EL CERRITO HILLSIDE NATURAL AREA FIRE HAZARD REDUCTION PLAN
Initial Study / Negative Declaration

May 1, 1994

Prepared for:
City of El Cerrito

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City of El Cerrito

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920492

ESA

CITY OF EL CERRITO
FIRE HAZARD REDUCTION PLAN:
INITIAL STUDY
AND
"MITIGATED" NEGATIVE DECLARATION

1. **Project Title:** Fire Hazard Reduction Plan, El Cerrito Hillside Natural Area

2. **Lead Agency:** City of El Cerrito
   10900 San Pablo Avenue
   El Cerrito, California 94530

3. **Contact Person:** Patrick O'Keefe, Director of Community Development
   (510) 215-4384

4. **Location:** City of El Cerrito, California

5. **Sponsor:** City of El Cerrito, address above

6. **General Plan Designation:** Park and Open Space

7. **Zoning:** F-1 (Open Space Scenic Resources and Recreation)

8. **Project Description:** (see Section II, below)

9. **Other agencies whose approval is required and permits needed:**
   Bay Area Air Quality Management District
   (controlled burning)

10. **Determination:** The City of El Cerrito finds that the proposed project will not have a significant effect on the environment because mitigation measures described in the attached report have been added to the project to reduce any potentially significant impacts to insignificant levels.

    Therefore, the City proposes to adopt a Negative Declaration.

_____ _____
Signature Date

_____ _____
Printed Name For

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I. INTRODUCTION

This combined Initial Study and Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq., §21064.5) to evaluate potential significant impacts of, and identify mitigation measures for, the City's adoption of a Fire Hazard Reduction Plan for the El Cerrito Hillside Natural Area (HNA). The City-owned 90-acre HNA public open space lies in the heart of the City's hillside residential area. (See Figure 1.)

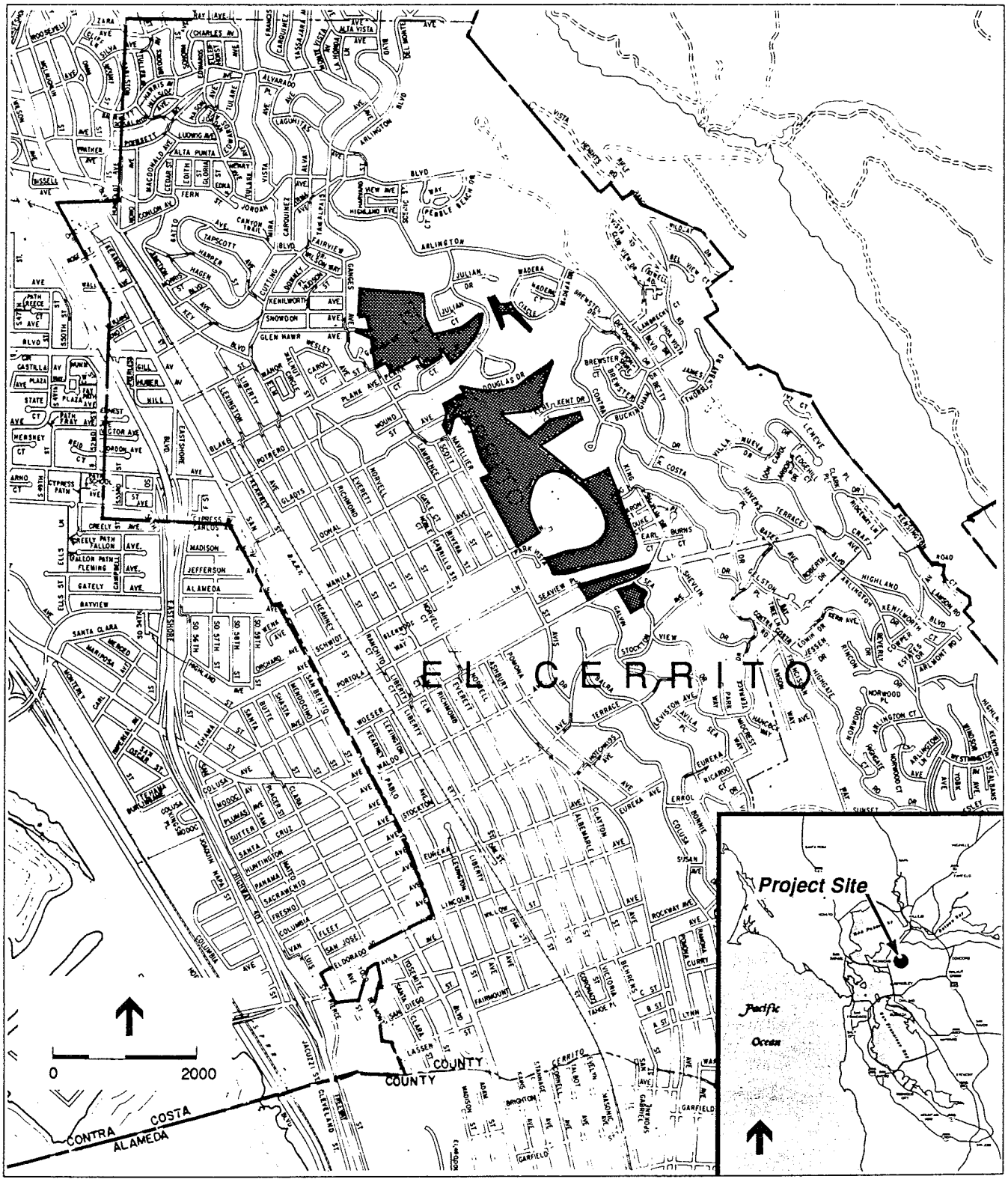
A. PROJECT PURPOSE

The HNA is heavily vegetated and presents a significant fire hazard and liability to the surrounding residential areas and to the City as a whole. For the past several years, the City has carried out routine fire prevention activities, such as annual grassland burning, discing and other vegetative maintenance of fuel breaks, on both publicly and privately owned lands, including the HNA and adjacent properties. These activities can be described as "minor alterations to land," a class of activities that normally are categorically exempt from CEQA (CEQA Guidelines §15304). The City recognized the need to further reduce fuel loads and/ or disrupt fuel continuity periodically and to buffer surrounding residential uses from potential fire hazard internal to the HNA in a more comprehensive manner. The Draft Fire Hazard Reduction Plan is designed to guide the City in implementing these activities in a comprehensive and systematic manner.

B. PROJECT TASKS COMPLETED

In 1987, the City contracted to have a vegetation management plan prepared for the HNA (LSA 1987). This plan provided a good description of the vegetation and habitat types on the site, and also provided preliminary proposals for fire prevention and management. It did not, however, analyze the inherent fire hazard on the site or present recommended fuel modification treatments appropriate to reduce specific types of hazard.

In November of 1992, the City undertook a contract with Environmental Science Associates, Inc. (ESA) to prepare two reports that would culminate in the development of a Fire Hazard



Fire Hazard Reduction Plan and IS / 920492 ■

SOURCE: Environmental Science Associates

Figure 1
Project Location
El Cerrito Hillside Natural Area

Reduction Plan (FHRP) for the HNA, and, subsequently, to subject the FHRP to environmental review, pursuant to CEQA.

The first of these reports was a Fire Hazard Analysis prepared by ESA subconsultants David Sapsis, Ph. C., and Robert Martin, Ph. D., experts in fire science and ecology. The Fire Hazard Analysis addressed the wildland /urban interface which links the HNA and surrounding adjacent residential neighborhoods, and it applied current empirical and modeling methods designed to quantitatively assess the fire hazards within the HNA. The Analysis provided recommendations for an array of fuel modification treatments and on-site infrastructure actions to reduce fire hazard to the HNA and adjacent residences (ESA 1993a).

Following the completion of the FHA, ESA prepared a Preliminary Environmental Assessment (EA) (ESA 1993b) to identify potential environmental impacts that could result from implementation of the recommended treatments within various portions of the HNA. Several issues were identified as requiring further study (geology and soils; sensitive plant species; and endangered, threatened, or sensitive animal species).

The City held an informal public workshop (December 14, 1992) and an interagency meeting (January 26, 1993) to obtain additional input for development of the Fire Hazard Reduction Plan.

On the basis of the Fire Hazard Analysis, the EA, and expression of public and agency concerns, a Draft Fire Hazard Reduction Plan (FHRP) was subsequently prepared by ESA in association with subconsultants and City staff. The Draft FHRP proposes that several fire management techniques be carried out in "management units" within the HNA, and that infrastructure systems (fire roads and water delivery systems) be upgraded for better management of fire potential within the HNA.

Subsequent environmental studies were carried-out, as recommended in the Preliminary Environmental Assessment. A geotechnical site visit was conducted in May, 1993 (GeoResources Consultants 1993). Season-dependent surveys were conducted to determine the presence or absence of rare plant species (June 1993), to identify suitable habitat for Alameda whipsnake (February and June, 1993) (Beeman 1993), and to determine whether the Monarch butterfly uses the site for roosting (December, 1993; January 1994) (Arnold 1993, 1994). The required surveys were completed in January 1994.

C. PURPOSE AND USE OF INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

The use of a Mitigated Negative Declaration is authorized in Public Resources Code §21064.5 (AB 1888, 1993). This combined Initial Study (IS) and Mitigated Negative Declaration is based on the previous reports prepared by LSA (1987) and ESA(1993a, b, and c), on public and agency comment solicited by the City of El Cerrito, and on results of the field surveys. Previous reports are incorporated by reference and summarized where necessary to make the IS/Negative Declaration a "stand-alone" document. The IS/Negative Declaration examines the potentially significant direct and indirect impacts of proposed fuel management techniques and installation of infrastructure facilities described in the FHRP, and presents mitigation measures to reduce all potential impacts to levels of insignificance.

This IS/Negative Declaration has been prepared in accordance with CEQA Guidelines §§15063 (d) and 15071. The IS as presented in this document serves three purposes:

> Enables the City of El Cerrito to modify the project (the HNA Fire Hazard Reduction Plan), mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a Negative Declaration (CEQA Guidelines §15063 (c) (2));
>
> Facilitates environmental assessment early in the design of a project (§15063 (c) (4); (A preliminary environmental assessment based on the IS format was prepared before the FHRP was completed (ESA 1993b).)
>
> Provides documentation of the factual basis for the finding in a Negative Declaration that the project will not have a significant effect on the environment (Guidelines §15063 (c) (5)).

The IS is attached to and supports the Negative Declaration. The CEQA Guidelines do not prescribe the exact format for the IS but do specify certain required information. The required information is found in this document following the Introduction (**Section I**), as follows:

> **Section II**: Description of Project - the proposed location, map, and a summary of the project (FHRP).
>
> **Section III**: Environmental Evaluation - information identifying the project's effects in relation to an Initial Study Environmental Checklist and examination of consistency of the project with existing zoning, plans, and other applicable land use controls. (Note: The Environmental Checklist used herein is included in Proposed Amendments to the State CEQA Guidelines (July 25, 1993), pending adoption by the Resources Agency sometime in 1994. Because the Environmental Checklist format, CEQA Guidelines Appendix I, is advisory, not mandatory, it is acceptable to use this revised, updated, and

improved version, even though the July 1993 draft CEQA Guideline Amendments have not been adopted.)

