply, as appropriate, weed removal treatments, native grass seeding, herbicide applications or combinations thereof to reduce the invasion of exotic species.

MITIGATION BIO-3: Install additional protective fencing along portions of the Dunn Trail if the unfenced areas adjacent to the trail are shown to be negatively impacted by a decrease of 25 percent or more in the density of Presidio clarkia, either by increases in trampling and social trails, or significant decreases in Presidio clarkia when compared to fenced plots. Likely locations for this potential future fencing are marked on *Figure 5 – Protective Fencing*.

MITIGATION BIO-4: Restore existing oak woodland habitat within the 1,836-acre Redwood Regional Park through the continuation of the French broom (*Genista* sp.) removal programs so as to encourage the restoration of native chaparral and woodland habitats in areas where coast live oak trees will be likely to thrive (communication Mary Ann Showers, CDFG September 4, 2008).

- c) **No Impact.** While riparian habitat and wetlands, in the form of springs and seeps occur within the Redwood Regional Park, the proposed project does not include any construction or prairie restoration activities in proximity to any federally protected riparian, marsh, vernal pool, or coastal, habitat. Project activities would be limited to upland serpentine habitat mostly along existing service roads and within the degraded Hunt Field.

Where drainage improvements are proposed to improve the Dunn Trail for year-round use the work would be permitted under: 1) *Streambed Alteration Agreement Renewal Routine Maintenance Agreement Alameda and Contra Costa County (CDFG 2005)*; 2) *East Bay Regional Park District, Regional Maintenance Activities, Alameda and Contra Costa Counties, Order No. R2-2004-0057 (RWQCB 2004)*; and 3) *Department of the Army Regional General Permit 13 (USACOE 2005)*. Therefore, the proposed project activities would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act.

Mitigation: None required.

- d) **Less Than Significant with Mitigation Incorporated.** The proposed project does not include any construction or restoration activities within a riparian habitat and so would not interfere with the movement of any native resident or migratory fish.

The proposed project does include activities within habitat and near habitat that could support the following Federal and state threatened species; Alameda whipsnake (ALWH) and Cooper's hawk.

AWHL. ALWH is listed as a federal and State threatened species commonly associated with north coastal scrub, but it has been found in a variety of habitats including oak woodland, grassland, and riparian habitat. Suitable habitat, including annual and perennial grasslands and coastal scrub habitat (coyote bush dominated) occurs within the borders of the serpentine prairie.

Trapping records from 2008 have documented ALWH in the coyote brush habitat on the serpentine prairie (Swain, 2008). There is also a historic record (1953) from an area approximately one mile southwest of the site at a location formerly called Leona Valley (CNDDDB 2007). A recent unconfirmed sighting of an ALWH from Leona Canyon Regional Park was submitted to the EBRPD in August 2007. If accurately identified, this sighting occurs approximately two miles southeast of the prairie.

Given documented sitings of ALWH, there is the potential that these snakes could be affected by the proposed habitat modification during the construction period. Heavy trucks operating in Hunt Field could disturb habitat for the ALWH during the short-term tree removal and trail/fence construction periods. Installation of protective fencing in Hunt Field, though designed to minimize interference with the movement of wildlife species, has the potential to shift pedestrian, equestrian and off-leash dog use patterns to new areas of the prairie creating the potential to

degrading habitat areas not currently disturbed resulting in a potentially significant impact to serpentine prairie grasslands. However, overall the activities proposed to enhance Presidio clarkia and overall prairie community health, including tree removal and control of non-native annual grasses and the related thatch would be expected to enhance AWHL habitat over the long term.

Moreover, the project would include implementation of the following surveying and monitoring procedures: 1) a pre-project survey; 2) installation and running of a trap array within and the along the perimeter of the scrub and grassland in order to document any whipsnake presence; 3) installation of drift fences to prevent animals from entering the project construction zone; 4) a crew training program to identify the ALWH; 5) on-site monitoring during tree removal, landscape-scale prescribed fire and mowing activities; and 6) capturing and removing snakes prior to a burn. These procedures, as set forth in the *Serpentine Prairie Plan* and Mitigation **BIO-5** would reduce these potential impacts to a less than significant.

Cooper's Hawk. Cooper's hawk may roost or nest in trees at the project site, but would not be expected to be nesting at the time of logging (August/September-October therefore, nursery sites would not be expected to be utilized during implementation of the proposed project. Additionally, the construction activities associated with the restoration effort would occur outside of the breeding seasons of most resident and migratory birds in the area covered under Sections 3503, 3503.5, 3800 of the Fish and Game Code and the Migratory Bird Treaty Act (MBTA). If vegetation removal would occur outside the nesting season (typically February 1 to August 31), there would be no effect on nesting birds and the following surveys would not be required. Some established native resident or migratory wildlife corridors may be temporarily and/or intermittently disturbed by project-generated noise, however, these impacts would be considered insignificant as they would occur outside of the breeding season and would be short-term. Should vegetation removal occur during the nesting season during other phases of the restoration effort, implementation of mitigation **BIO-5** would serve to protect the Cooper's Hawk and other raptors and other migratory birds protected under the federal Migratory Bird Treaty Act (MBTA).

MITIGATION BIO-5: A wildlife biologist shall perform pre-project biological surveys; conduct a crew training identification program for Alameda whipsnake (ALWH) and Cooper's hawk prior to vegetation removal; and maintain on-site monitoring during tree removal, landscape-scale prescribed fire and mowing activities to monitor for the presence of these animals. In addition for ALWH the following measures shall be undertaken prior to commencing construction activities: a) install and set a trap array within and along the perimeter of the scrub and grassland to document any whipsnake presence; and b) install drift fences to prevent animals from entering the project construction zone. If either Alameda whipsnake (ALWH) or Cooper's hawk are found to be present, an appropriate buffer zone shall be developed by the biologist and construction activities shall be suspended in this zone until future surveys indicate that the snake is no longer in the area (or snakes have been captured and removed) or that the chicks have fully fledged (left the nest). Survey results shall be valid for a period of 21 days from the date of the survey. Should work fail to be conducted within this timeframe, an additional biological survey shall be undertaken within three weeks of commencement of construction activities.

- e) **Less than Significant Impact with Mitigation Incorporated.** The proposed project proposes the felling and removal of approximately 500 trees consisting primarily of: 290 pines (primarily Monterey pine, *Pinus radiata*); 131 coast live oaks *Quercus agrifolia*; 28 acacia spp.; 20 California Bay, *Umbellularia californica*; 12 Monterey cypress *Cupressus macrocarpa*; and 9 cypress of other varieties to improve habitat conditions for the Presidio clarkia. Tree removal would be initiated after the District botanist has determined that the Presidio clarkia plants have dropped their seeds. This work would occur in late summer (August-October) and would last for

approximately one to two months over the course of three to four years. Removing native, naturally occurring successional trees (e.g., coast live oak, toyon, California bay, etc.) could have a potentially significant effect on species that use these trees for nesting and foraging. All projects identified as a result of the *Serpentine Prairie Restoration Plan* would be carried out on regional parklands where EBRPD is the local jurisdictional authority. As a result, all projects that may result from implementation of the Plan would be conducted in accordance with local District policies and ordinances, including: 1) continuance of ongoing French broom (*Genista* sp.) removal programs developed in Redwood Regional Park to encourage the restoration of native chaparral and woodland habitats in areas where coast live oak trees will be likely to thrive as stated in mitigation **BIO-4**; and 2) contractor requirements as stated in Mitigation **BIO-6**.

MITIGATION BIO-6: All “specimen” trees designated for protection shall be clearly marked by the District Representative and these trees shall be identified in the field at a pre-construction meeting with the Contractor. The Contractor shall be notified and become liable to the District in the amount of \$300.00 for each protected specimen tree damaged by the Contractor for liquidated damages and not as a penalty.

- f) **No Impact.** The *Serpentine Prairie Restoration Plan for Redwood Regional Park* would involve the implementation of a local serpentine restoration plan to ensure survival of special status species associated with the prairie by increasing the percent cover and total number of native species, while reducing the cover and number of non-native species.

There are no other adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or State habitat conservation plans are known to exist for the project area. As a result, the Plan would not conflict with any of these types of conservation plans. **Mitigation:** None required.

4.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the <i>CEQA Guidelines</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the <i>CEQA Guidelines</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a) **Less than Significant.** Cultural resources are places or objects that are important for scientific, historic or religious reasons to cultures, communities, groups or individuals. Cultural resources include human-made artifacts, structures and sites possessing archaeological or historic significance such as a Native-American burial or an architectural landmark. The District contracts with cultural resource professionals to inventory and evaluate potential cultural resources and preserves these resources in place through protection and specialized management according to State and federal law. Furthermore, the District keeps the location of known archaeological resource sites confidential as they are vulnerable to disturbance and destruction.

Section 15064.5 of the *CEQA Guidelines* defines a resource as “historically significant” if it is associated with events important to California’s history, is associated with the lives of important persons, embodies distinctive construction characteristics, or contributes important prehistoric or historic information. A significant adverse impact would occur if the project would cause the historical resource to be “materially impaired,” as defined in Section 15064.5 of the *CEQA Guidelines*. When the East Bay Regional Park District obtained Redwood Regional Park in 1935 the grassland summit area southeast of the headquarters, known locally as “Hunt Field,” and now referred to as part of the serpentine prairie, was used as an equestrian training and competition course. This course included riding trails, jumps, and obstacle courses for various riding events. A large portion of the site was also fenced and utilized as horse pastures. The site was managed by the Metro Horsemen’s Association (MHA). This area is listed in the District’s cultural resource guide. It is also recommended for restoration in the Redwood Regional Park Land Use Plan (1977). As a restoration project with potential benefits to serpentine habitat, the proposed project would include removal of former riding trails, jumps, and obstacle courses used in the past for competitive riding events. Equestrian use would be retained on the Dunn Trail and throughout the 1,836-acre park and use at the equestrian arena would not be disturbed. The area contains no other structures. As the site is already listed in the District’s cultural resource guide, the proposed

restoration project is consistent with the 1977 Land Use Plan, and the proposed project would not result in a substantial adverse change to ongoing equestrian traditions of trail and arena riding or any historical resource as defined in Section 15064.5 of the *CEQA Guidelines*, the proposed project activities would not have a substantial adverse effect on historical resources. **Mitigation:** None required.

b, c & d) District Cultural Resources Policy (EBRPD Board Resolution 1989-4-124) calls for the preservation and protection of known archaeological resources in place. Accordingly, District staff have consulted District maps and survey records to determine if archaeological resources have been catalogued in the project vicinity. Based on this research no archaeological resource sites have been identified within the general proximity of the proposed project site. However, it is possible that unknown archaeological or paleontological material could be uncovered during the minor ground-clearing and other earth-moving activities associated with the restoration project, resulting in a potentially significant adverse impact under CEQA. If this were to happen, the District would follow its established protocol for appropriate treatment of these materials. Implementation of District Cultural Resources Policy (EBRPD Board Resolution 1989-4-124) along with Mitigations **CULT-1**, **CULT -2**, and **CULT-3** would avoid or reduce potentially significant impacts to archaeological and paleontological resources to a less-than-significant level.

MITIGATION CULT-1: District Representative shall monitor ground-disturbing activities to ensure there are no impacts to prehistoric or historic resources, and comply with District Cultural Resources Policy (EBRPD Board Resolution 1989-4-124) if resources are encountered.

MITIGATION CULT-2: In the event that prehistoric, archaeological or paleontological artifacts or remains are encountered during project construction, all ground disturbing activities shall be halted within at least 50 feet and artifacts shall be protected in place (in accordance with EBRPD Board Resolution No. 1989-4-124 and State and federal law) until the find is evaluated by a monitor/archaeological consultant, and appropriate mitigation, such as curation, preservation in place, etc., if necessary, is implemented.

MITIGATION CULT-3: In the event of accidental discovery of human remains, the County Coroner shall be notified, and, if the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) would be notified to identify the Most Likely Descendant (MLD), in accordance with State and federal law. The disposition of the remains shall be coordinated between EBRPD, the County Coroner, NAHC, MLD and the archaeological consultant.