Section III also incorporates mitigation measures included in the project to avoid potentially significant effects, as required by CEQA Guidelines §15071.

Section IV: Mandatory Findings - provides the finding that the project, after mitigation, will not have a significant effect on the environment.

Section V: References - documents and other sources of information.

Appendix A: Vegetation and Wildlife in the HNA

Appendix B: Field Survey Results

The reader is referred to the Fire Hazard Reduction Plan (ESA 1993c) for a complete project description, and to the El Cerrito Hillside Natural Area Vegetation Management Plan (LSA 1987), the Fire Hazard Analysis (ESA 1992a), and the Preliminary Environmental Assessment (ESAb) for further background information.

D. PUBLIC NOTICE AND REVIEW OF THE IS/NEGATIVE DECLARATION; CITY APPROVAL OF THE FHRP

The City must notify the public of its intention to adopt this Negative Declaration and approve the FHRP, and provide a period of 20 days for public review (PRC §21091 (b) - amended by AB1888, 1993), 30 days if the Negative Declaration is sent to the State Clearinghouse. Following the close of the public review, the City, prior to approving or carrying out the project for which this Negative Declaration is proposed to be adopted, must consider the Negative Declaration, together with any comments that were received (PRC §21091 (f) - amended by AB1888). The City is not obligated to respond to specific public comments in approving the Negative Declaration and the Fire Hazard Reduction Plan. Finally, because the Negative Declaration recommends conditions to mitigate any potentially significant environmental effects, the City shall also adopt a program of monitoring or reporting to ensure that these conditions are fulfilled as the project is implemented (PRC§21081.6).

The minimum processes for notification, public review, consideration and approval of the Negative Declaration, and approval of the project are outlined in CEQA Guidelines §§15072 to 15075 (Notice of Determination). Further public notification and review requirements are contained in the City's own procedures for implementing CEQA.

II. DESCRIPTION OF PROPOSED ACTION

A. PROJECT LOCATION AND GENERAL CONDITIONS

The HNA is located in the City of El Cerrito, Contra Costa County, at the northern end of the Berkeley and Oakland Hills. The 90-acre HNA consists of five units divided by Potrero Avenue, Pacific Gas and Electric Company (PG&E) property maintained for a transmission line, and Moeser Lane. The entire HNA is east of Navellier Street and west of Contra Costa Drive. The majority of the site is north of Moeser Lane. A small 1.3-acre parcel is located south of Moeser Lane at the Corner of Sea View Drive and Moeser Lane. Refer to Figure 1 for the HNA boundaries.

The HNA occupies a portion of a steep slope within San Pablo Ridge, between approximate elevations 180 and 660 feet mean sea level. The south-west corner of the site is an abandoned quarry area, the "floor" of which is now occupied by a recycle facility. The remainder of the HNA is generally covered with a mixture of pine and eucalyptus forest, oak woodland, coastal scrub, and grassland vegetation. It has been disturbed by a variety of human activities, and is surrounded on all sides by residential neighborhoods. The HNA has a number of trails that are used for passive recreation. In addition, the HNA is a visually attractive vegetated area of open space situated within the urban El Cerrito setting, as viewed from numerous short-to-long-range points of view.

B. PROJECT NEED AND DESCRIPTION

The HNA has been the location of many fires over the last 20 years. Most of the burns have originated along the periphery of the park in locations dominated by grass and in areas that are most easily accessed by pedestrians (or unauthorized vehicles) and most heavily travelled. The continuing fire hazard present in and around the HNA, as discussed in the Fire Hazard Analysis and FHRP, resides particularly in fuel complexes occupying steep undeveloped ground, in combination with heavily landscaped surrounding residences.

The City of El Cerrito already has in place a fire suppression system for the HNA and adjacent private lands. It consists of several components:

joint response and mutual aid agreements with neighboring agencies,

fire-fighting equipment and staff at two fire stations,

fire trails within the HNA, accessible to fire-fighting equipment and/or firefighting stafff,

water delivery system within the HNA,

small-scale fuel reductions (fuel breaks) within the HNA, regularly maintained by the City Fire Department,

designation (of the area) by the City of El Cerrito as High Fire Hazard Zone, and adopted Fire Hazard Abatement Ordinance, Article 89,

landscape guidelines and mitigations to minimize fire hazard, for new developments adjacent to the HNA, and

community education and neighborhood disaster preparedness programs.

For a variety of reasons described in the FHRP, the current suppression system is inadequate in the areas of fuel management and on-site infrastructure for both access and water delivery.

The FHRP lays out a range of general fuel modification techniques, and then details specific techniques for designated management units within the HNA (Figures 2 and 3). Among the general techniques described in the FHRP, the City would employ a combination of mechanical (e.g. mowers; "brush hog"; "chip harvester"), hand labor (e.g., loppers; chainsaws), prescribed burning (grasslands and selected understory vegetation and dead litter in groves), and local chemical applications ("Round-up" with or without diesel oil, largely limited to poison oak removal). These would be applied as appropriate in specific management units. These techniques are described in the Draft FHRP, and summarized in Table 1.

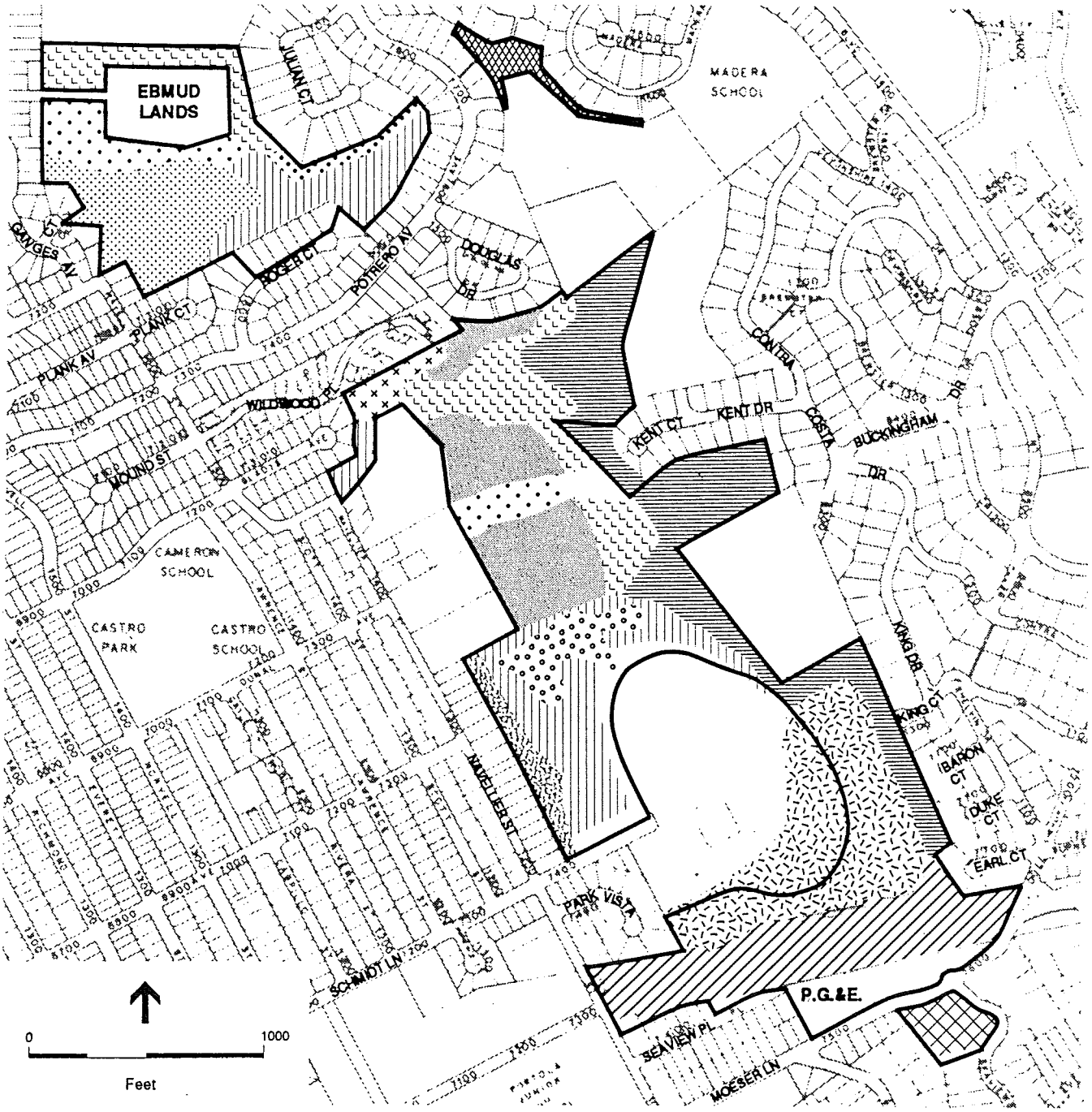
In addition to fuel modification treatments summarized in Table 1, several other management components are recommended in the FHRP, as follows:

The City would continue to create buffer (vegetation-free) zones on both sides of the main north-south fire road that traverses the HNA.

Hand labor would be used on steep slopes to clear shrub systems a minimum of 20 feet on each side of the road.

Riparian areas and oak forest would require only minor treatments.

To replace the inadequate quill water delivery system, a new, hydraulically engineered system with facilities to deliver compressed foam would be installed.

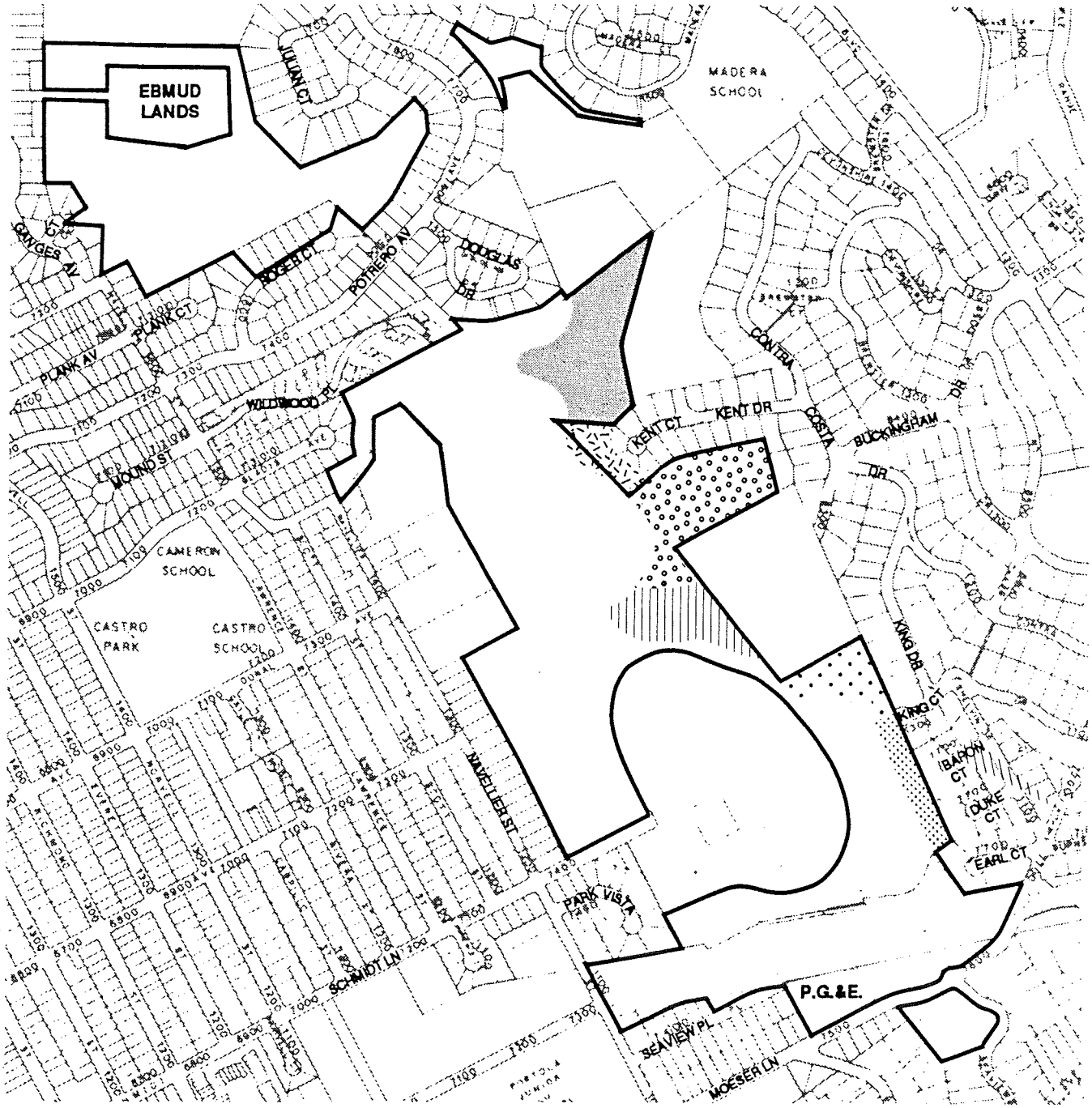


South of Moeser Ln.
North of Moeser Ln.
Madera Connector
Quarry Hill Eucalyptus
Chaparral
Ken Smith Grove
Julian Grove
Wildwood
Grassland Succession
Oak Forest
Oak Woodland
Julian Fuel Break
Lower Fuel Break
Upper Fuel Break

SOURCE: Remar and Environmental Science Associates, Inc.

Fire Hazard Reduction Plan and IS / 920492 ■

Figure 2
Fire Hazard Management Units



SOURCE: Remar and Environmental Science Associates, Inc.

Fire Hazard Reduction Plan and IS / 920492 ■

Figure 3
Fire Hazard Management Units
Upper Fuel Break - Detailed

TABLE 1: SUMMARY OF FIRE HAZARD REDUCTION RECOMMENDATIONS FOR EACH MANAGEMENT UNIT

Management Unit	Recommendation
Wildwood	Prune trees of low hanging material Clear debris and leaf litter
Upper Fuel Break	Combination of hand and mechanical labor to clear a 100 foot buffer from residential structures
Quarry Hill Grove	Broadcast burn during the winter or spring, or Hand removal of debris and low hanging branches
Grassland Succession	Hand removal of low branches, shrubby material, and debris Create a buffer strip where grassland abuts scrub vegetation by mowing or burning
Julian Tree Grove	Broadcast burn during the winter or spring, or Hand removal of debris and low hanging branches
Chaparral	Create physical buffers between scrub and adjacent vegetation communities by hand removal or fire
Lower Fuel Break	Prune woody plants within 20 feet of the upslope side of the road Remove brush by hand from the west side of the road to the junction of private property
Ken Smith Grove	Broadcast burn during the winter or spring, or Remove debris and low hanging branches by hand
Julian Fuel Break	Continue manual fuel modification
Oak Forest	No treatment recommended
Oak Woodland	No treatment recommended
Madera Connector	No treatment recommended
South of Moeser Lane	No treatment recommended
North of Moeser Lane	Manual removal of woody material
Fire Road	Create buffer zones (minimum of 20) on either side of the main fire road
Water Delivery System	Installation of a hydrologically engineered system that delivers compressed air foam
Access Roads	Maintain and expand existing road system
Public Education	Implement a comprehensive public education and facilitation program

Finally, the fire trail system would receive both corrective maintenance and would be extended. Extensions would occur in two areas and improvements in a third area (Figure 4):

(1) In the Kent Drive/Buckingham draw area, the existing fire road would be improved through the Kerr property and extended by cutting a new fire road up through the Buckingham draw and back down to the main lateral fire road traversing the HNA. This will require perfecting the fire road easement across the Kerr property and the back portions of properties at 8336 and 8340 Kent Court.

(2) Off the end of King Drive and extending behind Baron Court, Duke Court, and Earl Court, a new fire road would be cut through the east side of a ravine down to the fire road on the perimeter of the P.G. & E. right of way. This is a steep hill area that may require a road cut through the bottom of the ravine behind Quarry Grove.

(3) The fire road between the main lateral fire road traversing the HNA and the fire road south of the Wildwood draw is steep with very sharp turns; it would be widened and the turn radii expanded in several places to facilitate passage by 4-wheel drive fire apparatus.

The FHRP does not specify the frequency of vegetation treatments, which will vary with both locale and vegetation type and be determined on the basis of a number of criteria influencing potential fire behavior (e.g. fuel weight, height, continuity, contiguity between adjacent fuel types, etc.). For example, grasslands are currently, and would continue to be, burned annually; in contrast, surface fuel reduction and controlled burning within the larger tree groves would occur on a frequency interval of every two to five years, depending on their present condition and the rate of fuel build-up. Using a standard of 18 inches as maximum height of vegetation within fuel breaks, and a general objective of two tons/acre for surface (understory) fuels, vegetation could be cut to approximately six inches without denuding hillsides in the HNA. Working to these standards would dictate, in part, the frequency of necessary treatments.

The seasonal timing of some fuel treatments is indicated in Table 1: e.g., understory burning would occur during the late winter or early spring; grassland burning would continue to occur in late spring or early summer after grass vegetation has "cured"; manual and mechanical treatments could occur at various times of the year, to be determined.

Disposal of vegetation is only incidentally discussed in the FHRP. The City proposes several means to ensure that any removed vegetation will be diverted from landfills, pursuant to the requirements of AB 939: chip and distribute mulch on site (preferred); windrow piles and burn; chip and remove to other areas of the HNA for mulching; remove to other public lands in the City (least preferred).

SOURCE: Adapted by Environmental Science Associates and City of El Cerrito

Figure 4

Existing and Proposed Water Lines and Fire Roads
Hillside Natural Area Fire Hazard Reduction Plan

III. ENVIRONMENTAL EVALUATION

A. INITIAL STUDY FORMAT

The Initial Study evaluation of environmental factors potentially affected by the Fire Hazard Reduction Plan consists of a checklist of questions concerning potentially affected resources or conditions, each with five possible responses, interpreted as shown below:

1. *No impact* (EIR is not required; no mitigation required)
2. *Less Than Significant Impact* (EIR is not required; may be minor impact for which no mitigation is required)
3. *Potentially Significant Unless Mitigated* (Mitigations required; appropriate to prepare Mitigated Negative Declaration)
4. *Potentially Significant Impact* (Either there is potential for significant impact or lead agency may lack information to make finding of insignificance; one or more entries requires preparation of EIR)
5. *Beneficial Impact* (added to the Checklist to account for the project effects that would be clearly beneficial; appropriate to prepare a Mitigated Negative Declaration)

An explanation is required for all responses except *"No Impact"* responses that are otherwise adequately supported by appropriate project information. For example, where the question does not apply to projects like the one being evaluated (e.g., no structures are proposed as part of the FHRP), no further explanation is required, since any question involving impacts from placement of structures would be irrelevant. Alternatively, *"No Impact"* answers may be explained briefly on the basis of evident project-specific or general standards (e.g. the project will not expose residents to increased levels of traffic), General Plan policies, Zoning Ordinance or other City codes, or other normally accepted standards.

A few questions in the Evaluation indicate a response of *"Less than significant impact."* These responses are briefly explained; however, no mitigation is required under CEQA Guidelines.

Responses to questions that receive the response: *"Potentially Significant Unless Mitigated"* are discussed below in some detail, and mitigation measures that would reduce impacts to less-than-significant levels are listed. No *potentially significant impacts* are identified in the Evaluation.

B. ENVIRONMENTAL CHECKLIST QUESTIONS AND RESPONSES

I. LAND USE AND PLANNING

Questions and Responses: *Would the proposal:*

a) Conflict with general plan designation or zoning? (No Impact)

b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project? (No Impact)

c) Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses)? (No Impact)

d) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)? (No Impact)

Explanation for Responses

The FHRP is currently designated in the El Cerrito General Plan as Park and Open Space. It is zoned F-I (Open Space Scenic Resources and Recreation). The project does not propose any change in land use, nor does it propose uses or activities that are inconsistent with the general plan or zoning designations.

II. POPULATION AND HOUSING

Questions and Responses: *Would the proposal:*

a) Cumulatively exceed official regional or local population projections? (No Impact)

b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)? (No Impact)

c) Displace existing housing, especially affordable housing? (No Impact)

Explanation for Responses

The FHRP does not propose to place any structures on the HNA; it proposes no activities that would influence or alter surrounding residential uses.

III. GEOPHYSICAL

Questions and Responses: *Would the proposal result in or expose people to potential impacts involving:*

a) *Seismicity: fault rupture?* (No impact)

b) *Seismicity: ground shaking or liquefaction?* (No impact)

c) *Seismicity: seiche or tsunami?* (No impact)

d) *Landslides or mudslides?* (Less than significant)

e) *Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?* (Potentially significant unless mitigated)

f) *Subsidence of the land?* (No impact)

g) *Expansive soils?* (No impact)

h) *Unique geologic or physical features?* (Less than significant)

Explanation for Responses

Setting

The Hillside Natural Area is located within California's geologically complex and seismically active Coast Ranges Geomorphic Province. Topography of the HNA is characterized by steep, hilly terrain. Slopes vary from gentle (less than 15 percent) to steep (30 percent to 75 percent) on the hillsides. A near-vertical scarp about two hundred feet high dominates the southwest corner of the site within an abandoned quarry area.