4.6 GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a) i) **Less than Significant.** *Earthquake Fault Rupture.* The proposed project area is located within the seismically active San Francisco Bay Area. Three earthquake faults cross parts of the park with the Chabot Fault forming the eastern edge of the serpentine prairie. All of the faults are short branch faults of the Hayward fault and are considered active. The Hayward fault, trending northwest to southeast, generally follows the alignment of Highway 13 approximately one mile southwest of the project site. The Hayward Fault has the potential to produce a maximum credible earthquake of an approximate magnitude of 7.5. Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake, usually along an active major fault

trace, such as the Hayward fault zone. Although the potential for fault rupture in the study area exists, the activities being proposed under the *Serpentine Prairie Restoration Plan* would not include the construction of facilities or buildings within which people or property would be exposed to potential substantial adverse effects, including the risk of loss, injury, or death, related to ground rupture from an earthquake. Therefore, implementation of the Plan would have a less-than-significant adverse impact related to earthquake fault rupture. **Mitigation:** None required

ii) **Less than Significant.** *Strong Seismic Ground Shaking.* Because Redwood Regional Park is located in a region of high seismicity, the entire area would experience strong ground shaking in the event of an earthquake, which is a substantial hazard throughout the region. However, as the activities being proposed under the restoration plan would not include the construction of facilities or buildings within which people or property would be exposed to potential substantial adverse effects, including the risk of loss, injury, or death, related to strong seismic ground shaking from an earthquake. Therefore, implementation of the Plan would have a less-than-significant adverse impact related to strong seismic ground shaking. **Mitigation:** None required.

iii) **Less than Significant.** *Seismic-related Ground Failure and Liquefaction.* While site preparation efforts required as part of the overall restoration effort would include the disturbance of vegetation on slopes as part of the tree removal activities and proposed future prescribed burns, which could thereby exacerbate conditions for seismic-related ground failure, the project would not include the construction of facilities or buildings within which people or property would be exposed to potential substantial adverse effects, including the risk of loss, injury, or death, related to seismic-related ground failure.

The upland characteristics of the project site include gently rolling to steeply sloped hills, a narrow channel with a perennial creek and a few seeps and springs, but no other open bodies of water. As such, the site is not susceptible to liquefaction hazards since saturated soils are a necessary condition for liquefaction. This is confirmed by regional liquefaction hazard maps which indicate that the project area is rated very low for liquefaction hazard (ABAG Liquefaction Map March 2007). Thus, the risk of lateral spreading is considered to be potentially low.

Therefore, implementation of the restoration plan would have a less-than-significant adverse impact related to seismic-related ground failure and liquefaction. **Mitigation:** None required.

iv) **Less than Significant with Mitigation Incorporated.** *Landslides.* Slope failure can occur as either rapid movement of large masses of soil (“landslide”) or slow, continuous movement (“creep”). The primary factors influencing the stability of a slope are: 1) the nature of the underlying soil or bedrock; 2) the geometry of the slope (height and steepness); 3) rainfall; and 4) the presence of previous landslide deposits. The proposed project would include the removal of vegetation on slopes with previous landslide deposits as part of the tree removal activities and proposed future prescribed burns, thereby creating conditions potentially conducive for landslides. While the project site does not contain any large mapped landslides (Wentworth 1997), it does contain slope conditions that could contain scattered small landslides that could be exacerbated by the site preparation work and future burns when areas of soil could be rendered temporarily bare. Implementation of Mitigation **GEO-1**, **GEO-2**, **GEO-3**, and **GEO-4** would reduce potential impacts associated with these activities to a less than significant level.

MITIGATION GEO-1: All roads, skid trails and landings shall be left clear of debris and in good repair after the construction work (e.g., tree felling, trail construction and deconstruction) is completed. Such repair shall include correcting potential erosion problems, soil ruts, and soil disturbance, including compaction. The District Representative shall halt site remediation

activities if site damage becomes excessive. Project activities shall not resume until the ground conditions are sufficient to minimize site damage.

MITIGATION GEO-2: The amount of disturbed land shall be minimized and any unnecessary slope disturbance shall be avoided. Activities shall be scheduled to occur during dry periods when the soil is hard. All portions of the project site that are affected by the work shall be rehabilitated including: areas with tire or track marks, collateral tree damage, and disturbed slopes requiring slope stabilization measures.

MITIGATION GEO-3: The contractor shall implement appropriate Best Management Practices for minimizing potential erosion and sedimentation and controlling potential release of pollutants on skid trails and other locally disturbed, bare areas within the project area. These measures include, as appropriate to the site conditions: conducting activities during the dry season; using dikes, basins, ditches, straw, erosion control fabric and other temporary measures (e.g., water bars, fiber rolls); installing catchments for source pollutants; and providing for a sufficient vegetated buffer between park facilities and wetlands, creeks and drainages.

MITIGATION GEO-4: The contractor shall exercise a due standard of care and judgment to protect environmental values and shall stop work when adverse weather or anticipated rainfall has made or would make access inadvisable, or that continued vehicular travel would cause unacceptable land, road, landing, or skid trail damage. In any event, rain in the amount of one inch or more in a seventy-two hour period shall result in a postponement of operations.

- b) **Less than significant with mitigation incorporated.** The dominant underlying rock in the proposed project area is serpentinite, which is a highly resistant metamorphic rock. In the outlying areas sandstone, with some shales, dominate. The dominant soil within the project area is comprised of serpentinite, which has a low erosion potential, but is likely to contain chrysotile asbestos, a naturally occurring fibrous mineral. While natural weathering and erosion processes can act on asbestos bearing rock and make it easier for the release of asbestos laden serpentine once the rock is disturbed, which could be deposited into stream sediments, the overall goal of this project is the enhancement of serpentine grasslands. This restoration work should serve to minimize the overall acreage of bare soils that would be subject to weathering and erosion over the long term. Mitigations **AIR-1, GEO-1, GEO-2, GEO-3, and GEO-4** would reduce potential construction impacts associated with tree removal, earth moving activities and potential future prescribed burns that could create a potential for loss of soil from erosion and migration of asbestos laden serpentine into waterways to a less than significant level.
- c) **No Impact.** The project site is made up primarily of serpentine soils that are not subject to liquefaction. Moreover, the project would not involve any construction of any new buildings or exposure of existing structures to liquefaction potential. **Mitigation:** None required.
- d) **No Impact.** Soils in the vicinity of the proposed project are not considered to be expansive. **Mitigation:** None required.
- e) **No Impact.** No septic tanks or alternative waste disposal systems are required or being constructed for the proposed project, and no potential impacts associated with septic systems would occur. Therefore, the capacity of the soils to adequately support waste disposal systems is irrelevant. **Mitigation:** None required.

4.7 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3.7 HAZARDS AND HAZARDOUS MATERIALS -- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b) Less than Significant with Mitigation Incorporated. Proposed project construction activities would require use of small quantities of potentially hazardous materials, such as fuels, oils, and solvents used for equipment, but these materials would be contained within vessels engineered for safe storage. Large quantities of such materials would not be stored on-site. Spills, upsets, or other project-related accidents, along with the transporting and deposition of tree materials could result in the release of fuel or other hazardous substances into the environment. Implementation

of Mitigation **HAZ-1** would reduce the potential for adverse impacts from incidents associated with the transport and use of potentially hazardous materials to a less than significant level.

MITIGATION HAZ-1: The transport and use of potentially hazardous materials shall conform to the following provisions:

- All equipment shall be inspected for leaks immediately prior to the start of project activities, and regularly inspected henceforth until equipment is removed from the premises.
- The contractor(s) shall prepare an emergency spill response plan prior to the start of the project and maintain a spill kit on-site throughout the duration of the proposed project. In the event of a spill or release of any chemicals during activities associated with the proposed project, on or adjacent to park property, the contractor shall immediately notify the appropriate District Representative (e.g., project manager or supervisor). Emergency containment procedures shall be initiated immediately to prevent contamination.
- Equipment shall be refueled, cleaned and repaired outside park boundaries, or within a contained area on site, except during emergency situations. All contaminated water, spill residue, or other hazardous compounds shall be disposed of outside park boundaries at a permitted or authorized location.

- b) **Less than Significant with Mitigation Incorporated.** The cut stumps of the hardwood tree species (e.g., eucalyptus, acacia, oaks) would need to be treated topically with 100% PathfinderII herbicide (Garlon 4 with surfactant) and colorant within one hour of tree removal. No broadcast spraying would be employed. Pine and cypress tree species would not be subject to this treatment. Pesticide use regulations in California designate parks and their associated facilities (i.e., picnic areas, parking lots, roadways, turf, landscape, rangeland, open space, trail systems, etc.) as “Agricultural Use” sites (Sec. 11408 Food 4 Agriculture Code). Application of herbicides in accordance with Mitigation **HAZ-2** would reduce potential impacts associated with the use of these chemicals to a less than significant level.

MITIGATION HAZ-2: All weed/pest control activities shall be performed in accordance with the District pest management policies and practices which require contractors and/or subcontractors applying any herbicide or pesticide to District lands to comply with procedures listed below in accordance with “Agricultural Use” sites (Sec. 11408 Food 4 Agriculture Code). The Contractor or subcontractor may seek pest management advice from, and coordinate activities with, the District Integrated Pest Management Specialist prior to initiating work. Applicable requirements include, but are not limited to the following:

- Pesticide application(s) shall be performed by a licensed pest control operator (PCO) who is registered to perform such services in the County where application would take place. At the Contractor’s discretion either: 1) the District shall provide the Contractor pest control specifications with a detailed prescription on methods and means for treating the stumps after cutting; or 2) the Contractor shall secure a pest control specification from a licensed integrated pest management advisor.
- Application shall be made by applying a stream of herbicide/blazon mix to the entire circumference of the exposed cambium area on the cut trunk.
- Pest Control Operator shall be responsible for posting on-site pesticide application signs in District-approved format. These signs shall be prominently displayed after the pesticide application. Signs shall be posted 24 hours prior to initiating weed/pest control activities and during at each work site each day of herbicide application. The signs shall remain posted in place for 24 hours after the application. Signs shall be located to maximize visibility.

- The Pest Control Operator shall provide the District with a written accounting of the total amount of raw concentrate pesticide applied.
- The Pest Control Operator (contractor or subcontractor) shall submit a report of pesticide usage to the respective County Agricultural Commissioner.

(Copies of the District Pest Management Guidelines are available upon request.)

- c) **No Impact.** There are no schools or proposed schools within one-quarter mile of the proposed project site. The closest schools, Skyline High School and Oakland Hebrew Day School, are located approximately one mile and nine-tenths of a mile respectively from the project site. **Mitigation:** None required.
- d) **No Impact.** The proposed project area is not included on the Department of Toxic Substances Control's (DTSC's) Hazardous Waste and Substances Site List - Site Cleanup (Cortese List) pursuant to Government Code §65962.5 (AB 3750). **Mitigation:** None required.
- e, f) **No Impact.** The project site is not located within an airport land use plan or within two miles of a public airport or public use airport; nor is the proposed project in the vicinity of a private airstrip. Therefore, implementation of the proposed project would not expose people working in the project area to airport related hazards. **Mitigation:** None required.
- g) **No Impact.** Hunt Field has been used as a helicopter landing on occasion in the past. However, it is not necessary to use it except in emergencies. The proposed project fencing is not expected to present a problem to these emergency uses (Per. Com. Chief Blonski, July 17, 2008). Therefore, the project would not impair implementation of, or physically interfere with, an adopted emergency response or evacuation plan. **Mitigation:** None required.
- h) **Less Than Significant with Mitigation Incorporated.** The EBRPD Fire Department conducts a small number of prescribed burns every year on its property including several hundred acres of summer and fall grassland burns. Burns are designed to meet specific land management objectives such as fire hazard reduction, grassland restoration or to reduce the presence of non-native or pest plant species. Over the long term implementation of a controlled burn program has the potential to reduce the volume of non-native, dried plant material to fire-safe levels, increase habitat diversity, and improve beneficial conditions for Presidio clarkia.

However, the land comprising the serpentine prairie, located at the wildland-urban interface, is subject to wildfire risk and is designated a Very High Fire Hazard Severity Zone (www.firecenter.berkeley.edu/fhsz, 2008). This condition is accentuated by dry, windy climatic conditions during summer/fall (June through October) months, along with a landscape comprised of a mosaic of annual grasses, chaparral and flammable trees. The proposed project would not add any new uses that would create additional long term or permanent increased fire risks. The project would remove approximately 500 trees in phases. This would include removal of over time more than 275 highly flammable trees (e.g., pines, eucalyptus) and associated layers of organic material (litter layer and duff from years of pine needle deposition). These actions would serve to lessen the current fire hazard risk within the prairie.

The proposed project would involve the use of heavy equipment for a short term period that could magnify fire risk, particularly during warmer days. Sparks could generate from improperly outfitted exhaust systems or friction between metal parts crushing rocks. Implementation of Mitigation **HAZ-3** would ensure that heavy equipment operators take appropriate precautions to reduce fire risk to a less than significant level.

Implementation of Mitigation **HAZ-4** would ensure that fire-safety measures are incorporated into the District's prescribed burn operations thereby minimizing potential risk to park visitors, neighbors and nearby structures to a less than significant level.