The site is underlain almost entirely by bedrock units of the Franciscan complex. Graywacke sandstone, shale, greenschist, basalt, and traces of serpentine are present Stratigraphic relations among the various lithologies are complex; some units appear to be separated by near vertical or horizontal shear zones (see ESA 1993b and Appendix B - GeoResources Consultants 1993, for fuller description of geology). Alluvium (unconsolidated materials deposited by water) and colluvium (unconsolidated materials deposited by downslope movement due to gravity) are present in the HNA swales and drainages. Soil thicknesses on the site are generally less than one foot except along ridge noses, where as much as four feet of colluvial material is present. The abandoned quarry has been inactive for several years.

The varying lithologies on the site appear, generally, to be stable under present slope conditions. Existing fire trails on the site do not appear to have initiated raveling or other structural failure in the bedrock. The site is bounded by ancient landslides to the north and south. Within the HNA are two colluvial debris flow landslides northwest of Kent Drive; both of them were repaired. Historic air photos indicate that shallow colluvial debris flows may

have occurred elsewhere on the site, but these appear to be old, currently stable features, and are not considered to present a risk (Appendix B - GeoResources Consultants 1993).

Contra Costa County, like the rest of the San Francisco Bay Area, is located in a seismically active region. The area's seismic setting is dominated by the Hayward fault (located less than 2,500 feet to the east) and the more distant San Andreas fault. Although there are no known active faults on the site, strong ground shaking because of movement along the San Andreas, Hayward, or any one of a number of other active faults in the region could create the hazard of slope failure such as landsliding within the HNA. Earthquake-induced landslides generally occur in areas already susceptible to slope failure due to other factors.

The U.S. Department of Agriculture Soil Conservation Service (SCS) has classified the soils of the HNA for purposes of planning site investigations prior to design and construction (in this instance, extension of fire roads and periodic manipulation of some vegetation types). The soils found in the HNA are identified as Rock Outcrop-Xerothents (young soils without characteristic layers) and Cut and Fill Land-Los Osos Complex (SCS 1973). The former quarry has little to no soil covering the Xerothents bedrock.

Soils of the Rock Outcrop-Xerothents Association dominate most of the HNA. This association consists of approximately 50 to 75 percent rock outcrops and 25 to 50 percent Xerothents soils. Xerothents are typically shallow loams (4 to 10 inches) but also form silt loam or light clay loam in places. This association is excessively drained, with the potential for erosion being severe where vegetation is removed. Shrink-swell potential is generally low due to the low clay component within this unit. Permeability is moderate and the available water holding capacity is less than 1.5 inches. Native vegetation controls much of the surface water through detention and absorption, thereby reducing the erosion potential. Given the relatively steep slope, exposure of bare soil could initiate surface erosion.

Cut and Fill Land-Los Osos Complex underlies the Madera Connector, North of Moeser Lane, and South of Moeser Lane management units within the HNA. As the name implies, Cut and Fill Land is the result of mechanical manipulation of strongly sloping to moderately steep soils on uplands for urban use. The complex occurs as either a heavy clay loam, silty clay, or clay, although as much as 20 percent, by volume, is shale and sandstone; exposed cuts consist of interbedded shale and fine-grained sandstone. This complex is well to excessively drained and runoff is rapid. For these reasons, the potential for erosion is high. Permeability

is slow depending upon compaction. Careful management of water is needed to reduce the hazards of erosion and landslides.

The site does not contain unique or geologic features; significant mineral resources have been recovered from the site and the quarry is no longer active.

Impacts

CEQA defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Appendix G of the CEQA *Guidelines* lists geology and soils-related impacts that would normally be considered significant. These include the following:

Expose people or structures to major geologic hazards;

Cause substantial flooding, erosion, or siltation (See also WATER, below);

Cause topographic changes which lead to adverse impacts (e.g., slope failure);

Adversely affect unique geologic or topographic features;

Prevent the recovery of significant mineral resources.

Vegetation cover and surface vegetation litter and woody debris on the hillsides of the HNA currently serve to control erosion. Removal of this protective cover from steep slopes would expose soils to water and wind erosion. The steep slopes in the HNA are susceptible to downslope runoff and erosion. Therefore, exposing soils to erosion by clearing away woody debris and litter from the ground surface and reducing live vegetative cover constitutes a potentially significant impact. Soil-disturbing activities would also contribute to wind erosion, soil loss, and increased particulate (dust) above the project area and areas downwind. Use of mechanical equipment on steep slopes could exacerbate soil erosion through compaction and additional disturbance to soils.

Existing fire trails are generally in good condition, but they need to be extended to improve access into certain areas and upgraded to improve drainage and erosion control, as well as access and turning radii. Construction of new fire trails will require grading (cut and fill) of an unspecified number of cubic yards of earth. Because a relatively small amount of earthwork is proposed, the resulting change in topography would not be a significant adverse impact. It is not likely that downslope residences would be exposed to hazards associated

with destabilization of historic and recent landslides due to grading for extension of fire roads.

Mitigation Measures

Since extension of fire trails could encounter areas of repaired landslides, a surficial site visit was conducted by an engineering geologist (Appendix B) before preparing the FHRP. The report of the engineering geologist indicated that the proposed upgrade and/or expansion of the existing fire trail system, properly designed and constructed, are feasible. Mitigation recommendations include measures outlined below, to be incorporated as project conditions into the FHRP.

To minimize erosion from implementation of the proposed plan and to ensure the stability and integrity of the fire trail system, the City of El Cerrito should incorporate best management practices for grading and erosion control into all fire hazard reduction activities. Vegetation modification fire treatments and use of machinery should be appropriate for given slopes and soil conditions. Best management practices and engineering measures for grading new fire trails should include at least the following:

Any intensive mechanical vegetation treatments should be confined to the least critical areas (for example, moderate slopes, stable soils);

Mechanical and hand labor removal of vegetation and all grading work should be confined to the dry season - i.e., May to October - to minimize soil exposure to direct precipitation;

Freshly graded slopes or bare areas should be stabilized by hydroseeding and installation of drainage control measures, such as sediment traps, geotextile or vegetative filters;

Sufficient above and underground portions of desirable vegetation should be retained wherever feasible (minimum six inches of above-ground live material)

In clearing buffer areas, complete denuding should be avoided, but where unavoidable, denuded areas should be mulched with chipped vegetative material within 30 days of completing activity;

Most of the existing fire trails are cut into bedrock; cut slopes in rock should be laid back to reduce the potential for cut bank failure. In areas of colluvium thicker than one (1) foot, some engineering of the trail may be required, e.g., overexcavation and compaction, with properly engineered onsite fill material;

Spoils generated by grading of fire trails will be removed from the site; spoils should be kept out of stream areas at all times;

Any drainage crossings should be protected by placement of a culvert beneath the fire trail such as those under existing trails; peak runoff calculations should be performed by the City Engineer to determine the minimum size of culvert for each crossing; and

Road gradients should be kept below ten percent (steeper slopes, if necessary, should be kept to a minimum).

To insure compliance with these measures, the site should be routinely inspected by the City at the following times:

prior to initiation of and during implementation of any prescribed treatment; prior to the first rains;

at key points in the construction of fire roads (e.g., when grading is occurring near sensitive features;

after the first storm to determine whether repairs or additional erosion control measures are needed; and

the area is erosion free and that vegetation and water courses have not been impacted by sedimentation.

IV. WATER

Questions and Responses: Would the proposal result in:

a) *Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?* (Potentially significant unless mitigated)

b) *Exposure of people or property to water related hazards such as flooding?* (Less than significant impact)

c) *Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity)?* (Potentially significant unless mitigated)

d) *Changes in the amount of surface water in any water body?* (No impact)

e) *Changes in currents, or the course or direction of water movements?* (No impact)

f) *Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?* (No impact)

g) *Altered direction or rate of flow of groundwater?* (No impact)

h) *Impacts to groundwater quality?* (No impact)

Explanation of Responses

Setting

The climate in western Contra Costa County is characterized by moderate temperatures and moderate precipitation (approximately 20 to 25 inches of rainfall annually) (SCS 1973). Precipitation occurs primarily during the six-month period from November through April.

The five HNA parcels consist of steep hillsides and interspersed ravines and swales. Runoff from the HNA generally drains into six internal intermittent drainages, five within the main HNA parcel and one occurring within the Madera Connector unit. These drainages are located west of Earl Court, northwest of Kent Drive, north of Buckingham Drive, east of Gladys Avenue, east of the upper portion of the Wildwood, east of the East Bay Municipal Utility District (EBMUD) Water Tank located off Potrero Avenue, and east of Potrero Avenue within the Madera Connector unit. These waterways are steep, average six feet in width, and have rocky to cobbly substrates incised into bedrock. No drainages occur within the North or South of Moeser Lane units nor within the Julian area. There is no significant aquifer underlying the site, nor does the HNA function as a groundwater recharge area.

There are no known existing water quality problems within the HNA. However, water quality in the drainages that flow through the site would be subject to the influence of pollutants generated by on-site and adjacent land uses and transported in runoff to downstream waterways and San Francisco Bay. Water quality in tributaries to and in the San Francisco Bay system has been degraded by urban storm water runoff (nonpoint discharges), as well as by point discharges from industry. Typical urban pollutants in runoff include silt from grading and construction sites, and pollutants from vehicle, pedestrian, and animal traffic: oil, grease and heavy metals from vehicular traffic and technical equipment maintenance; trash from humans; and bacteria and biodegradable wastes from animals. Under the HNA's current use and management, none of these is a major contributor to degraded surface water quality.

Urban storm water runoff is regulated under the Federal National Pollution Discharge Elimination System (NPDES) Program (established by the Clean Water Act), with the intent of reducing pollutants to water bodies from point and nonpoint discharges. The program is administered by the Regional Water Quality Control Board (RWQCB). The RWQCB is also responsible for carrying out the *San Francisco Bay Basin Water Quality Control Plan (Basin Plan)* (1986). The *Basin Plan* describes the beneficial uses of surface waters, groundwaters, wetlands and marshes and the water quality objectives that must be met to protect the

beneficial uses. One of the beneficial uses of inland surface waters applicable to the HNA, is wildlife habitat (RWQCB 1986).

Impacts

Significance criteria based on CEQA Guidelines, Appendix G, suggest that a project will normally have a significant effect on the environment if it will:

> Substantially degrade surface or ground water quality, such that beneficial uses are adversely affected, including public water supply
>
> Interfere with ground water recharge
>
> Cause substantial flooding, erosion, or siltation (see also GEOPHYSICAL, above); a significant flooding impact would be defined as inadequate protection from flooding during a 100-year flood event.

Implementation of the FHRP could contribute to downstream flooding if rates of runoff, especially peak runoff, were increased through excessive clearing of vegetation and surface litter. The Plan could cause an adverse impact to water quality if vegetation treatments or grading for road construction caused erosion and consequent siltation or released other contaminants into surface waters in the HNA vicinity such that beneficial uses on-site and downstream were adversely affected. With exposure of and disturbance to soils, the primary indicator of degraded water quality would be increases in turbidity from erosion-induced suspended sediments.

Mitigation Measures

To minimize changes in peak runoff and other drainage characteristics, to avoid contributing to downstream flooding, and to prevent degrading water quality from sedimentation, the City should implement the best management practices and other mitigation measures, described above under GEOPHYSICAL impacts, above.

V. AIR QUALITY

Questions and Responses: *Would the proposal*

a) *Violate any air quality standard or contribute to an existing or projected air quality violation?* (Potentially Significant Impact Unless Mitigated)

b) *Expose sensitive receptors to pollutants?* (Potentially Significant Impact Unless Mitigated)

c) *Alter air movement, moisture, or temperature, or cause any change in climate?* (No impact)

d) *Create objectionable odors?* (No Impact)

Explanation for Responses

Setting

The San Francisco Bay Area is Mediterranean in character, with mild, rainy winters and warm, dry summers. The climate is dominated by maritime influences, particularly offshore high-pressure areas which produce cool, moist, generally westerly winds over the land. The Bay Area is susceptible to two types of atmospheric temperature inversions, both of which can trap pollutants in a limited volume of air near the ground at certain times of the year.

The most serious air quality problem in the Bay Area is high concentrations of ozone (O_3). Ozone is not emitted directly into the atmosphere; rather, it is a secondary pollutant produced through photo chemical reactions involving hydrocarbons (HC) and nitrogen oxides (NOx). Conditions favoring the creation of ozone generally occur during late summer and fall. The most severe conditions are created on low wind days when limited air movement permits ozone to accumulate. The most significant source of the pollutants from which ozone is produced is motor vehicle exhaust. The largest sources of particulate (PM10) in the Bay Area include demolition and construction activity, industrial emissions, and traffic. Air-bourne particulates also can result from wind-blown dust.

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities. Among these land uses, schools, playgrounds, child care centers, and residences are considered to be relatively sensitive to poor air quality. Sensitive receptors in the HNA project vicinity include residences surrounding the park site, and several schools and/or day care facilities: Portola Junior High School on Navellier Street, Madera Elementary School, Madera Day Care, and Sierra School (independent).

The Bay Area Air Quality Management District (BAAQMD) is the local agency empowered to regulate pollutant emissions. The BAAQMD regulates air quality through its permit authority over most types of stationery emission sources and through its planning and review activities.

Impacts

CEQA Guidelines, Appendix G states that a project will normally have a significant effect on the environment if it will:

> Violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.

The FHRP provides for the use of controlled (prescribed) burning as a tool for reducing vegetation fuel loads on the HNA. Primary emissions from fires, whether of natural or prescribed origin, are NOx, carbon dioxide, and particulates. Volatile oils could also be released from the burning of poison oak or other plants. The NOx and particulate emissions would contribute to regional emissions, and particulate emissions could lead to violations of the 24-hour average particulate standard in and around the burn sites. Volatile oils could present a health risk to any exposed individuals allergies to them. By state and local regulation, prescribed fires are restricted to days when predicted weather patterns would minimize potential air quality problems.

Limited grading activity in connection with extension and maintenance of fire trails, would generate short-term emissions of air pollutants, primarily dust generated from earth-moving and minor amounts of exhaust emissions from powered grading equipment and related motor vehicles.

Mitigation Measures

The City currently conducts prescribed burning annually to reduce fuel in grasslands both within and outside the HNA. The Fire Chief is empowered to conduct prescribed burning to reduce fire hazard, subject to permission from the BAAQMD. The City typically blocks out a period of time within which it intends to do such burning and posts notices within the affected neighborhood alerting residents to the activity, in particular warning residents with respiratory problems to close windows or otherwise avoid potential exposure to smoke. Since, by state and local regulation, prescribed fires are restricted to days when predicted weather patterns would minimize potential air quality problems, *on the day (s)* scheduled for the activity, the Fire Chief contacts the BAAQMD to obtain permission.

> The City will continue to conduct prescribed burning subject to regulatory requirements and permission of the BAAQMD

Dates of projected burning days will be posted with appropriate warnings in affected neighborhoods.

The City should implement dust control measures during mechanical fuel reduction activities and during fire road grading, such as watering or applying other dust repellent.

VI. TRANSPORTATION/CIRCULATION

Questions and Responses: *Would the proposal result in:*

a) *Increased vehicle trips or traffic congestion?* (Less than significant impact)

b) *Hazards to safety from design features (e.g. sharp curves or dangerous intersections) or incompatible uses?* (Beneficial impact)

c) *Inadequate emergency access or access to nearby uses?* (Beneficial impact)

d) *Insufficient parking capacity on-site or off-site?* (No impact)

e) *Hazards or barriers for pedestrians or bicyclists?* (No impact)

f) *Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?* (No impact)

g) *Rail, waterborne, or air traffic impacts?* (No impact)

Setting

Vehicle access, including access for emergency vehicles (police and fire) and maintenance equipment, in the vicinity of the HNA is provided primarily by Potrero Avenue, Navellier Street, Moeser Lane, Contra Costa and King Drives, and several cul-de-sacs. Arlington Boulevard provides indirect access from the hills above the park site, and Potrero Avenue and Moeser Lane provide primary west-east connection between lower El Cerrito and hillside residential areas, including the HNA. Streets in the immediate vicinity of the HNA are in many instances narrow and winding, with numerous cul-de-sacs and limited line-of-sight. Within the HNA is a network of fire trails accessible by fire equipment and maintenance vehicles as well as pedestrians.

Impacts

CEQA Guidelines, Appendix G states that a project will normally have a significant effect on the environment if it will:

Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (typically measured as unacceptable increases in Level

of Service (LOS) at selected intersections, and/or unacceptable increases in volume to capacity (V/C) ratios along selected roadways;

Interfere with emergency response plans or emergency evacuation plans.

Activities proposed by the FHRP will not generate increases in either regional or local traffic nor create traffic hazards on local streets. On occasion, maintenance vehicles will use local streets or cul-de-sacs to enter the HNA to carry out vegetation treatments described in the FHRP, including prescribed burning. These activities will be conducted almost entirely from within the HNA, on fire trails that are not accessible to private vehicles. Similarly, grading and other construction activities associated with improvements to the interior fire trails will be conducted primarily within the HNA.

Improvements proposed to the fire trail system will be beneficial for access by emergency fire equipment and staff in the event of future fires.

No other transportation modes are affected by the project.

Mitigation Measures (none required)

VII. BIOLOGICAL RESOURCES

Questions and Responses: *Would the proposal result in impacts to:*

a) *Endangered, threatened, or rare species or their habitats, including but not limited to plants, fish, insects, animals (mammals, reptiles, etc.), and birds?* (Animals - Potentially significant impact unless mitigated; Plants - No impact)

b) *Locally designated species (e.g. heritage trees)?* (Less than significant impact)

c) *Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)?* (Less than significant impact)

d) *Wetland habitat (e.g. marsh, riparian and vernal pool)?* (Less than significant impact)

e) *Wildlife dispersal or migration corridors?* (Less than significant impact)

Setting

Vegetation

Vegetation in the City of El Cerrito is characterized by native and non-native grassland, riparian scrub and woodland, oak woodland, salt marsh near the San Francisco Bay, and other scrub and "soft" chaparral, in addition to extensive introduced landscaping and naturalized

nonnative species such as eucalyptus and pine (the latter, native to other parts of California). The heavily vegetated, undeveloped San Pablo and Sobrante ridges occur northeast of the City.

Vegetation occurring in the HNA is a mosaic of eight cover types (LSA 1987). These include grassland, northern Franciscan coastal scrub (soft chaparral), oak woodland, groves of pines, riparian scrub, stands of French broom, pampasgrass, and eucalyptus groves. All but the French broom, pampasgrass, groves of pines, and eucalyptus are "natural" (albeit disturbed) communities, as described below. Natural communities are recurring combinations of species that inhabit similar environmental conditions and are not (generally) dependent on human intervention for their continuance (for example, oak woodland within the HNA). Classification of natural communities in the FHRP follows guidelines set forth by the California Department of Fish and Game (CDFG) in Holland 1986.

Introduced (nonnatural) vegetative communities are the result of human intervention (e.g., sowing seeds, planting saplings, irrigation), represented by landscaped gardens in the vicinity of the HNA. Naturalized communities are those in which nonnative vegetation, once introduced by humans, has continued to reproduce naturally and has thus become adapted to the "new" environment. For example, nonnative grassland in the HNA is composed primarily of introduced species and thus is considered an introduced, nonnative, although naturalized, community. Similarly, eucalyptus (*Eucalyptus* spp.), and other introduced species that dominate much of the current California landscape, are considered nonnative or naturalized.

A "significant" natural community is a plant community that is rare, in part, because it has experienced severe losses in statewide acreage. This reduction has resulted in the listing of some plant and wildlife species that are dependent on those communities as "rare," "threatened," or "endangered" by state or federal government (discussed below) and has also diminished some ecosystem functions, such as destabilization of streambanks by removal of riparian (streamside) vegetation. Significant natural communities occurring within the HNA include valley needlegrass grassland and riparian scrub, although these have been modified by their proximity to urban landscapes and isolation from contiguous natural communities. Coast live-oak woodland, a natural community occurring in the HNA, is not classified as "significant" in this context, but because it represents a limited remaining stand of undisturbed oak woodland in the City, it is assumed to have local importance.

Appendix A, provides descriptions of vegetative communities located within the HNA, providing distributional limits, habitat requirements, community sensitivities, and a list of plant species characteristically found in conjunction with each plant assemblage. These descriptions are based on LSA (1987), with some modifications by ESA.

Wildlife

In spite of relative isolation of the HNA from more extensive open space and habitats on ridgelines to the east, wildlife habitats within the HNA are expected to support a variety of animals, including numerous bird species, common to western Contra Costa County. Appendix A provides descriptions of common wildlife species observed or expected to utilize habitats within the HNA.

Special Status Species

"Special status" species include those that are listed by state and/or federal government as endangered, threatened, or rare; or have lesser protection under state, federal, and closely related programs (e.g., California Native Plant Society). Four special status species were identified as potentially inhabiting the HNA: two plant species, Santa Cruz tarplant (*Holocarpha macradenia*) and San Francisco owl's-clover (*Orthocarpus floribundus*); and two animal species, Monarch butterfly (*Danaus plexippus*) and Alameda whipsnake (*Masticophis lateralis euryxanthus*).

The Santa Cruz tarplant is listed as a category 1 federal candidate endangered species as well as a California endangered species. The San Francisco owl's clover is listed as a category 2 federal endangered species. Surveys by ESA in late spring and early summer, 1993, determined that neither the Santa Cruz tarplant nor the San Francisco owl's clover exists on the site.