MITIGATION HAZ-3: A safety plan shall be developed by the contractor and reviewed by all District project staff prior to the start of any work, including the following measures to reduce fire hazards:

- Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers shall be required for all heavy equipment.
- Work crews shall be required to park vehicles away from flammable vegetation, such as dry grass and brush. At the end of each workday, heavy equipment shall be parked over mineral soil, asphalt, or concrete at a location agreed upon by the Contractor and District Representative prior to project commencement.
- Park staff shall be required to have a District radio on-site, which would allow for direct contact to Calfire and the centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire. Fire suppression equipment (i.e., fire extinguishers) shall also be available at the project site.

MITIGATION HAZ-4: Prior to conducting a prescribed burn for a particular site, the EBRPD Fire Department shall prepare a burn plan which is to be reviewed and approved by the Park District's Operations and Planning and Stewardship Departments, Calfire, CDFG, and the BAAQMD. This plan shall incorporate, but not be limited to the following provisions:

- All prescribed burns shall be conducted under controlled conditions during weather that is conducive to smoke dispersal.
- Each plan shall include a detailed project description containing: the fuel type to be burned, required weather prescription, detailed site map, firing techniques, smoke management plan, list of fire department resources needed during the burn day, and public notifications and safety considerations.
- Prior to burning, existing fire control lines, such as paved and fire roads shall be enhanced with temporary control lines.
- Personnel used to supervise the burn, perform the actual firing, staff the fire engines, and control and extinguish the flames shall be fully trained and briefed.
- Smoke production and weather conditions shall be continuously monitored throughout the burn, and all burning material shall be completely extinguished at the end of each day.

4.8 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

a, f) Less Than Significant with Mitigation Incorporated. Proposed site restoration activities, including improving and maintaining existing trails; constructing new trails and decommissioning formal and informal trails could generate sediments and debris which would have the potential to

adversely impact water quality, particularly in the northern portion of the prairie which is divided by a riparian corridor. Implementation of mitigations **AIR- 1, GEO-1, GEO-2, GEO-3., GEO-4,** and **HYDRO-1** would reduce potential impacts associated with sediment and pollutant discharges to a less than significant level.

MITIGATION HYDRO-1: The Contractor shall not fell, load, skid, or haul logs or trees across or through any streams or watercourses, whether perennial or intermittent.

- b) **No Impact.** The project does not propose to use groundwater supplies nor does it propose the construction of infrastructure or facilities that would increase impervious surfaces leading to a substantial depletion of groundwater supplies or interference with groundwater recharge. Therefore, the proposed project would not substantially or permanently affect groundwater levels. **Mitigation:** None required.
- c, e) **Less than Significant with Mitigation Incorporated.** Redwood Regional Park contributes to the San Leandro Creek watershed. The dominant hydrologic feature of the park is Redwood Creek. The southern fork of Redwood Creek is also fed by two small, unnamed, intermittent tributaries. One of these tributaries originates in the serpentine prairie. The proposed project would involve: 1) removal of up to approximately 500 trees that currently serve to aid in the filtration of on-site water; 2) several minor trail drainage improvements aimed at preventing wet areas from forming in the winter and reducing water flows that could exacerbate erosion in order to maintain the Dunn Trail for year-round pedestrian and equestrian use; and 3) abandoning trails and scarifying local bare areas within the fenced protection area. These activities, compounded with natural weathering and erosion processes acting on asbestos bearing rock, could create or contribute to runoff. This would be especially likely during rain events which would make it easier for the release of asbestos laden serpentine thereby adding polluted runoff to the riparian system that traverses the serpentine prairie. However, the project would not create or contribute to an increase in runoff water which would exceed the capacity of existing or planned stormwater drainage systems. Potential erosion resulting from completing the proposed project improvements would be reduced to less than significant with the implementation of mitigations **AIR- 1, GEO-1, GEO-2, GEO-3, GEO-4,** and **HYDRO-1.**
- d) **Less than Significant Impact.** The proposed project would include minor drainage improvements on the existing Dunn Trail aimed at preventing wet areas from forming in the winter and reducing water flows. These improvements would not significantly alter drainage patterns such that on- or off-site flooding would result. **Mitigation:** None required.
- g, h, i) **No Impact.** The project involves the restoration of prairie habitat. It does not include construction of housing or any other major structures that would potentially impede or redirect flood flows. Moreover, the serpentine prairie restoration area is not located to an area that would be subject to inundation by a 100-year flood either through the natural topography of the land or as a result of the failure of a levee or dam. (Federal Emergency Management Agency Flood Insurance Rate Map Contra Costa County, California Unincorporated Areas, Community Panel Number 060025 0425B, July 16, 1987) **Mitigation:** None required.
- j) **Less than Significant.** At an elevation of approximately 1,100 feet above sea level and approximately six miles removed from the San Francisco Bay, the proposed project area would not be affected by seiche or tsunamis, nor would it increase exposure of new residents or business to such hazards.

The serpentine prairie restoration area is an upland habitat that would not be subject to inundation by mudflow as the serpentine soils that dominant the site are composed of highly resistant metamorphic rock, which has a low erosion potential. Additionally, while the site contains rolling and steep hills, the project does not propose any significant topographical alterations. The tree removal operation is not anticipated to disturb more than five percent of the soil surface in the area where trees are removed. Tree stumps would be cut as close to the surrounding soil level as practical leaving the tree roots in the soil to decompose naturally thereby maintaining an undisturbed soil profile. Moreover, construction activities would be limited to the dry season and would not include any construction activities during heavy rain events, when flooding resulting in the potential for mudflows would most likely occur. **Mitigation:** None required.

4.9 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING -- Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a) **No Impact.** Implementation of the *Serpentine Prairie Restoration Plan* would not physically divide an established community as the project area is wholly contained within Redwood Regional Park. As this park is owned and operated by the EBRPD, there are no established communities located within the project site. In addition, the development of infrastructure, facilities or structures that might physically divide a community is not proposed as part of the Plan. **Mitigation:** None required.
- b) **No Impact.** The project is consistent with the mission and policies of the District’s 1997 Master Plan, as it would protect natural resources, watersheds, water quality, wildlife habitat and scenic views, while continuing to provide the public with low-impact, passive outdoor recreation. In addition, the Land Use Plan for Redwood Regional Park adopted by EBRPD Board of Directors in 1977 includes policies and objectives related to resource management and protection of the serpentine prairie. **Mitigation:** None required.
- c) **No Impact.** The *Serpentine Prairie Restoration Plan for Redwood Regional Park* would involve the implementation of a local serpentine restoration plan to promote the survival of special status species associated with the prairie by increasing the percent cover and total number of native species, while reducing the cover and number of non-native species.

There are no other adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or State habitat conservation plans known to exist that would affect the project area. As a result, the Plan would not conflict with any conservation plans. **Mitigation:** None required.

4.10 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, b) No Impact. The purpose of the project is to restore a serpentine prairie for the enhancement of endangered species. The actions proposed as part of this restoration effort would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. **Mitigation:** None required.

4.12 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a, d) Less than Significant with Mitigation Incorporated. The proposed tree felling and associated chipping, heavy equipment operations and fence installation associated with the site preparation work for the restoration effort would generate temporary, periodic increases in ambient noise levels in the proposed project vicinity. Future, periodic prescribed burns and loading and unloading of livestock for proposed grazing activities could also result in increased ambient noise levels over the short term. Sensitive noise receptors within the project include common and rare wildlife, including threatened and endangered species (see Section 3.4 *Biological Resources*), and recreational users including hikers, dog walkers and their dogs, equestrians, bicyclists and bird watchers, as well as residents along the western project boundary and visitors to the Richard C. Trudeau Center.

Impacts to park visitors would be minimized through temporary park closures in the area of work during the hours of operations (weekday daytime hours – 8 a.m. to 5 p.m.). Impacts to residents and Richard C. Trudeau Center visitors would be reduced by locating the majority of construction activities in the lower areas of the prairie which would be buffered by the plateau above.

Construction associated with the site preparation and tree felling work would likely occur in late summer (August-October) and would last for approximately one to three months per year over the course of three to four years. After this heavy construction ceases, all equipment and materials

would be removed and noise levels would return to existing levels. Seeding and monitoring activities would require a minimum number of trained professionals. These restoration efforts would occur on a temporary, periodic basis and should not generate substantial increases in ambient noise over that which now occurs as part of ongoing park recreation and management activities. Implementation of Mitigations **NOISE -1 and NOISE -2** would reduce the short-term impacts associated with site preparation to a less than significant level. Implementation of Mitigation **BIO-5** would reduce potential impacts to wildlife to a less than significant level.

MITIGATION NOISE -1: Hours of work shall be Monday through Friday, 8:00 a.m. until 5:00 p.m. Requests to work off-hours, on weekends and District holidays shall be at the discretion of the District's Representative.

MITIGATION NOISE -2: Internal combustion engines used on the project site shall be equipped with a muffler type recommended by the manufacturer. Equipment and trucks shall utilize the best available noise-control techniques (e.g., engine enclosures, shrouds, intake silencers, ducts, etc.) whenever feasible and necessary.

- b) **No Impact.** The proposed project would not involve the use of explosives, pile driving, or other intensive construction techniques that generate significant ground vibrations and/or noise. Minor vibrations along truck haul routes would be less than significant. **Mitigation:** None required.
- c) **Less than Significant.** Certain activities (e.g., tree felling) proposed by the Plan (see 3.12 a, d above) would result in the short-term generation of noise above ambient levels. However, the generation of noise would be of short duration and would not result in a substantial permanent increase in ambient noise levels in the project vicinity. Upon project completion, all construction noise would cease and no residual noise-generating equipment would be present. **Mitigation:** None required.
- e, f) **No Impact.** The proposed project area is not located within a private airport land-use plan or within two miles of a public airport or public-use airport or the vicinity of a private airstrip. Therefore, implementation of the Plan would not expose people working in the project area to excessive noise levels associated with airport operations. **Mitigation:** None required.

4.12 POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a) No Impact.** The proposed project would involve the restoration of habitat on land dedicated as regional park open space since 1939. Work would occur within the boundaries of the park, with no additions or changes to the existing local infrastructure. Moreover, the project would not induce substantial population growth in the area because construction activities are limited in scope and short-term in duration so relatively few workers would be involved in the project. Long term monitoring and management of the site would be accomplished by existing District staff. Therefore, the proposed project would not directly result in population growth through the construction of new houses, nor indirectly add capacity-allowing population growth in the surrounding area. **Mitigation:** None required.
- b, c) No Impact.** The proposed project would involve the restoration of habitat in land dedicated as regional park open space. As such, the proposed project would not displace existing housing nor displace temporarily nor permanently persons residing in the area, nor require the construction of replacement housing. Thus, the project would not have any impact on population growth in the area. **Mitigation:** None required.

4.13 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a) Less than Significant with Mitigation Incorporated.** Implementation of the proposed project would not create a need for additional parks, schools or other public facilities. The Plan does not propose the construction of new or altered government facilities, and no additional governmental facilities would be required in order to restore the serpentine prairie as proposed by the project.

The level of services required for the proposed project is expected to remain relatively static. Restoration activities undertaken to restore the serpentine prairie would rely on fully equipped and professionally trained District staff that routinely undertake restoration activities. Fire protection and emergency services are provided to the parks in the study area by the EBRPD and surrounding fire and police protection districts. The Richard C. Trudeau Center located at the top of the hill west of the project area would continue to be used for District purposes, thereby maintaining an additional positive security presence. EBRPD rangers and police officers would continue to patrol the parkland by vehicle and helicopter and the Oakland Police Department, which patrols adjacent areas within City limits, along with the District’s Police Department, would continue to respond to emergencies within the park.

Nonetheless, the construction activities required to initiate the restoration project would require short term park area closures Monday through Friday, 8:00 a.m. to 5:00 p.m. workdays (anticipated to be in late summer - August-October) lasting for approximately per year over the course of three to four years.). The Redwood Regional Park Equestrian Arena and following trails would be closed to public use during this time period: a) Dunn Trail between the Skyline Ranch Equestrian facility and the junction with Graham Trail, b) Golden Spike Trail between Dunn Trail and Monteiro Trail; and c) all of the trails in Hunt Field. These actions would require noticing and additional monitoring by park staff as well as the contractor, to ensure that park visitors do not

enter the construction area during periods that could pose a safety risk. Redwood Regional Park Equestrian Arena and all of the trails, except those in Hunt Field, which would be decommissioned as part of the restoration effort, would be open during non-work hours weekdays, weekends and on District holidays.

As noted in 3.7-g, the use of heavy equipment near flammable vegetation presents an increased fire risk during the high fire hazard season that could result in additional demands on District fire response teams. Moreover, future restoration activities could include the use of prescribed burns as a habitat management tool.

Any impact on services associated with the use of heavy equipment and prescribed burns would be temporary and nothing in the project scope would contribute to the need for an increased level of public services on a permanent basis.

Implementation of mitigation **SERV-1** and **HAZ-3** and **HAZ-4**, which require readily available on-site fire suppression equipment (i.e., fire extinguishers), an on-site radio to facilitate the rapid dispatch of control crews and response equipment in case of a fire or other emergency, would reduce potential short-term project impacts to public services a less than significant levels.

MITIGATION SERV-1: District shall post warning signs to stay clear of work area and provide alternative parking/access areas during periods of active construction. Contractor shall install temporary construction fencing around the work areas prior to each phase of construction and retain until each phase of work is completed. Additionally, the District project representative shall alert District fire response teams prior to each phase of construction and burn activities and maintain work alert and adhere to fire risk reduction practices until each phase of work is complete.

4.14 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION --				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a, b) The 1,836-acre Redwood Regional Park offers various recreational opportunities to the general public. These activities include horseback riding, hiking, biking, dog walking, bird-watching, sightseeing, picnicking, and participation in recreation and interpretive and educational programs. The serpentine prairie, which is site of the proposed project currently, allows off-leash dog walking in Hunt Field and provides an arena for equestrian training at the southeast end of Hunt Field, as well as horseback riding, hiking, biking, dog walking and nature and viewshed appreciation, along the Dunn Trail and a number of informal trails that transect the prairie. Primary recreational access to the project area is provided at a parking lot with 29 spaces adjacent to the Richard C. Trudeau Center which is located at the northwest boundary of the project site and four standard and two handicapped spaces directly in front of the Center. The Trudeau Center has served as a training facility since the early 1990s when the District relocated its main headquarters away from the park. Secondary public access to the project area is provided from on-street parking along Skyline Boulevard (approximately 35 spaces). Additional public access to the park occurs at several staging areas located off Skyline Boulevard and at the main entry to the park which is located off Redwood Road. None of these additional staging areas provide direct access to the serpentine prairie. City of Oakland Joaquin Miller Park is located west of Skyline Boulevard. Anthony Chabot Regional Park is located southeast of Redwood Road. These adjoining parklands along with Silbey, Huckleberry, Tilden and Wildcat Regional Parks to the north provide over 12,800 acres of contiguous recreational open space serving this region.

The Plan does not propose to develop recreational infrastructure, facilities or structures that might increase the use of the regional parks such that substantial physical deterioration of the project site would occur or be accelerated. Nor would the activities proposed by the project cause an increase the number of visitors to the parks. The intent of the restoration project is to remediate significant adverse effects to the environment that have resulted from overuse of a fragile ecosystem and to direct visitors to improved trails within the project site. These actions would alter existing recreational use patterns within the project site over the short and long term.

The public outreach component of the project as proposed would include: a) augmentation of existing informational panels that explain the history and value of the serpentine prairie; b) informational signs regarding work under progress; c) public meetings; d) press releases; and e) the development of educational programs that would be conducted by the District interpretive

staff. Volunteer/docent led tours of the area also may be planned to increase awareness and understanding of the restoration project.

Short-term Disruptions. The proposed project could interfere with or degrade the recreational experience for users of the serpentine prairie and adjoining trails for intermittent periods of construction in late summer (August-October) lasting for approximately one to three months per year over the course of the three to four years beginning in August 2009 and continuing in future years for similar periods if prescribed burns are authorized as a habitat management procedure for this site. While the project does not propose overall closure of the entire park during these periods, some recreation activity in the project area would be disrupted.

These disruptions would be confined primarily to weekdays during the late summer months. Hours of restoration work would be Monday through Friday, 8:00 a.m. until 5:00 p.m. Recreation use would be permitted during non-work hours (before 8:00 a.m. and 5:00 p.m.) weekdays and regular hours (5 a.m. to 10 p.m.) weekends and on District holidays. In general, short-term impacts to recreational use would include the following:

- The potential for interruption or closure of: a) Redwood Regional Park Equestrian Arena; b) Dunn Trail between the Skyline Ranch Equestrian facility and the junction with Graham Trail; c) Golden Spike Trail between Dunn Trail and Monteiro Trail; and d) all of the trails in Hunt Field when heavy equipment (e.g., tree removal equipment and earth grading equipment) is in use rendering public access to the project site impractical or potentially unsafe
- Vehicular access may be interrupted by flagmen along Skyline Boulevard as haul vehicles are entering or leaving the project site. Flaggers or other monitors would also be empowered to turn the public away during periods of high and/or unsafe activity.

Long term Recreation Impacts. Implementation of the project would also result in long term changes in recreational behavior. Fencing of Hunt Field would likely shift visitor use to unfenced areas thereby increasing the level of use of nearby trails with the possible result of increased disturbance in the unfenced areas adjacent to those trails. Proposed project activities leading to long term changes to recreation would include:

- Long term closure of Hunt Field to dogs and equestrians and very limited use to hikers when on guided interpretive walks
- Improved access to the project site in two locations and development of an interpretive overlook along the perimeter of Hunt Field
- Closure of unofficial (bootleg) trails in the area utilizing fencing, signage and/or other means (e.g., scarifying trails).
- Drainage improvements to improve year-round recreational access along the Dunn Trail
- Substantial changes to the visual character of the site as a result of tree removal activities, installation of the resource protection fencing, temporary increases in bare areas as a result of minor earthmoving activities, and potential scorching of vegetation and ground areas if prescribed burns are instituted on the site.
- Additional fencing adjacent to the Dunn Trail to limit access to the lower (northern) portion of the prairie if this area is shown to be negatively impacted, either by increases in trampling and social trails, or significant decreases in Presidio clarkia.

Refer to *Figure 7 - New Trailhead and Trail Improvements* to view the proposed circulation changes and likely locations for potential future fencing.

Although, the serpentine prairie and adjoining recreational trails are highly valued recreational areas, these impacts would be considered adverse, but not significant for the following reasons:

- The construction component of the project that would required temporary closures would be of relatively short duration (one to three months per year in late summer [August-October] over the course of three to four years), with the majority of construction occurring during weekday periods of lower public use
- District rules and regulations regarding protection of resources are promulgated in Ordinance 38, which regulates the types of parks uses and recreational activities; Section 804, which specifically prohibits damage to plants on District parklands; and Section 801, which addresses pet restrictions - dogs are not permitted in Resource or Wildland Protection Areas.
- Alternate trail access would be available throughout Redwood Regional Park for all current users of the serpentine prairie and the surrounding regional open space parks
- The proposed project is consistent with the resource guidelines established for the site in the *Redwood Regional Park Resource Analysis (Resolution No: 1971-9-175, Adopted September 16, 1975, Revised October 1977)* and the *Redwood Regional Park Land Use Plan (1977)*
- The long term effect on the visual character of the site would be to create a landscape that would provide more diversity and a higher volume of wildflowers through the spring and summer months, a landscape characteristic generally valued by park visitors.

Implementation of Mitigations **AES-1, BIO-2, BIO-6, and REC-1** would reduce potential adverse impacts to recreation and the site characteristics that draw people to the site to a less than significant level.

MITIGATION REC-1: The District shall develop a noticing and outreach component to inform the public about scheduled closures, alternative access and the need for protecting the biological values of the prairie. Serpentine prairie noticing and outreach shall include the following components:

- The District shall post notices at key access points in Redwood Regional Park that detail the proposed project's construction schedule, including the timing and duration of planned road or trail closures, and include a map of alternative access points and trails which would remain open to the public;
- The District shall post a large visible sign along Skyline Boulevard in proximity to the project site warning the public of ongoing construction activities and likely disruption of recreational access off of Skyline Boulevard
- The Richard C. Trudeau Center reservation staff shall be informed of the project site preparation and tree felling activities and briefed as to potential construction related disruptions (e.g., added noise and dust in a normally tranquil setting, occasional traffic disruptions, potential reduction in available parking as part of the parking area may be occupied by contractor employees)
- The District shall provide public access and interpretive exhibits along the perimeter of the restoration areas to provide park visitors visual access to this unique California landscape resource
- The District shall provide notice of the project on its website
- All construction activities shall be prohibited on weekends and on District holidays
- A flagger shall be provided as needed to ensure safe public access to this facility and along Skyline Boulevard during the tree felling and other construction activities involving the use of heavy construction equipment (e.g., trail construction and deconstruction, removal of dirt mounds).

4.15 TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a) **Less than Significant with Mitigation Incorporated.** As a restoration / research project the proposed activities do not include any proposals to construct infrastructure, facilities or permanent structures that would cause an increase in the number of visitors at the park and a related increase in the vehicular trips and traffic. Dunn Trail, which would serve as the primary access for the tree removal work, is a 10 to 12-foot wide dirt road on which unauthorized motor vehicles are prohibited. Moreover, all project activities would be confined within the boundaries of the park and would not severely restrict access to or block any major public road.

The site preparation work would include the use of heavy equipment for: 1) tree removal and chipping activities; and 2) minor earth moving associated with decommissioning, repairing and constructing trails and removal of dirt mounds. These activities may result in temporary circulation impacts over a period of approximately one to three months per year in late summer (August-October) over the course of three to four years as tree logs, chipped

materials, and small quantities of soil and debris are carried off-site. It is estimated that the exported material would amount to approximately 65 cubic yards resulting in 45 to 65 truck trips over a one to three month period during the course of three to four years depending on how the materials are prepared for transport to an off-site location. These are the only activities that would involve a concentrated use of heavy equipment transportation and these disruptions would be short term in nature and access along Skyline Boulevard would continue to be permitted under the control of a flagger. Delivery of imported materials (e.g., sheep, fire equipment) would amount to a small number of trips that would occur intermittently over the course of several years as a part of normal District parks operations. Therefore, implementation of the Plan would not cause a long term increase in traffic which would be substantial in relation to the existing traffic load and capacity of the street system. Mitigations **AIR -1** and **TRAF-1** would reduce short-term transportation/ traffic impacts to a less than significant level.

MITIGATION TRAF-1: Traffic control would be the sole responsibility of the Contractor. A lookout shall be posted on all roads and trails to ensure the safety of park users during all felling operations. All traffic control measures required by the City of Oakland for road closure shall be adhered to as a condition of this project including at a minimum:

- Hours of work shall be Monday through Friday, 8:00 a.m. until 5:00 p.m. Requests to work off-hours, on weekends and District holidays shall be at the discretion of the District Representative. Normal flow of traffic shall not be hindered between 7:30 a.m. and 9:00 a.m., nor shall traffic be hindered between 3:00 p.m. and 5:00 p.m.
- Flaggers shall wear highly visible orange, yellow-green, or fluorescent-colored garments and shall use advance warning signs, cones, and STOP/SLOW paddles.
- No existing roadways or fire roads shall be altered, except as pre-approved by District Representative in the field, as needed for equipment to access the project site.
- Heavy equipment shall be stored on park property for the one to three month seasonal duration of the project at a location pre-determined by the District Representative and the contractor.

- b) **No Impact.** Per 3.15-a discussion above, the impact on congestion resulting from project-generated vehicles on normal traffic on the Interstates or surface roads would be minimal and have no impact on the acceptable Level of Service for this area. **Mitigation:** None required.
- c) **No Impact.** Implementation of the Plan would not result in a change in air traffic patterns. **Mitigation:** None required.
- d) **Less than Significant with Mitigation Incorporated.** As noted in 3.15-a discussion above, the project does not include any proposals to change the design of roadways, intersections or parking areas, and does not include the construction of any infrastructure, facilities or permanent structures. Implementation of the Plan may result in minor temporary circulation impacts while equipment and personnel are transported to and from the site however, these disruptions would be short term in nature.

All activities associated with the project would occur within the boundaries of the serpentine prairie within Redwood Regional Park and the work would not create or contain any design features (e.g., sharp curves or a dangerous intersection) that would substantially increase hazards. Moreover, safety precautions would be incorporated into the project including, but not limited to: 1) the use of flaggers on the roadway to direct traffic; and 2) staff monitoring to ensure visitors do not enter the construction site in order to minimize interactions between the public and the construction activities. Mitigation **TRAF-1** would ensure that these safety precautions are put in

place throughout the duration of construction activities thereby reducing potential conflicts between construction activities and trail users and public vehicle use along Skyline Boulevard to a less than significant level.