Although the Monarch butterfly is not listed as an endangered or threatened species, the California Department of Fish and Game lists this butterfly as a Species of Concern. Two surveys were conducted, first, to determine suitability of habitats onsite for use by the Monarch butterfly, and, second, to determine whether the butterfly uses these habitat for roosting in the winter. The first survey (Spring, 1993) found that several management units on the site (e.g., Quarry Hill Eucalyptus, Ken Smith Grove, Julian Grove) - in combination with favored nectar plants, sheltered areas, and water supply sources adjacent to those management units - provide conditions favorable for either temporary or permanent

overwinter clustering (roosting) by Monarch butterflys (Arnold 1993). However, the site is more distant from coastal or bay waters (three miles) than is typical of clustering sites, which are generally located within one mile of the immediate coast. The second follow-up survey determined that, notwithstanding the presence of suitable habitat, the Monarch butterfly apparently does not use the site for winter roosting. The results of the two surveys are found in Appendix B (Arnold 1993 and 1994).

The Alameda whipsnake is listed by the federal government as a category 2 candidate and by the State as a threatened species. A reconnaissance-level survey by a recognized herpetologist to determine suitability of habitats for Alameda whipsnake was conducted in June, 1993 (Beeman 1993). The survey found that the site either contains or is contiguous with four prime habitat areas: one 20+/- acre area in (and adjacent to, in EBMUD lands) the Madera Connector, and three 3+/- acre areas within soft chaparral (northern Franciscan coastal scrub) management units west and northwest of Kent Drive. This survey was followed by a follow-on site visit to discuss specific vegetation treatments and mitigation measures, to ensure that whipsnake habitat would not be compromised by the FHRP. The results of the survey are found in Appendix B; Appendix A provides further descriptions of these special status species and their legal protection.

Impacts

Significance criteria are based in part on CEQA Guidelines, Appendix G, supplemented by guidance from CDFG and the U.S. Army Corps of Engineers, which regulates placement of fill in waters of the United States, including wetlands (and riparian areas). A project will normally have a significant effect on the environment if it will:

> Substantially affect a rare or endangered species of animal or plant or the habitat of the species, defined as destruction or deterioration of an individual, population, and/or habitat;
>
> Interfere substantially with the movement off any resident or migratory fish or wildlife, including placement of barriers to normal replenishment of natural communities, or important plant or animal species;
>
> Substantially diminish habitat for fish, wildlife, or plants, measured in terms of measurable change in community composition (abundance or diversity) beyond that of normal variation;
>
> Direct loss or degradation of one acre or more of wetland, including riparian, habitat
>
> Direct loss or degradation of a significant natural community or sizable reduction in function and value of both native and nonnative habitats that provide high habitat values for wildlife (e.g., oak woodlands, eucalyptus).

Recommended fire hazard reduction techniques involve the selective removal of vegetation within the HNA. Activities range from clearing of surface litter and woody debris, for example within eucalyptus and pine groves, to thinning or removal of shrubs and thinning of trees to create fire breaks and buffers and/or reduce total fuel mass and volume. In any case, the structure and functional character of habitats and their dependent plant and wildlife populations could be affected in varying degree. Impacts include loss of canopy complexity within pine and eucalyptus groves; change to surface environment (e.g., change to light and moisture through removal of litter, duff); reduction of shelter, cover, nesting, resting, and perch sites; reduction in standing crop of plant species used for forage and browse; and temporary obstruction of deer feeding trails and movement patterns. Further indirect effects to plant and wildlife populations, such as in riparian areas, could occur from changes in the soil or hydrologic regime.

Implementation of fire hazard reduction recommendations could also result in the direct removal, reduction, or alteration of habitats for special status species (Alameda whipsnake) and significant natural communities, notably valley needle grassland and north coast scrub, as follows:

> An estimated 10 to 15 acres of prime Alameda whipsnake habitat occur on the site. About nine of these acres occur in soft chaparral areas where some clearing of vegetation is proposed to create buffers between vegetation units. Mitigations recommended below would minimize the adverse impact to this species:
>
> Valley needlegrass grassland and riparian scrub communities located within the HNA qualify as "significant" natural communities . Because of recent and historic habitat loss, the significance of these communities is recognized in CDFG policy (but not in regulations); in accordance with CEQA policy (Public Resources Code §21001 (c), these communities should be preserved "...for future generations (as) representations of plant and animal communities (of California)".

Mitigation Measures

As general mitigation, grading for roadways and application of fuel modification techniques should be conducted so as to restrict alteration to natural and naturalized communities on site to the minimum amount necessary to meet the objectives of the fire hazard reduction plan. However, removal of nonnative scrub such as French broom would be beneficial to retention of native stands of northern Franciscan coastal scrub, and removal of poison oak would reduce the hazard of volatile oils released during either controlled or uncontrolled burning. Specifically:

Minimize disturbance of valley needlegrass grassland, other than through annual prescribed burning, and removal of riparian scrub communities to the extent possible.

Define and maintain vegetative cover within a 50-foot buffer zone extending landward from the top of creek banks on either side of the waterways. Encroachment of roads into or vegetation removal within this buffer zone should be minimized to ensure long-term protection of riparian corridors. If complete avoidance of drainages by new road extensions within the HNA is deemed infeasible, the City will be required to enter into a "Streambed Alteration Agreement" (SAA) with the CDFG pursuant to Fish and Game Code 1601. The agreement is designed to minimize degradation to water quality and stream habitat.

The best management practices listed above (GEOPHYSICAL and WATER), if implemented, would also accomplish the objectives of the Stream Alteration Agreement.

Limit disturbance to coast live-oak woodlands, which will otherwise not be modified for fuel reduction, and northern Franciscan coastal scrub, to the minimum amount necessary to create cleared buffer zones and strips and meet the other objectives of the FHRP.

Hand labor and small equipment should be utilized whenever possible, particularly on steep slopes, to reduce soil compaction, root damage, and accidental death of wildlife occurring within the HNA.

Specific mitigation measures to avoid adverse impacts to habitat of the Alameda whipsnake include the following (these mitigations were submitted to CDFG in a letter, and, in the absence of response, can be assumed to be acceptable):

Construct occasional loose rock piles to create refugia for both the snake and its prey species;

Burning or cutting openings in closed scrub canopy will improve habitat for both snake and prey species;
Conduct on-site supervision while work is being performed in prime snake habitat areas;

Install undercrossings under new road extensions near prime habitat areas and suspected movement corridors

Because usage of the HNA by the Monarch butterfly could not be predicted, the three management units most likely to "host" the species were inspected as a mitigation measure, with a negative result. Further mitigation measures are not warranted.

VIII. ENERGY AND MINERAL RESOURCES

Questions and Responses: *Would the proposal:*

a) Conflict with adopted energy conservation plans? (No impact)

b) Use non-renewable resources in a wasteful and inefficient manner? (No impact)

Explanation for Responses

The FHRP implementation does not require unusual expenditure of energy, nor does it affect non-renewable resources.

IX. HAZARDS

Questions and Responses: *Would the proposal involve:*

a) *A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals, or radiation)?* (No impact)

b) *Possible interference with an emergency response plan or emergency evacuation plan?* (Beneficial impact)

c) *The creation of any health hazard or potential health hazard?* (Potentially significant unless mitigated - see AIR QUALITY, above)

d) *Exposure of people to existing sources of potential health hazards?* (No impact)

e) *Increased fire hazard in areas with flammable brush, grass, or trees?* (Beneficial impact)

Explanation for Responses

The implementation of the FHRP will employ standard methods and equipment, so will not present unusual hazards to the community. The purpose of the FHRP is to reduce the hazard associated with current fuel loads in the HNA. As discussed above under the topic of AIR QUALITY, prescribed burning will be carried out in seasons that are appropriate for the "target" vegetation, and under weather conditions that minimize air quality impacts and are condusive to fire control and suppression.

X. NOISE

Questions and Responses: *Would the proposal result in:*

a) *Increases in existing noise levels?* (Potentially significant unless mitigated)

b) *Exposure of people to severe noise levels?* (Potentially significant impact unless mitigated)

Explanation for Responses

Setting

The FHRP will be carried out in a residential area of the city which can be characterized as generally "quiet." Noise sources are local, associated with the close proximity of residences and with busier streets used primarily by private and commercial vehicles typical of residential uses. Occasional short-term noise emanates from small equipment used in yard maintenance or home construction improvements. Because the area is elevated above the lower City, distant sounds from freeway traffic and other urban activities are evident, varying with season, weather pattern, and time of day. Under most circumstances, the lands within and adjacent to the HNA are relatively free of noise disturbances.

Some land uses are considered more sensitive to ambient noise levels than others. These include residences, schools, libraries, hospitals, and parks and outdoor recreation areas. Noise-sensitive receptors in the project vicinity include the HNA itself, surrounding residences, and the Portola Junior High School on Navellier Street.

Neither the City of El Cerrito Noise Element nor the El Cerrito City Code have limits on temporary noise sources such as those that would be part of this project.

Impacts

The *CEQA Guidelines* in Appendix G indicate that a project would normally have a significant adverse impact on the environment if it would

Increase substantially the ambient noise levels of adjoining areas

Expose people to severe noise levels

Environmental noise usually is measured in A-weighted decibels (dBA). A change in noise levels of less than three dBA is not discernible to the general population, an increase in average noise levels of from three to five dBA are clearly discernible to most people, and an increase in the noise environment of five dBA or greater is considered to be subjectively substantial and to constitute significant noise impact. Construction activities (implying that they are occasional or periodic) are generally limited in their hours. In San Francisco, for example, construction activities between 8 p.m. and 7 a.m. must not increase ambient noise limits more than 5 dBA (San Francisco Police Code, Section 2908).

Future noise associated with the proposed FHRP would be from occasional use of equipment for clearing of vegetation: noise sources include chain saws, brush hogs, chipper harvester, maintenance trucks, hand tools and grading equipment for extending and maintaining fire roads (trails). The noise levels from this equipment is similar to the noise levels of standard construction equipment as shown in Table 2.

TABLE 2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Noise Level at 50 feet (dBA, Leq)
backhoes	85
dozers	80
scrapers	88
truck	91
paver	89
pumps	76
generators	78
compressors	81
jack hammers	88

SOURCE: Bolt, Beranek, and Newman, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, 1971.

Noise levels at any given site of maintenance work would fluctuate depending on the particular clearing activity, and the type, number and duration of use of various pieces of equipment. Moreover, the significance of noise would depend upon the distance (and the presence or absence of barriers) between construction sites and the closest receptors.

Residential land uses are considered to be compatible (conditionally acceptable) with noise levels between 55 and 70 dBA, Ldn (Office of Planning and Research, *State of California General Plan Guidelines*, 1987). Considering the calculations needed to determine an Ldn value (the day-night average noise level), a short-term daytime noise level of 67 dBA can be considered to be conditionally acceptable. The activities involved in this plan could result in short-term significant noise increases for activities within 800 feet of residences or other sensitive receptors. This determination is made by assuming a maximum dBA level of 91 dBA fifty feet from the equipment and an attenuation of 6 dBA for each doubling of distance. At 800 feet the noise from these activities would not be significant (since it would fall below 67 dBA). By raising ambient noise levels by 5 dBA or more, activities within 800 feet, however, could result in a short-term significant impact. It is expected that such increases would only occur a few days per year in any local neighborhood or at any residence.