- e) **Less than Significant with Mitigation Incorporated.** Implementation of the project would not substantially alter roads or other infrastructure used or identified as emergency access routes. Work associated with the proposed project would not substantially restrict access to or block any public road during weekdays. Weekends, the project site would be open to the public and access would be provided at the Richard C. Trudeau Center parking lot and along Skyline Boulevard. Most areas within the park would remain open to the public during project activities, with intermittent and temporary traffic interruptions along Skyline Boulevard as described above. With the implementation of Mitigation **TRAFF-1** impacts to emergency access would be reduced to less than significant.
- f) **Less than Significant.** The project does not include uses that would directly increase the amount of visitors to the study area. Project activities would generate a temporary demand for construction worker vehicle parking. This parking demand would not be substantial and would likely be accommodated in the staging/sorting area and at the Richard C. Trudeau Center parking lot. **Mitigation:** None required.
- g) **No Impact.** The site preparation and restoration activities identified in the serpentine prairie Restoration Plan would not conflict with any adopted policies, plans, or programs that support alternative transportation. **Mitigation:** None required.

4.16 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a) **No Impact.** Redwood Regional Park is within jurisdiction of the San Francisco Bay Area Regional Water Quality Control Board (RWQCB). Implementation of the project would not result in the construction of any new permanent structures that would generate wastewater or require wastewater treatment. Therefore, implementation of the project would not exceed wastewater treatment requirements of the San Francisco Bay Area RWQCB. **Mitigation:** None required.
- b) **No Impact.** The proposed project contains no elements that would require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. The strategies proposed under the restoration plan would not require large amounts of water or produce large amounts of wastewater. The proposed restoration activities would not require irrigation or construction of facilities or uses that would use a large amount of water. Use of heavy equipment and implementation of prescribed burns, which would be contained to small experimental plots, would only require small volumes of water. This intermittent, short term water usage would be for short duration that would occur only during the periods of construction

and burn activities. Therefore, implementation of the project would not require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities. **Mitigation:** None required.

- c) **No Impact.** No new storm water drainage facilities or expansion of existing facilities, structures or impervious surfaces would be part of the proposed project. The project would include minor drainage improvements focused on preventing wet areas from forming on existing trails in the winter and reducing water flows that could exacerbate erosion within the project site. These improvements would not alter existing drainage patterns or require the expansion of any facilities. All improvements would contain storm water runoff on-site. As such, the project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities. **Mitigation:** None required.
- d) **No Impact.** The proposed project would not require new or expanded water supply entitlements. Current supply sources are adequate for existing demands associated with the proposed project, and projected future use; therefore, the proposed project would have no impact on water supplies. **Mitigation:** None required.
- e) **No Impact.** The proposed project would not affect the capacity of any wastewater treatment provider in any way. See explanation 3.16.a above. **Mitigation:** None required.
- f, g) **Less than Significant with Mitigation.** The long term volume of waste generated from existing recreation and training center uses are expected to remain static as visitor use is not anticipated to expand as a result of the restoration/research project. Over the short term, the proposed project would include the removal of up to approximately 500 trees from the project. This would occur over approximately one to three month period in late summer (August-October) over three to four years with the Phase I activities resulting in the removal of approximately 57 mature trees and 50 seedlings and sapplings.

Implementation of the proposed project would include similar waste generation rates to those already realized by management efforts undertaken by EBRPD and its contractors. The tree materials would be removed as tree logs and bark mulch and tree duff. These activities would result in approximately 45 to 65 truck loads [or 650 cubic yards] of tree materials over the course of a three to four year period. The majority of this waste would be considered green wastes, including wood chips, felled or fallen branches, and other types of duff.

Earth moving activities would involve minor trail construction, and removal of dirt mounds and soil scarification to ready soils for seeding with native seeds collected from the site. These earth moving activities would involve minor soil disturbance and may involve transport of small quantities of soil and debris off-site.

Materials collected and removed under the contract would become the property of the contractor upon collection and would be disposed of off site. District contractors typically dispose of green wastes at area-wide landfills. Alameda County's construction and demolition (C&D) ordinance (effective July 1, 2003) requires at least seventy-five percent of the asphalt, concrete, and earth debris (e.g., debris includes trees, stumps, earth, and rock from the clearing of construction sites) generated by the project to be diverted from landfill via reuse or recycling (Chapter 4.38 Construction Debris Management and Green Building Practices). All material from declared host trees (Toyon, coast live oak, coast redwood and California bay laurel) that are known to carry the fungus *Phytophthora ramorum* which causes sudden oak death (SOD), would be required to be disposed of within Alameda and Contra Costa Counties per the California Department of Food

and Agriculture 455.1 Plant Quarantine Manual 09-06-07 for oak mortality disease control (CDFA 2007). Similarly, all material from declared host trees (acacias, oaks, pines, redwoods, eucalyptus) that are known to serve as a food source for the *Epiphyas postvittana*, Light Brown Apple Moth (LBAM) would be required to be disposed of within the quarantine area of Alameda County pursuant to California Code of Regulations 3434 and the Federal Domestic Quarantine Order *Epiphyas postvittana*, Light Brown Apple Moth DA-2007-18. Additionally, the District and the contractor may be subject to further CDFa stipulations upon issuance of quarantine compliance agreements for both SOD and LBAM.

The project activities would result in the removal of approximately 650 cubic yards of timber, plant materials and soil and debris to existing area composting and recycling facilities over a three to four year period. Because the disposal materials would be comprised primarily of green, recycleable and compostable waste, the project would not result in increases to solid waste disposal needs exceeding the existing permitted capacity of receiving landfills; thus any potential impacts to landfill capacity resulting from implementation of the project would be less than significant.

It should be noted that as of 2000 Alameda County's Altamont Landfill & Resource Recovery located at 10840 Altamont Pass Road in Livermore CA 94550 reported an estimated remaining capacity of 45,720 million cubic yards (73.7 percent of total landfill capacity) with an estimated closure date of Jan 2029]. This estimate of remaining capacities indicates that available capacities are also sufficiently high to accommodate any minor disposal needs of EBRPD's contractors when removing materials other than green waste that could be required to support the prairie restoration activities,

(<http://www.ciwm.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=1&FACID=01-AA-0009>-Accessed 21 April 2009)

Implementation of Mitigations **UTL-1** and **UTL-2** would ensure that the Contractor is acting in accordance with federal, state, and local statutes and regulations pertaining to solid waste and SOD and LBAM quarantine compliance agreements.

MITIGATION UTL-1: All cut trees and associated slash and woody debris (greater than 1.5-inch diameter or 3 feet in length), soil and debris shall be removed and disposed of offsite by the contractor in a legal manner at a site approved by the District. The contractor shall be responsible for making all arrangements for the disposal of such materials in a manner that shall comply with federal, state, and local statutes and regulations pertaining to solid waste, green waste and SOD and LBAM quarantine compliance agreements.

MITIGATION UTL-2: All tree felling machinery and equipment including, but not limited to trucks, tree pruning and removal equipment, chipping machinery, shall be prohibited from moving from the project area until the machinery and equipment has been cleaned and treated to the satisfaction of the District's representative.

3.17 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a) **Less than Significant with Mitigation.** Potentially significant adverse impacts to the natural environment resulting from the proposed project and related activities were evaluated. The proposed project would involve activities in and near sensitive habitats that contain a diverse array of plant and wildlife species, including some endangered, threatened, and rare species (e.g., Presidio clarkia, Alameda whipsnake). The project involves the implementation of a serpentine prairie restoration plan. This plan includes strategies for enhancing ecological values for plant and wildlife habitat. The resource management strategies included in the Plan are intended to result in long term beneficial effects on the habitat of plant and wildlife species, populations and communities, including special-status species. The locally historic equestrian area formerly located within the area of the project site has been previously documented by the District and the tradition of equestrian use in the area is promoted with the availability of the area's trails and equestrian arena. The proposed project could potentially affect unknown prehistoric resources; however, with the implementation of the previously mentioned mitigation measures, impacts to unknown cultural resources would be reduced to a less than significant level. With full implementation of all the aforementioned mitigation measures, potential adverse project-related impacts would be reduced to a less than significant level and the overall serpentine habitat would benefit.
- b) **Less than Significant.** Several of the impacts described as baseline conditions in the *Serpentine Prairie Restoration Plan for Redwood Regional Park* have had and will continue to have adverse cumulative effects on the Presidio Clarkia and Alameda whipsnake in the project vicinity such as

loss of habitat to development, atmospheric nitrogen deposition, development of recreational trails and their use, invasion of non-native species, increase in urban predators, and fire suppression. However, the purpose of the *Serpentine Prairie Restoration Plan for Redwood Regional Park* is to restore the vitality and botanical diversity of the serpentine prairie, manage the site to promote survival of special status species associated with the prairie, and to provide for the enjoyment and appreciation of the park users. This plan would have beneficial impacts on Presidio Clarkia and Alameda whipsnake with the implementation of a number of adaptive management experiments that are aimed at: promoting /expanding native plant composition, suppressing non-native weeds, decreasing the likelihood of catastrophic burn, and increasing acreage of available habitat through the elimination of the dense canopy cover. No additional projects other than routine maintenance are planned for the proposed project area in the foreseeable future. Impacts from other known projects do not overlap with potential impacts from the proposed project; therefore, the project would not have impacts that are cumulatively considerable.

- d) **Less than Significant with Mitigation.** Environmental effects from the proposed project would generally not have substantial adverse effects on humans. However, possible impacts from construction accidents, noise, and other safety hazards do exist. With the incorporation and implementation of the proposed mitigation measures, impacts to humans from the proposed project would be reduced to less than significant.

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B. REFERENCES

Alameda County, *Alameda County General Ordinance Code Title 6, Section 40.430*, January 2008

Association of Bay Area Governments, *Liquefaction Map*, March 2007

California Department of Conservation, Division of Land Resource Protection, *Alameda County Important Farmland, 1998, 1999*

California Department of Food and Agriculture, *California Department of Food and Agriculture 455.1 Plant Quarantine Manual 09-06-07 for Oak Mortality Disease Control*, 2007

California Integrated Waste Management Board, *Active Landfills Profile for Vasco Road Sanitary Landfill (01-AA-0010)*. <http://www.ciwmb.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=7&FACID=01-AA-0010>, Accessed April 9, 2008

Cal-IPC California Invasive Plant Council, www.cal-ipc.org/, Accessed July 18, 2008

Department of Toxic Substances Control (DTSC), *Hazardous Waste and Substances Site List - Site Cleanup (Cortese List)*, Accessed May 8, 2008

East Bay Regional Park District, *1977 Master Plan* (Note that the Master Plan Map was updated in 2007), December 17, 1997

East Bay Regional Park District Planning, Stewardship and GIS Services Department, *East Bay Regional Park District, Cultural Resources Site Atlas*, June 2004

East Bay Regional Park District Planning, Stewardship and GIS Services Department, *Serpentine Prairie Restoration Plan Redwood Regional Park*, April 2008

East Bay Regional Park District, *Serpentine Prairie Tree Cutting Project- Redwood Regional Park Technical Specifications*, April 21, 2008

East Bay Regional Park District, *Pest Management Guidelines*

East Bay Regional Park District, Planning and Design Department, *Redwood Regional Park Resource Analysis, Resolution No: 1971-9-175*, Adopted September 16, 1975, Revised October 1977

East Bay Regional Park District, *Land Use Development Plan Environmental Impact Report, Resolution No: 1977-08-226*, Adopted August 2, 1977

Federal Emergency Management Agency *Flood Insurance Rate Map Contra Costa County, California Unincorporated Areas, Community Panel Number 060025 0425B*, July 16, 1987

Peek, Kenneth, Alameda County Department of Agriculture, E-mail Memo: *SOD info for Nancy Brownfield.doc; ExhibitA.pdf; ExhibitE.pdf; ExhibitH.pdf; Compliance Agreement Master w Ala Co info for 2008.DOC*, June 9, 2008

R.W. Grayer, *Geology Map and Map Database of Oakland Metropolitan Area, Alameda, Contra Costa and San Francisco Counties*, 2000

Showers, Mary Ann, Lead Botanist, Habitat Conservation Branch, California Department of Fish and Game, Correspondence Re: *Draft Serpentine Prairie Restoration Plan Redwood Regional Park, Alameda County*, May 30, 2007

United States Department of the Interior, Fish and Wildlife Service, *Draft Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area*, February 1998

United States Department of the Interior, Fish and Wildlife Service, *Formal Consultation on East Bay Regional Park District's Fire Mitigation Projects, FEMA-919-DR-CA, HMGP#919-515-24, Alameda California*, August 14, 2001

URS Corporation, for Federal Emergency Management Agency Region IX, *Final Environmental Assessment East Bay Regional Park District Vegetation Management Project Alameda and Contra Costa Counties, California, HMGP#919-515-24*, April 2003

Wentworth, Carl M., Graham, Scott E., Pike, Richard J., Beaukelman, Gregg S., Ramsy, David W., and Barron, Andrew D., *Summary Distribution of Slides and Earth Flows in Alameda County, U.S. Department of the Interior, U.S. Geological Survey*, 1997, <http://pubs.usgs.gov/of/1997/of97-74s/al-sef.pdf>, accessed May 28, 2008

www.cdfa.ca.gov/phpps/pdep/lbam/lbam_main.html - accessed 7 April 2009

www.ciwmb.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=1&FACID=01-AA-0009 - Accessed 21 April 2009

www.co.alameda.ca.us/ - Summary of oak tree retention/preservation provisions- accessed 4 April 2009

www.firecenter.berkeley.edu/fhsz/ - Accessed 4 August 2008

www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php - Accessed 4 August 2008

www.oaklandpw.com/page_551.aspx - accessed 4 April 2009

APPENDIX A: AN ANNOTATED LIST OF PLANTS OF THE SERPENTINE PRAIRIE

82: X = reported on serpentine prairie 1979-1982 in 1982's A Flora of Redwood Regional Park by K. Culligan

90: X = reported on serpentine prairie in 1990 CNPS survey

91: X = reported on serpentine prairie in 1991 CNPS survey

07: X = added to serpentine prairie list during 2007 survey by W. Legard

Scientific Name: According to The Jepson Manual, Higher Plants of California

Common Name: According to various local references

Family: Scientific family name without the -aceae ending; ie. Aceraceae = Acer-

F-C: Federal - California state status according to the California State CNPS online (7-9-07); FE = Federal Endangered, CE = California Endangered

List: California state CNPS status as of 7-9-07 (online): 1B = Rare, threatened or endangered in Calif., 3 = Review List, 4 = Watch List

0.1 = Seriously endangered in California, 0.2 = Fairly endangered in California

U: Unusual rank according to the East Bay Chapter of the California Native Plant Society, November 2006:

*A=Statewide listed rare; A1=2 East Bay regions or less; A1X=extinct/rare; A2=3-5 regions; B=6-9 regions; C=watch list

NL: Native/Introduced: n = native, i = introduced + Longevity: a = annual, b = biennial, p=perennial, or a combination

Notes: Abundance, location, and collection date notes from the 1979-82 (K. Culligan), 1990 (CNPS) and 1991 (CNPS) surveys

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X				<i>Acacia baileyana</i>	Cootamundra Wartle	Fab-			ip	5/19/90: Prairie.	
		?		<i>Acacia dealbata</i>	Cootamundra Wartle	Fab-			ip		
X				<i>Acacia melanoxylon</i>	Blackwood Acacia	Fab-			ip	5/19/90: Prairie.	
X				<i>Acaena pinnatifida</i> var. <i>californica</i>	California Acaena	Ros-			C	np	
X	X	X		<i>Achillea millefolium</i>	Yarrow	Aster-			np	5/19/90: Prairie. 4/81: Very common in grasslands throughout the park. Serpentine grassland.	
X	X			<i>Achyrochaena mollis</i>	Blow Wives	Aster-			na	5/19/90: Prairie.	
X				<i>Agoseris apargioides</i> var. <i>apargioides</i>	Seaside Dandelion	Aster-			A1	np 5/81: Common, serpentine grassland.	
X				<i>Agoseris grandiflora</i>	Large-flower Native Dandelion	Aster-			np	5/19/90: Prairie. 5/81: Common. Grassy, open slopes. Above Golden Spike Trail just south of Piedmont Stables.	
X				<i>Agoseris heterophylla</i>	Annual Native Dandelion	Aster-			C	na 4/81: Occasional. Dry, rocky serpentine outcrops.	
X				<i>Agoseris retrorsa</i>	Spearleaf Native Dandelion	Aster-			B	np 6/2/91: Vouchered.	
X				<i>Agrostis pallens</i>	Dune Bent Grass	Po-			C	np	
X				<i>Aira caryophylla</i>	Silver European Hair Grass	Po-			ia	5/19/90: Sandstone.	
X				<i>Allium falciifolium</i>	Sickle-leaf Onion	Lili-			A2	np 5/19/90: Prairie. 6/2/91: approx. 20 plants flowering. Trail on ridge S. of headquarters, about 3/4 way to corral, E. facing slope on E. side of trail, about 20 ft. down from trail. About 30-50 ft. SW (uphill + towards corral) from 2 cypresses and a redwood. In grassland - slightly barren area.	
	X			<i>Anagallis arvensis</i>	Scarlet Pimpernel	Primul-			ia		
X				<i>Anaphalis margaritacea</i>	Pearly Everlasting	Aster-			np	5/19/90: Sandstone.	

Thursday, September 27, 2007

Appendix A: Serpentine Prairie Plant List - Survey Results from 1979-82, 1990, 1991 plus 2007 additions

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82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X				<i>Aphanes occidentalis</i>	Lady's Mantle	Ros-					na 4/81: Common on openings in grasslands throughout the park. Serpentine grassland.
X				<i>Artemisia californica</i>	California Sagebrush	Aster-					up 5/19/90: Sandstone. 8/90: Common on dry, usually south or west facing brushy slopes. Brushy slope below Dunn Trail 1/3 mile north of park headquarters.
X				<i>Artemisia douglasiana</i>	California Mugwort	Aster-					up 5/19/90: Prairie.
?				<i>Aster radulinus</i>	Broadleaf Aster	Aster-					up 5/19/90: Creek
X				<i>Astragalus gambelianus</i>	Gambel/Little Bill Milkvetch	Fab-					na 4/82: Common but apparently only on serpentine. Dry rocky serpentine outcrop near park headquarters.
X	X			<i>Avena barbata</i>	Slender Wild Oat	Po-					ia 5/19/92: Creek.
X	X			<i>Baccharis pilularis</i>	Coyote Bush	Aster-					up 5/19/92: Prairie.
X	X			<i>Brodiaea elegans ssp. elegans</i>	Harvest / Elegant Brodiaea	Lili-					up 5/81: Fairly common on grassy slopes and ridge tops. Serpentine grassland.
X	X			<i>Bromus carinatus var. carinatus</i>	California Brome	Po-					up 4/81: Common on dry, open sites. Serpentine grassland.
X	X			<i>Bromus diandrus</i>	Ripgut Brome	Po-					ia 5/19/91: Sandstone.
X				<i>Bromus hordeaceus</i>	Soft Brome	Po-					ia 5/19/91: Creek.
X	X			<i>Bromus japonicus</i>	Japanese Brome	Po-					ia 5/19/90: Prairie. 4/81: Common. Knoll below Cream Cup Corners, serpentine grassland.
	X			<i>Bromus madritensis ssp. madritensis</i>	Spanish Brome	Po-					ia
X				<i>Bromus madritensis ssp. rubens</i>	Red Foxtail Brome	Po-					ia 5/19/90: Prairie + Sandstone.
X	X			<i>Calandrinia ciliata</i>	Magenta Red Maids	Portulac-					na 5/19/90: Prairie. 3/81: Common on dry benches and outcrops of the serpentine grassland. Near park headquarters.
X	X			<i>Calochortus luteus</i>	Yellow Mariposa Lily	Lili-					C up 5/19/90: Prairie. 5/81: Common, serpentine grassland. Occasional on open, grassy sites along the ridges. Serpentine grassland below Hunt Field.
X	X			<i>Calycadenia multiglandulosa</i>	Sticky Rosinweed	Aster-					Al na 8/80: Rare. Serpentine talus behind park headquarters. 7/81: Rare. Dry serpentine outcrop near Hunt King. 6/2/91: 2 populations. (1) 800 vegetative plants, above west end of corral, along road. (2) 83 vegetative plants on serpentine batten near seep on trail going NW from corral along E. slope.
X	X			<i>Calystegia subcaulis ssp. subcaulis</i>	Shortstem Morning Glory	Convolvul-					up 5/19/91: Creek. 5/81: Common, serpentine grassland.
	X			<i>Carduus pycnocephalus</i>	Italian Thistle	Aster-					ia
?				<i>Carex barbae</i>	Santa Barbara Sedge	Cypet-					B up 5/19/90: Creek.
X				<i>Carex serratodens</i>	Bifid Sedge	Cypet-					B up
X				<i>Castilleja densiflora ssp. densiflora</i>	Common Owl's Clover	Scrophulari-					C na
X	X			<i>Centaurea melitensis</i>	Tocotate	Aster-					ia 5/19/90: Sandstone. 5/81: Common. Grasslands and disturbed sites. Serpentine grassland.

82	90	91	07	Scientific Name	Common Names	Family	F-C	List U	ML	Notes
X	X	X		<i>Centaurea solstitialis</i>	Yellow Star Thistle	Aster-				ia 5/19/90: Creek + Prairie. 8/80: Very common on disturbed sites, trailides etc. Horse trail through serpentine grassland.
X				<i>Centaureum muhlenbergii</i>	Monterey Centaury	Gentian-	C	nab		6/2/91: None seen this year by seep at bottom of serpentine barren.
X				<i>Chamomilla suaveolens</i>	Pineapple Weed	Aster-				ia
X	X	X		<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	Common Soap Plant	Lili-		np		5/19/90: Prairie. 5/81: Common throughout the park on dry open hills and openings in brush and woods. Serpentine grassland.
X				<i>Cirsium quercetorum</i>	Brownie Thistle	Aster-	A2	np		1991: reported by Jeff Greenhouse
X				<i>Cirsium</i> sp.	Thistle	Aster-				5/19/90: Creek.
X				<i>Cirsium vulgare</i>	Bull Thistle	Aster-				ib
X	X			<i>Clarkia franciscana</i>	Presidio Clarkia	Onagr-	FE-CE	IB.1	*A1	na 5/19/90: Prairie. 5/81: Extremely common throughout the serpentine grassland especially on northeast facing slopes. Particularly abundant on and about gravelly outcrops. Previously known only from the Presidio of San Francisco and first discovered in 1979, this plant probably does not occur naturally here. The population appears to be quite stable at this location and at this time is considerably larger than the Presidio populations. Serpentine outcrops behind park headquarters. 6/2/91: 4,800 plants, many locations.
X				<i>Clarkia rubicunda</i>	Ruby Chalice Clarkia	Onagr-				na
X				<i>Claytonia exigua</i> ssp. <i>exigua</i>	Common Pale Claytonia	Portulac-	C	na		3/81: Common. Moist serpentine outcrops and banks. Occasional in the serpentine grassland. Serpentine talus about a small spring. 3/82: Steep mossy trail cut, Dunn Trail.
X	X	X		<i>Claytonia perfoliata</i> ssp. ?	Miner's Lettuce	Portulac-		na		5/19/90: Creek. 3/81: Around a spring in the serpentine grassland.
X				<i>Conium maculatum</i>	Poison Hemlock	Api-		ib		5/19/90: Creek.
X				<i>Corallorhiza maculata</i>	Spotted Coralroot	Orchid-		np		5/19/90: Redwood.
X	X	X		<i>Cortaderia selloana</i>	Smooth Pampas Grass	Po-		ip		5/19/90: Creek. 8/82: Common. Escape from cultivation and becoming widely established within the park. Serpentine talus slope near Hunt Field.
X				<i>Crassula connata</i>	Sand Pygmy Weed	Crassul-		na		3/81: Common on open, dry, often rocky sites, especially within serpentine grassland. Slope above Hunt Field.
X	X	X		<i>Cupressus macrocarpa</i>	Monterey Cypress	Cupress-		np		5/19/90: Prairie. 8/82: Intersection of Skyline Blvd. and Joaquin Miller Rd.
X				<i>Cynodon dactylon</i>	Bermuda Grass	Po-		ip		
X				<i>Cynosurus echinatus</i>	Hedgehog Dogtail Grass	Po-		ia		5/19/90: Sandstone.
X	X			<i>Danthonia californica</i> var. <i>californica</i>	California Oat Grass	Po-		C	np	5/19/90: Creek.