Individuals using the noise equipment could be exposed to noise above the Occupational Safety and Health Administration (OSHA) standards if they are not using ear protection devices.

Mitigation Measures

To minimize the impact from short-term noise, the following mitigation measures should be implemented:

Noise activities within 800 feet of a sensitive residence or other noise-sensitive receptor should be limited to 8 a.m. to 7 p.m., the time of day that is least noise-sensitive to most individuals.

If noise-generating activities from the FHRP are expected to be on-going within 800 feet of residences for a period of more than five days, they should be restricted to weekdays (Monday - Friday), ensuring residents relief from the noise on weekends.

The FHRP should contain the necessary safeguards to assure that workers using noisy equipment are provided with ear protection so that they are not exposed to noise above that recommended by OSHA.

XI. PUBLIC SERVICES

Questions and Responses: *Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:*

a) *Fire protection?* (Beneficial impact)

b) *Police protection?* (No impact)

c) *Schools?* (No impact)

d) *Maintenance of public facilities, including roads?* (No impact)

e) *Other governmental services?* (No impact)

Explanation for Responses

No governmental services are adversely affected by implementation of the FHRP. The FHRP will be carried out by the El Cerrito Fire Department under the supervision of the Fire Chief, and is being done to facilitate emergency response to any fire occurring within or adjacent to the HNA. The El Cerrito Police Department will have the incidental benefit of improved access to the HNA in the event of fire or other emergency. The project will benefit parks maintenance activities by Public Works Division, City of El Cerrito, by reducing annual road maintenance after implementation of FHRP.

XII. UTILITIES AND SERVICE SYSTEMS

Questions and Responses: *Would the proposal result in a need for new systems, or substantial alterations to the following utilities:*

a) *Power or natural gas?* (No impact)

b) *Communications systems?* (No impact)

c) *Local or regional water treatment or distribution facilities?* (Beneficial impact)

d) *Sewer or septic tanks?* (No impact)

e) *Storm water drainage?* (Less than significant impact, see WATER, above)

f) *Solid waste disposal?* (Less than significant impact)

Explanation for Responses

No unusual demands would be placed by the FHRP on power or natural gas supplies or distribution, on communications systems, on sewer systems, or storm water drainage, except as discussed under WATER, above. Two utilities (public services) would be potentially affected by activities proposed in the FHRP.

Water Delivery

The current water delivery system and placement of pipe within the outside berm along the main fire road are inadequate, and the capacity of the quill system is limited. Further, there is concern in regard to the adequacy of the overall EBMUD water system in the event of a large scale interface fire, such as was experienced in the "Tunnel Fire" of 1991. These deficiencies are explained more fully in the Fire Hazard Analysis (ESA 1993a) and the FHRP.

To mitigate these deficiencies, the FHRP proposes to install a hydraulically engineered system with facilities to deliver compressed air foam as funds become available.

Solid Waste Disposal

Removed vegetation will be diverted from landfills, pursuant to the requirements of AB 939, in the following order of preference: chip and distribute mulch on site (preferred); windrow piles and burn; chip and remove to other areas of the HNA for mulching; remove to other public lands in the City (least preferred). Only small, incidental amounts of solid waste (nonorganic trash) collected in routine maintenance of the HNA would be sent to a landfill. This would not constitute a change to current practice.

XIII. AESTHETICS

Questions and Responses: *Would the proposal:*

a) *Affect a scenic vista or scenic highway?* (Less than significant impact)

b) *Have a demonstrable negative aesthetic effect?* (Potentially significant unless mitigated)

c) *Create light or glare?* (No impact)

Explanation for Responses

Setting

The region surrounding and including El Cerrito is characterized by three major landscape elements: the open Bay waters to the west; the relatively flat expanses of the urbanized Bay Plain, east of the Bay; and the generally northwesterly-trending hills and ridgelines (for example, Sobrante Ridge) that rise to elevations of approximately 1,050 feet east of the Bay Plain. Visually prominent open spaces in the vicinity of the HNA include the waters of the San Francisco and San Pablo Bays west and south of the City, and Richmond Harbor. Beyond San Pablo Bay, the Marin Hills form a visual "backdrop" to the west. To the east, the Berkeley Hills, San Pablo Ridge, Pinole Ridge, and the Sobrante Ridge define the edge of the visual corridor in the Bay Plain. Brooks Island forms a prominent visual landmark to the south, with the City of San Francisco in the background.

Scenic views from the HNA and from adjacent uphill residences include both panoramic vistas and partially obstructed views of San Pablo Bay and Point Pinole, followed by panoramic views of Mount Tamalpais, Richmond's shoreline, the City of El Cerrito itself, San Francisco Bay, and the San Francisco City skyline beyond. These views vary with ones location within and adjacent to the HNA; views are often obscured by trees, primarily eucalyptus, and by tall rank scrub such as coyote brush and French broom. Long-range views from El Cerrito's hillside residences are frequently impaired by fog during summer months.

The HNA is visually prominent in the local and regional landscape. The landform of the HNA is composed of steep, northwest-southeast trending wooded hillsides, ravines, and swales. In contrast to dense woodlands, scrub, and grasslands elsewhere on hillside portions of the site, the bowl-shaped quarry surface generally consists of exposed soil and rock and is a prominent and easily identified visual feature of the project site in views from vantage points to the north and west of the site.

The mix of vegetative cover types within the HNA provides a visually heterogeneous pattern of greens and gray-greens and variously textured woodlands and scrub, to light colored and fine textured grasslands. The native evergreen species of the woodlands and scrubs have few seasonal foliage effects and no visually important floral effects. However, the eucalyptus and pine groves contribute a strong vertical visual element. The grassland vegetation within the

HNA exhibits seasonal changes characteristic of the summer pattern on coastal hills throughout California of light-colored grasslands alternating with evergreen woodlands.

Motorists on the roadways near the HNA experience view sequences of pine, eucalyptus, and oak-wooded hillside in which landscape features change their apparent locations, dimensions and prominence within the visual field. As the sequence progresses, specific features including individual trees or grassy slopes become distinguishable within the tree canopy. The quarry gradually becomes more prominent within the central field of view, changing to a conspicuous bowl-shaped opening in the tree cover.

Public roadways that provide important medium- to short-range view sequences of the HNA include: Potrero Avenue, San Pablo Avenue, Moeser Lane and numerous other streets perpendicular to San Pablo Avenue running east-west, with more distant views from the Eastshore Freeway (I-580). Short-range views of the HNA from existing residential neighborhoods surrounding the park vary widely in quality depending on proximate landform and vegetation type and density.

Impacts

The FHRP does not propose any vegetation type conversion. However, even the selective reduction of vegetation would alter the visual character and scenic quality of some portions of the HNA. This can be viewed as either a positive or adverse change, depending on the viewer's vantage point and preferences. Existing linear features (tall eucalyptus and pine trees) and overall spatial organization of the HNA would be generally preserved, including the mosaic of oak woodlands and grassland areas. However, selective thinning or removal of some coastal scrub (soft chaparral) and understory would change the vegetative textures of the HNA, with mixed results.

The existing trees and other vegetation on the HNA now serve as a visual asset to distant viewers, and as a screen for residential development on the ridges. The larger denser trees also tend to impair distant bay views from hillside residences. Although potentially adverse, removal of selected trees or shrub areas from the HNA will also improve panoramic views from residences in the vicinity of the HNA and views from trails within the HNA. This impact could vary widely across the site, depending on the actual quantity and specific locations of vegetation removed from the HNA and the perspective of the viewer.

Mitigation Measures

Areas of vegetation removal should be restricted to the amount necessary to accomplish the objectives of the FHRP. Conversion of vegetation types should be avoided, consistent with the intent of the FHRP.

XIV. CULTURAL RESOURCES

Questions and Responses: *Would the proposal:*

a) *Disturb paleontological resources?* (No impact)

b) *Disturb archaeological resources?* (No impact)

c) *Affect historical resources?* (No impact)

d) *Have the potential to cause a physical change which would affect unique ethnic cultural values?* (No impact)

e) *Restrict existing religious or sacred uses within the potential impact areas?* (No impact)

Explanation for Responses

The HNA consists primarily of an inactive quarry which has already reconfigured portions of the site. No paleontological, archaeological, or historical resources have been identified on the HNA by the City. Because the FHRP proposes minimal ground disturbance to the HNA, no surveys were conducted on the HNA for purposes of this project.

XV. RECREATION

Questions and Responses: *Would the proposal:*

a) *Increase the demand for neighborhood or regional parks or other recreational facilities?* (No Impact)

b) *Affect existing recreational opportunities?* (Less than significant impact)

Explanation for Responses

Setting

Recreational opportunities in the East Bay Hills region are abundant. They include, among others, hiking, walking, jogging, bicycling, horse-back- riding, swimming, bird watching, general nature study, and fishing within county and regional parks, such as Charles Lee Tilden and Wildcat Canyon regional parks and public open spaces including portions of El Sobrante and San Pablo ridges and EBMUD watershed lands further east.

Recreation within the HNA consists primarily of hiking, walking, jogging, dog-walking, and biking along trails and fire roads. No managed recreational resources occur within the HNA.

Impacts

Proposed techniques and other measures to reduce fuel fire hazard could result in a short-term reduction of recreational user days. Prescribed burning, for example, would temporarily close portions of the HNA to recreational users. However, selective removal of understory vegetation and branches in various parts of the HNA, and extension of fire roads or trails, would enable easier access to trails for recreational users and improve recreational views from the site - in the long term, a beneficial impact.

Mitigation Measures

By restricting vegetation removal to the minimum amount necessary to achieve the objectives of the FHRP, the treatments proposed in the FHRP will be implemented in a manner that avoids or potential adverse impacts.

IV. 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?* (No)

b) *Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?* (No)

c) *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)* (No)

d) *Does the project have the environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?* (No)

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APPENDICES

A. VEGETATION AND WILDLIFE ON THE HNA
B. RESULTS OF FIELD SURVEYS

APPENDIX A: VEGETATION AND WILDLIFE IN THE HNA

VEGETATION

NATURAL COMMUNITIES

Non-Native Grassland

Non-native grassland is typically composed of a dense to sparse cover of annual grasses, often associated with numerous species of annual and perennial wildflowers. These grasslands grow actively during winter and spring, while remaining dormant during summer and early fall, persisting only as seed until conditions are favorable for germination (Holland, 1986). Within the HNA, non-native grassland is dominated by a number of introduced annual grasses including soft chess (*Bromus mollis*), ripgut grass (*Bromus diandrus*), foxtail brome (*Bromus rubens*), wild oat (*Avena barbata*), foxtail barley (*Hordeum jubatum)*, and perennial rye-grass (*Lolium perenne)*. A number of non-native herbs, such as a filaree (*Erodium* sp.), Italian, star, and bull thistle (*Carduus pycnocephalus, Centaurea solistalis, and Cirsium vulgare)*, wild radish (*Raphanus sativa*), sweet fennel (*Foeniculum vulgare*), field bindweed (*Convolvulus arvensis*), burclover (*Medicago polymorpha*), cut-leaved geranium (*Geranium dissectum*), and mustard (*Brassica* sp.), frequently occur as subdominants. In some areas, thistles or other forbs may dominate (LSA, 1987). Native wildflowers commonly interspersed among the grasses include lupine species (*Lupinus* sp.), California poppy (*Eschscholzia californica*), common fiddleneck (*Amsinckia intermedia*), blue dicks (*Dichelostemma pulchellum*), checkerbloom (*Sidalcea malvaeflora*), and wild onion (*Allium* sp.). The presence and relative abundance of native annual and perennial herbs is influenced by the level of historic and recent disturbance at a particular site.