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes	
X				<i>Daucus pusillus</i>	Rattlesnake Weed	Api-			na			
X	X			<i>Dichelostemma capitatum ssp. capitatum</i>	Blue Dicks	Lili-	np	5/19/90:	Prairie.	4/81:	Common. Serpentine grassland and grassy openings along the ridges. Serpentine grassland.	
X				<i>Dichelostemma congestum</i>	Ookow	Lili-	np	5/19/90:	Prairie.			
X				<i>Disporum hookeri</i>	Hooker Fairy Bells	Lili-	C	np	5/19/90:	Redwood.		
X				<i>Dryopteris arguta</i>	Coastal Wood Fern	Dryopterid-	np	5/19/90:	Creek.			
X	X			<i>Elymus glaucus ssp. glaucus</i>	Blue Wild Rye	Po-	np	5/19/90:	Prairie.			
X	X			<i>Elymus multisetus</i>	Big Squirreltail	Po-	C	np	5/19/90:	Prairie.	5/81: Common. Dry rocky slopes and disturbed sites. Serpentine outcrop.	
X	X			<i>Elymus trachycaulus ssp. trachycaulus</i>	Slender Wheatgrass	Po-	B	np	5/19/90:	Prairie.		
X				<i>Epilobium minutum</i>	Chaparral Willowherb	Onagr-	na					
X				<i>Equisetum arvense</i>	Common Horsetail	Equiset-	np	5/19/90:	Creek.			
X	X			<i>Eriogonum luteolum var. caninum</i>	Tiburon Buckwheat	Polygon-	3.2	*A1	na	5/19/90:	Prairie.	8/80: Common but entirely restricted to serpentine outcrops and immediately surrounding grasslands. This is the only known East Bay location for this rather rare and very restricted serpentine endemic. Bare serpentine outcrop, north slope.
X				<i>Eriogonum nudum var. ?</i>	Naked-stem Buckwheat	Polygon-	np	5/19/90:	Sandstone.			
X				<i>Eriogonum nudum var. auriculatum</i>	Curl-leaf Eared Buckwheat	Polygon-	A1	np	8/80:	Common on dry, rocky slopes and banks. Rocky, serpentine cliff above Dunn trail, Aug 1980.		
X	X			<i>Eriophyllum confertiflorum var. confertiflorum</i>	Golden Yarrow	Aster-	np	5/19/90:	Creek.			
X				<i>Erodium botrys</i>	Long-beaked Filaree	Gerani-	ia	5/19/90:	Sandstone.			
X				<i>Erodium cicutarium</i>	Red-stem Filaree	Gerani-	ia					
X	X			<i>Eschscholzia californica</i>	California Poppy	Papaver-	np	5/19/90:	Prairie.	3/81:	Extremely common on grassy, open sites throughout the park. Serpentine grassland.	
X				<i>Eucalyptus globulus</i>	Blue Gum	Myrt-	ip	5/19/90:	Prairie.			
X				<i>Euphorbia peplus</i>	Petty Spurge	Euphorbi-	ia	3/81:	Common on moist disturbed sites. Serpentine grassland near creek.			
X				<i>Festuca arundinacea</i>	Tall Fescue	Po-	ip	5/19/90:	Creek.			
X	X			<i>Festuca idahoensis</i>	Idaho Fescue	Po-	C	np	5/19/90:	Prairie.		
X	X			<i>Festuca rubra</i>	Red Fescue	Po-	B	np	4/82:	Occasional. Moist, usually north facing hillsides. Serpentine grassland.		
X				<i>Festuca rubra</i>	Red Fescue	Po-	B	np				
X	X			<i>Filago californica</i>	California Fluffweed	Aster-	C	na	4/81:	Common. Dry openings and flats. Serpentine grassland.		
X				<i>Fragaria vesca</i>	Woodland Strawberry	Ros-	np	5/19/90:	Creek.			
?				<i>Gallium andrewsii ssp. gatense</i>	Serpentine Bedstraw	Rubi-	4.2	*A2	np	5/19/90:	Almost certainly a bad ID.	

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X				<i>Galium aparine</i>	Goosegrass Bedstraw	Rubi-			na		
X				<i>Galium porrigens</i> var. <i>porrigens</i>	Climbing Bedstraw	Rubi-			np	5/19/90:	Creek.
X	X			<i>Genista monspessulana</i>	French Broom	Fab-			ip	5/19/90:	Creek.
X				<i>Geranium dissectum</i>	Purpletop Cut-leaf Geranium	Gerani-			ia	5/19/90:	Sandstone.
X				<i>Gilia achilleifolia</i> ssp. <i>achilleifolia</i>	California Blue Gilia	Polemoni-	B		na	3/81 + 4/81:	Rare. A single population, serpentine grassland above Cream Cup Corners.
X				<i>Gnaphalium californicum</i>	California Everlasting	Aster-			nb	5/19/90:	Sandstone.
X				<i>Grindelia camporum</i> var. <i>camporum</i>	Great Valley Gumplant	Aster-			np	5/81:	Occasional, serpentine grasslands. Hill 2.
X				<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Hairy Gumplant	Aster-	C		np	5/19/90:	Creek.
X	X			<i>Guillemia lasiophylla</i>	California Mustard	Brassic-			na	4/81:	Common. Serpentine grassland.
X	X	X		<i>Guerrerzia californica</i>	Calif. Matchstick / Matchweed	Aster-	C		np	5/19/90:	Creek. 8/80: Common on south slopes of serpentine grassland and occasional on sandstone outcrops. Previously thought to be a narrow serpentine endemic, it has recently been found growing in abundance on non-serpentine substrates. Serpentine hillside above creek (Hill 2).
X	X	X		<i>Hemizonia congesta</i> ssp. <i>luculaefolia</i>	Hayfield Tarweed	Aster-			np	5/19/90:	Prairie. 5/81: Common. North slopes of serpentine grassland. 8/80: Extremely common. Serpentine grassland.
X				<i>Heracleum lanatum</i>	Cow Parsnip	Api-			np	5/19/90:	Creek.
X				<i>Hespererax sparsiflora</i> var. <i>sparsiflora</i>	Erect Hespererax	Aster-			na	4/82:	Common. Dry, barren serpentine outcrops and surrounding grassland.
X	X			<i>Heteromeles arbutifolia</i>	Toyon	Ros-			np	5/19/90:	Sandstone.
X				<i>Hirschfeldia incana</i>	Shorthead Mustard	Brassic-			ibp	5/19/90:	Sandstone.
X	X	X		<i>Hordeum brachyantherum</i> ssp. <i>brachyantherum</i>	Meadow Barley	Po-			np	5/19/90:	Prairie. 4/82: Occasional. Dry flats and trails. Along Dunn Trail behind park headquarters.
				<i>Hordeum brachyantherum</i> ssp. <i>californicum</i>	California Barley	Po-	B		np	1991:	reported by Jeff Greenhouse.
				<i>Hordeum jubatum</i>	Foxtail Barley	Po-	A2		nap		
X				<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean Barley	Po-			ia	5/81:	Common in waste places. Horse trail through serpentine grassland.
X	X			<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Hare Barley	Po-			ia	5/19/90:	Prairie.
X				<i>Hypochoeris glabra</i>	Smooth Cat's-ear	Aster-			ia	5/19/90:	Sandstone.
X				<i>Hypochoeris radicata</i>	Rough Cat's-ear	Aster-			ip	5/19/90:	Sandstone.
X	X			<i>Juncus bifonius</i> var. <i>bifonius</i>	Toad Rush	Junc-			na	5/81:	A common and cosmopolitan species. Moist places and dried flats throughout the park. Moist ditch and drying horse trail through serpentine grassland below park headquarters.
X				<i>Juncus effusus</i> var. <i>pacificus</i>	Pacific Bog Rush	Junc-			np	5/19/90:	Creek.

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X				<i>Juncus xiphioides</i>	Iris-leaf Rush	Junc-					7/81: Occasional. Moist places, springs, and ditches. Serpentine grassland. Drainage ditch along horse trail.
X	X	X		<i>Koeleria macrantha</i>	June Grass	Po-	C				5/19/90: Prairie. 5/81: Common especially in the serpentine grassland and along the ridges. Serpentine outcrop.
X	X			<i>Lactuca saligna</i>	Lettuce Willow	Aster-					8/80: Common throughout the serpentine grassland.
X	X	X		<i>Lasthenia californica</i>	Goldfields	Aster-					3/81: Common on northeast slopes of serpentine grassland especially in rocky and otherwise rather bare areas. Near Hunt Ring.
X	X			<i>Lepidium nitidum</i> var. <i>nitidum</i>	Threadleaf Peppergrass	Brassic-					5/19/90: Prairie. 2/81: Common. Moist sites, serpentine grassland.
X	X			<i>Leymus triticoides</i>	Wet-meadow Wild Rye	Po-					
X	X	X		<i>Linanthus androsaceus</i>	Pinklobe Linanthus	Polemoni-	C				5/19/90: Creek. 3/81: Common but found only on serpentine outcrops and surrounding grasslands on southwest facing slopes. Serpentine outcrop above Dunn Trail.
X	X	X		<i>Lolium multiflorum</i>	Awnead Italian Rye Grass	Po-					5/19/90: Prairie. 4/81: Extremely common throughout the park. Open slope, disturbed sites, trailsites, etc. Especially common on southeast slopes of the serpentine grasslands.
X				<i>Lolium perenne</i>	Perennial Rye Grass	Po-					
X				<i>Lomatium dasycarpum</i> ssp. <i>dasycarpum</i>	Hog Fennel Biscuit Root	Api-					
X				<i>Lomatium macrocarpum</i>	Sheep Biscuit Root	Api-					4/81 + 5/81: Common throughout the serpentine grassland.
X				<i>Lomatium utriculatum</i>	Spring Gold Biscuit Root	Api-					2/81: Common. Open, grassy slopes and ridges. Serpentine grassland.
X	X			<i>Lonicera hispidula</i> var. <i>vacillans</i>	Hairy Vine Honeysuckle	Caprifoli-					5/19/90: Creek.
X				<i>Lotus humistratus</i>	Colchita	Fab-					
X				<i>Lotus scoparius</i> var. <i>scoparius</i>	Deerweed	Fab-					5/19/90: Sandstone.
X				<i>Lotus wrangelianus</i>	California Lotus	Fab-					
X				<i>Lupinus adsurgens</i>	Drew's silky lupine	Fab-					5/81: Common. Dry grassy slopes. Serpentine Grassland near horse ring.
X	X			<i>Lupinus albifrons</i> var. ?	Blue Bush / Silver Lupine	Fab-					5/19/90: Prairie.
X				<i>Lupinus formosus</i> var. <i>formosus</i>	Summer / Woodland Lupine	Fab-					5/19/90: Sandstone.
X	X			<i>Lupinus microcarpus</i> var. <i>microcarpus</i>	Chick Lupine	Fab-					5/19/90: Creek. 5/81: Occasional, serpentine grassland.
X				<i>Marah fabaceus</i>	Common / California Manroot	Cucurbit-					5/19/90: Creek.
X				<i>Medicago polymorpha</i>	California Bur Clover	Fab-					
X	X			<i>Melica californica</i>	California Melic Grass	Po-	C				5/19/90: Creek. 4/82: Serpentine grassland.
X				<i>Melica imperfecta</i>	Coast Range Melic Grass	Po-					
X	X			<i>Melica torreyana</i>	Torrey Melic Grass	Po-					5/19/90: Creek.

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X				<i>Melilotus indica</i>	Sour Clover	Fab-					iab
X				<i>Microseris acuminata</i>	Sierra Foothill Silverpuffs	Aster-			B	na	
X				<i>Microseris douglasii</i> ssp. <i>douglasii</i>	Douglas Silverpuffs	Aster-				na	
X				<i>Mimulus aurantiacus</i>	Bush Monkey Flower	Scrophulari-				na	5/19/90: Creek.
X				<i>Mimulus douglasii</i>	Mickey Mouse Monkey Flower	Scrophulari-	A2	na		2/82: Rare. Restricted to bare, gravelly serpentine outcrops on south facing slopes. Serpentine outcrops above Dunn Trail near park headquarters.	
X				<i>Mimulus guttatus</i>	Golden Monkey Flower	Scrophulari-			na	5/19/90: Creek. 5/81: Occasional, springs and seeps. Serpentine grassland near the small spring.	
X				<i>Mimuartia douglasii</i>	Douglas Sandwort	Caryophyll-	B	na		4/81: Occasional on dry bare outcrops particularly throughout the serpentine grassland.	
X				<i>Monardella douglasii</i> ssp. <i>douglasii</i>	Douglas Coyotemint	Lami-	A2	na		5/19/90: Sandstone. 6/79: Rare. Restricted to barren, rocky, dry, serpentine outcrops. Behind park headquarters.	
?				<i>Monardella sheltonii</i>	Shelton's Coyotemint	Lami-			na	6/3/90: Reported by CNPS survey but highly suspect.	
X				<i>Monardella villosa</i> ssp. <i>villosa</i>	Common Coyotemint	Lami-			na	5/19/90: Sandstone.	
X				<i>Myrica californica</i>	California Bayberry	Myric-	A2	na		5/19/90: Creek.	
X				<i>Nassella lepida</i>	Foothill Needle Grass	Po-	C	na			
X				<i>Nassella pulchra</i>	Purple Needle Grass	Po-	C	na		5/19/90: Prairie. 5/81: Common especially throughout the Serpentine Grassland where its large clumps dominate the northeast facing slopes. Serpentine grassland.	
X				<i>Oenleria cerasiformis</i>	Oso Berry	Ros-			na	5/19/90: Creek.	
X				<i>Osmorhiza chilensis</i>	Mountain Sweet Cicely	Api-			na	5/19/90: Redwood.	
X				<i>Pellaea andromedifolia</i>	Coffee Fern	Pterid-			na	5/19/90: Creek. 3/81: Fairly common on serpentine outcrops and cliffs on south facing hills.	
X				<i>Pellaea mucronata</i> var. <i>mucronata</i>	Bird's-foot Fern	Pterid-	C	na		5/19/90: Creek.	
X				<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	Goldenback Fern	Pterid-			na	5/19/90: Creek.	
X				<i>Perideridia kelloggii</i>	Kellogg Yampah	Api-			na	5/19/90: Prairie.	
X				<i>Perideridia</i> sp.	Yampah	Api-			na		
X				<i>Phacelia imbricata</i> ssp. <i>imbricata</i>	Rock Phacelia	Hydrophyl-			na	5/19/90: Creek.	
?				<i>Phalaris minor</i>	Little-seed Canary Grass	Po-			ia	5/19/90: Creek.	
X				<i>Picris echioides</i>	Bristly Ox-tongue	Aster-			ab		
X				<i>Pinus coulteri</i>	Coulter Pine	Pin-	A2	na		5/19/90: Creek. 8/82: Several trees planted below Park Headquarters in serpentine grassland.	
X				<i>Pinus radiata</i>	Monterey Pine	Pin-			na	5/19/90: Prairie. 3/82: About park headquarters.	
X				<i>Plantago erecta</i>	California Dwarf Plantain	Plantagin-			na	5/19/90: Prairie. 4/81: Extremely common on dry, open sites throughout the park. Serpentine outcrop 0.5 mi north of park headquarters.	
X				<i>Plantago lanceolata</i>	English Plantain	Plantagin-			ia	5/19/90: Sandstone.	

82	90	91	07	Scientific Name	Common Names	Family	F-C	List	U	NL	Notes
X	X			<i>Platystemon californicus</i>	Cream Cups	Papaver-	na	4/79:	Common, Serpentine Grassland. Cream Cup Corners near park headquarters.		
X				<i>Plectritis macrocera</i>	Longhorn Plectritis	Valerian-	na	3/81 + 4/81:	Rare. Found only on the moist, north slopes of the serpentine grassland. More abundant in wet years.		
X	X			<i>Poa secunda</i> ssp. <i>secunda</i>	One-side Blue Grass	Po-	np	5/81:	Common especially in serpentine grassland.		
X		X		<i>Polygonum arenastrum</i>	Common Yard Knotweed	Polygon-	ia				
				<i>Polypodium californica</i>	Polypody Fern	Polyodi-	np	2/81:	Common on moist banks and among rock outcrops. Some extremely leathery plants growing on rocks below park headquarters were determined to be triploid individuals. Serpentine rock, northeast slope.		
	X			<i>Polygonum monspeliensis</i>	Annual Rabbitfoot Grass	Po-	ia				
	X			<i>Polystichum munifolium</i>	Western Sword Fern	Dryopterid-	np	5/19/90:	Creek.		
	X	X		<i>Pteridium aquilinum</i> var. <i>pubescens</i>	Bracken Fern	Demstaedhi-	np	5/19/90:	Creek.		
	X			<i>Pterostegia drymariaoides</i>	Pink Creeper	Polygon-	na	5/81:	Occasional, usually under shrubs. Below Dunn Trail near a large serpentine outcrop.		
		X		<i>Quercus agrifolia</i> var. <i>agrifolia</i>	Coast Live Oak	Fag-	np				
	X			<i>Quercus wislizenii</i> var. <i>wislizenii</i>	Interior Live Oak	Fag-	np	5/19/90:	Sandstone.		
	X	X		<i>Ranunculus californicus</i>	California Buttercup	Ranuncul-	np	5/19/90:	Creek. 3/81: Common on open grassy sites throughout the park. Serpentine grassland.		
	X			<i>Raphanus sativus</i>	Wild Radish	Brassic-	ia				
	X	X		<i>Rhamnus californica</i> ssp. <i>californica</i>	California Coffeeberry	Rhamn-	np	5/19/90:	Creek.		
		X		<i>Rigiopappus leptocladus</i>	Bristle-head	Aster-	B	na	6/2/91: 500+ plants, mostly in fruit. All along the road on the N. side of corrals.		
	X			<i>Rubus discolor</i>	Himalayan Blackberry	Ros-	ip				
	X			<i>Rubus ursinus</i>	Native California Blackberry	Ros-	np	5/19/90:	Creek.		
	X	X		<i>Rumex acetosella</i>	Sheep Sorrel	Polygon-	ip	5/19/90:	Creek.		
	X			<i>Rumex crispus</i>	Curly Dock	Polygon-	ip	5/81:	Common on disturbed sites. Serpentine grassland below Hunt Field.		
		X		<i>Rumex obtusifolius</i>	Bitter Dock	Polygon-	ip				
	X	X		<i>Rumex pulcher</i>	Fiddle Dock	Polygon-	ip	5/81:	Occasional in waste places. Serpentine grassland below Hunt Field.		
	X			<i>Rumex salicifolius</i> var. <i>transitorius</i>	Ovate Willow Dock	Polygon-	B	np	8/80: Rare. Serpentine grassland near the head of West Fork.		
	X	X		<i>Sambucus mexicana</i>	Blue Elderberry	Caprifoli-	np				
	X	X		<i>Sanicula bipinnatifida</i>	Purple Sanicle	Api-	np	5/19/90:	Creek. 3/81: Common on open, grassy slopes. Serpentine grassland.		
		X		<i>Sanicula crassicaulis</i>	Pacific Woodland Sanicle	Api-	np	5/19/90:	Creek.		

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X	X			<i>Sanicula tuberosa</i>	Turkey Pea / Tuberosus Saucile	Api-	C	up	2/81:	Common but restricted to northeast slopes of the serpentine grassland	
	X			<i>Satureja douglasii</i>	Yerba Buena	Lami-	up	5/19/90:	Creek.		
X				<i>Saxifraga californica</i>	California Saxifrage	Saxifrag-	up	2/81:	Rare. Very moist, often mossy, grassy hillsides. Serpentine grassland around the spring.		
X				<i>Scabiosa atropurpurea</i>	Pincushion	Dipsac-	ia	8/80:	Garden escape. Disturbed site near Hunt King, serpentine grassland		
	X			<i>Scrophularia californica</i> ssp. ?	California Figwort	Scrophulari-	up				
		X		<i>Senecio vulgaris</i>	Common Groundsel	Aster-	ia				
X				<i>Sequoia sempervirens</i>	Coast Redwood	Taxodi-	B	up	5/19/90:	Creek.	
X				<i>Sidalcea malvaeflora</i> ssp. ?	Common Checkerbloom	Malv-	C	up	5/19/90:	Sandstone.	
X	X	X		<i>Silene californica</i>	Indian Pink	Caryophyll-	B	up	5/19/90:	Creek.	
X	X	X		<i>Silene gallica</i>	Windmill Pink	Caryophyll-	ia	5/19/90:	Creek. 4/81: Common weed along trails and on disturbed sites. Especially common on serpentine outcrops.		
X				<i>Silybum marianum</i>	Milk Thistle	Aster-	iab	5/19/90:	Creek.		
X	X			<i>Sisyrinchium bellum</i>	Blue-eyed Grass	Irid-	up	5/19/90:	Prairie		
X				<i>Smitelina racemosa</i>	Fat False Solomon's Seal	Lili-	up	5/19/90:	Redwood.		
X				<i>Solanum americanum</i>	Small-flower Nighthade	Solan-	nap	5/19/90:	Prairie		
X				<i>Sonchus asper</i> ssp. <i>asper</i>	Prickly Sow Thistle	Aster-	ia	5/19/90:	Sandstone. 5/81: Common, waste places. Serpentine grassland.		
X	X			<i>Spergularia bocconii</i>	Boccone Sand Spurry	Caryophyll-	ia				
X		X		<i>Spergularia rubra</i>	Ruby Sand Spurry	Caryophyll-	iap	3/81:	Common on dry, disturbed sites and trails. Dunn Trail near Hunt Ring.		
X	X			<i>Stachys ajugoides</i> var. <i>rigida</i>	Common Rigid Hedge Nettle	Lami-	up	5/19/90:	Creek.		
X				<i>Stellaria media</i>	Common Chickweed	Caryophyll-	ia	5/19/90:	Creek.		
X	X			<i>Stephanomeria virgata</i> ssp. <i>pleurocarpa</i>	Twiggy Wreath Plant	Aster-	C	na	5/19/90:	Creek. 9/80: Fairly common, serpentine grassland especially along trails. Dunn Trail 0.1 mile north of park headquarters.	
X				<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	Bush / Common Snowberry	Caprifoli-	up	5/19/90:	Redwood.		
X	X			<i>Toxicodendron diversilobum</i>	Poison Oak	Anacardi-	up	5/19/90:	Prairie		
X				<i>Tragopogon porrifolius</i>	Purple Salsify	Aster-	ibp	5/19/90:	Creek.		
X				<i>Tridentalis lanifolia</i>	Star Flower	Primul-	C	up	5/19/90:	Redwood.	
	X			<i>Trifolium dubium</i>	Shamrock Clover	Fab-	ia				
	X			<i>Trifolium gracilentum</i> var. <i>gracilentum</i>	Pinpoint Clover	Fab-	na				
	?			<i>Trifolium hirtum</i>	Rose Clover	Fab-	ia	6/2/91:	Questionable ID.		
X				<i>Trifolium microdon</i>	Thimble Clover	Fab-	na	4/82:	Common. Grassy slopes throughout the park. Serpentine grassland behind park headquarters.		

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X				<i>Triphysaria pusilla</i>	Dwarf Owl's Clover	Scrophulari-				ni	
X				<i>Triteleia hyacinthina</i>	White Triteleia	Lili-			C		np 1980: Rare. Serpentine grassland. Seen but not collected.
X	X	X		<i>Triteleia laxa</i>	Ithuriel's Spear	Lili-					np 5/19/90: Prairie. 5/81: Common. Serpentine grassland and open grassy areas along Eastridge and Westridge. Serpentine grassland near park headquarters.
X				<i>Umbellularia californica</i>	California Bay Laurel	Laur-					np 5/19/90: Prairie.
X				<i>Uropappus lindleyi</i>	Silverpuffs	Aster-					na 5/81: Very common, serpentine grassland. 4/81: Fairly common especially in serpentine grassland. Serpentine grassland near park headquarters.
X				<i>Verbena lasiostachys</i> var. <i>scabrada</i>	Robust Vervain	Verben-					np 5/19/90: Redwood.
X				<i>Vicia gigantea</i>	Giant Vetch	Fab-			B		np 5/19/90: Creek.
X				<i>Vicia sativa</i> ssp. <i>nigra</i>	Narrowleaf Vetch	Fab-				ia	
X				<i>Vicia villosa</i> ssp. <i>varia</i>	Winter Vetch	Fab-				iab	5/82: Common and invasive. Serpentine grassland below Hunt Field and behind park headquarters.
X				<i>Vicia villosa</i> ssp. <i>villosa</i>	Hairy Vetch	Fab-				iab	5/81: Rare. Serpentine grassland.
X				<i>Viola pedunculata</i>	Johnny-Jump-Up / Wild Pansy	Viol-			C		np 5/19/90: Sandstone.
X				<i>Vulpia bromoides</i>	Six-weeks Fescue	Po-				ia	4/82: Common. Open slopes throughout the park. Serpentine grassland, Hill 2.
X				<i>Vulpia microstachys</i> var. <i>ciliata</i>	Hairy Fescue	Po-				C	na
X	X	X		<i>Vulpia microstachys</i> var. <i>pauciflora</i>	Few-flower Fescue	Po-					na 5/19/90: Prairie. 5/81: Common but restricted to dry sterile sites, mainly on serpentine. Serpentine outcrop.
				?	Foxtail Fescue	Po-				ia	5/19/90: Sandstone.
				<i>Vulpia myuros</i> var. <i>hirsuta</i>	Rattail Fescue	Po-				ia	
X				<i>Vulpia myuros</i> var. <i>myuros</i>	Giant Chain Fern	Blechn-			C		np 10/80: Rare. Along bank of West Fork, serpentine grassland.
X				<i>Wyethia angustifolia</i>	Narrow-leaf Mule's Ear	Aster-					np 5/19/90: Sandstone.
X				<i>Zigadenus fremontii</i>	Common Star Lily	Lili-					np 5/19/90: Sandstone.