Shrubs such as coyote brush (*Baccharis pilularis* var. *consanguinea*) and California sage (*Artemisia californica*) occur within this community depending on specific site conditions (i.e. microclimate). Oak woodlands and riparian forests are often adjacent on more mesic (moist), better-drained soils, while in more xeric (dry) locations, this community intergrades with scrubs and chaparrals (Holland, 1986). On the HNA, these typical relationships are evident wtih the exception of chaparral, present only in it's "soft" form (northern Franciscan coastal scrub), which is not present on the site.

The presence of this assemblage of non-native, annual grasses originating in the Mediterranean region, is a consequence of permanent alterations to the once widely distributed, pristine perennial grasslands of California. The conversion of native perennial grassland into non-native annual species has resulted from a combination of (1) invasion by alien plant species, (2) changes in the kinds of animals and their grazing patterns, (3) cultivation, and (4) fire regime (Heady, 1988).

Non-native grasslands are distributed throughout the valleys and foothills of coastal California, except for the north coastal regions, usually below 3,000 feet (Holland 1986). Non-native grassland is generally found on fine-textured, usually clay soils, which are moist to waterlogged during winter rains and dry during the summer and fall (Holland, 1986). Within the HNA, non-native grasslands dominate the North and South of Moeser Lane units.

Valley Needlegrass Grassland

Valley needlegrass grassland forms an open grassland (total plant cover in this community is typically low, ranging from 25-40 percent). Within the HNA, this community is dominated by native perennial bunchgrasses such as purple needle grass (*Stipa pulchra)*, foothill needlegrass (*Stipa lepida*), oatgrass (*Danthonia californica*), junegrass (*Koeleria cristata*), red fescue (*Festuca rubra*), and bentgrass (*Agrostis diegoensis*), intermixed with forbs including white forget-me-not (*Cryptantha* sp.), tidy tips (*Layia platyglossa*), popcorn flower (*Plagiobothrys* sp.), California cream cups (*Platystemon californica*), wild onion (*Allium* sp.), gilia (*Gilia* sp.), goldfields (*Lasthenia* sp.), and common jewelflower (*Streptanthus glandulosus*).

Historically, native bunchgrasses were much more widespread throughout California than today. The introduction of non-native grasses and forbs, livestock grazing, and alteration of the community's natural fire regime are factors that resulted in the displacement of native bunchgrasses and forbs by introduced species (Heady, 1988). For this reason, Valley needlegrass grassland is listed as a significant community by the CDFG (CNDDB, 1992; Holland, 1986).

Native grasses are fairly common in certain areas of the HNA, for example; El Cerrito Memorial Grove, Julian Fuel Break, and portions of Grassland Succession support healthy stands of purple needlegrass (*Stipa pulchra*).

The current distribution of this community includes portions of the valleys and hills of the Coast Range, in addition to other parts of California (Holland, 1986; Keeler-Wolf, pers. comm.).

Northern Franciscan Coastal Scrub (Soft Chaparral)

Species composition within the northern Franciscan coastal scrub community at the HNA varies substantially from stand to stand. Some areas are composed almost completely of coyote brush (*Baccharis pilularis*), while other consist of a mixture of coyote brush, California sage (*Artemisia californica*), coffeeberry (*Rhamnus californica*), French broom (*Cytisus monspessulanus*), poison oak (*Toxicodendron diversiloba*), and bush monkey flower (*Mimulus aurantiacus*).

This community generally forms dense thickets of tall woody shrubs typically two to three meters tall that create very low light conditions at the ground surface (LSA, 1987; Holland, 1986). Intermixed periodically among these dominants (where light conditions are more favorable, e.g., along the edge of this community or in patches) are California sagebrush (*Artemisia californica*), bush monkey flower (*Mimulus aurantiacus*), oso berry (*Osmaronia cerasiformis*), cow-parsnip (*Heracleum lanatum*), California bee plant (*Scrophularia californica*), manroot (*Marah fabaceus*), wild iris (*Iris douglasiana*), and bracken fern (*Pteridium aquilinum*). This community occurs on exposed sites with shallow or rocky soils.

Stands of northern Franciscan coastal scrub are found throughout the HNA, but they mainly occupy the steeper portions of the south and west facing slopes along the eastern boundary. Brush has been encroaching into adjacent grassland, changing fuel distribution of those areas (Refer to the FHA; ESA, 1993). This encroachment has been attributed to fire suppression and the termination of grazing (LSA,1987).

Although generally described as occurring from southern Oregon to San Mateo County and from Pacific Grove to Point Sur, this community changes in composition and richness (i.e., diversity and wealth of species and quality of habitat) depending on specific site conditions.

Coast Live Oak Woodland/Forest

Dense stands of coast live oak are located in drainages and on north-facing slopes of the HNA. This community is dominated by coast live oak (*Quercus agrifolia*), an evergreen tree which reaches 30 to 75 feet in height, intermixed with smaller numbers of California bay

(*Umbellularia californica*), black elderberry (*Sambucus mexicana*), and buckeye (*Aesculus californic)* (LSA, 1987). Understory composition varies according to the availability of water and sunlight. Dominant understory species include poison oak (*Toxicodendron diversaloum*), blackberry (*Rubus* sp.), hazelnut (*Corylus cornuta* var. *californica*), wood fern (*Dryopteris arguta*), sword fern (*Polystichum munitum*), soap plant (*Chlorogalum pomeridianum*), periwinkle (*Vinca major*), and honeysuckle (*Lonicera hispidula*) (LSA, 1987).

Forests are distinguished from woodlands by having a dense canopy cover that produces low light conditions at the ground surface which subsequently affects understory species composition, while woodlands form as open savanahs with parklike stands of trees. Within the HNA, coast live oaks form both woodlands and forests (ESA, 1993). Understory vegetation in these communities depends on site specific microclimate (i.e. topography, soil structure, available moistures, light conditions, etc.). The shrub layer is usually poorly developed except on drier sites where it intergrades with scrub vegetation. The herbaceous understory component is typically dominated by a number of introduced grasses and forbs characteristic of the non-native grassland community, while native herbaceous species are also present, especially on sites which have escaped intensive grazing.

Coast live oak woodland occurs throughout the Coast Range usually below 4,000 feet on well drained soils (Holland, 1986). The CDFG aims to protect oak woodlands because of their high value as wildlife habitat (State Concurent Resolution 17).

Riparian Scrub

Riparian vegetation occurs along several drainages within the HNA, including those occurring northwest of Earl Court, northwest of Kent Drive, north of Buckingham Drive, east of Gladys Avenue, and the upper portion of the Wildwood drainage (LSA, 1987).

The canopy is dominated by arroyo willow (*Salix lasiolepis*). Other species occurring in the riparian scrub include black elderberry (*Sambucus mexicana*), coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and California blackberry (*Rubus ursinus*).

This community occurs in loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows (Holland, 1986). Fromerley extensive along the major streams

of coastal California, riparian scrub has been much reduced by urban expansion, flood control, and channel "improvements" (Holland, 1986). For this reason this community is now considered significant by the CDFG (CNDDB, 1992; Holland, 1986).

NON-NATURAL COMMUNITIES

Pampasgrass

Pampasgrass (*Cortaderia selloana*) occurs as a sparse cover (approximately 25 percent) along the disturbed quarry walls. Although this species has spread into non-native grasslands adjacent to the quarry, annual grasses continue to prevail as the dominant vegetative cover.

French Broom

French broom (*Cytisus monspessulanus*) was introduced into California for use as a hearty landscape species because it could survive with little or no care. However, its ability to seed into disturbed and undisturbed sites and suppress native brush and grass species has resulted in its invasion into many natural communties within California; its use as a landscape species has thus been discouraged. Within the HNA, French broom has become an integral part of the northern Franciscan coastal scrub community. French broom is encroaching into the grassland on the east-west trending ridges above Navellier Street, along the western border above Navellier Street, and in the grassland around the Madera connector. Broom has also encroached into grassland communities in the area south of Kent Drive.

Eucalyptus Groves

Eucalyptus are present in four locations within the HNA. The largest grove is located above and along the southeast rim of the quarry, and is known as the Quarry Hill Grove. The Ken Smith Grove is located northwest of the quarry. A linear band of eucalyptus follows a perennial drainage south of Wildwood Place. A fourth large stand of eucalyptus is located southwest of Julian Court adjacent to EBMUD's reservoir on Ganges. Eucalyptus are the dominant tree species within the groves. Both blue gum (*Eucalyptus globulus*) and yellow gum (*Eucalyptus viminalis*) are found within the HNA (LSA, 1987). Conifers, primarily Monterey pine, and oaks comprise a small percentage of the cover in less dense areas of the groves, particularly around the edges (LSA, 1987).

Dense shade created by the eucalyptus canopy, combined with volatile chemicals contained in the large amount of bark and leaf litter deposited by eucalyptus, create poor growing conditions for most herbaceous and woody understory species. Consequently, the understory of these woodlands is generally devoid of vegetation and consists of a thick layer of bark and leaves. Where openings in the canopy allow sufficient light to penetrate to the grove floor scant patches of poison oak and annual grasses occur.

Eucalyptus, particularly blue gum, was planted throughout the East Bay Hills in the early 1900's by private water companies or investors as a means of producing hardwood lumber (LSA, 1987). Shortly after these plantings, further research into the characteristics of eucalyptus wood revealed that blue gum was not a desirable lumber species, and the plantations were removed or abandoned (LSA, 1987). Within the HNA, the Quarry Hill eucalyptus grove was planted around 1910 by the quarry operator to minimize slippage of quarry overburden (LSA, 1987). Now within the HNA, blue gum dominates and is slowly expanding its area as seedlings become established around the perimeter of the existing, mature stands (LSA, 1987).

Periodic freezes (i.e., temperatures below 32 degrees farenheight for prolonged periods of time), can occur in the coast range. Freezes in the winter of 1972 and again in 1990, resulted in crown damage of many and death of a few eucalyptus within the HNA. Frost damaged eucalyptus resprouted from the trunk, branches, and cut stumps, resulting in increased density within eucalyptus stands of the HNA (LSA, 1987).

Other introduced species present in the HNA in low numbers that are not currently invading areas of native vegetation include acacia (*Acacia* sp.), butterfly bush (*Buddliea davidii*), cotoneaster (*Cotoneaster pannosa*), kikuyu grass (*Pennisetum clandestinum*), Monterey pine (*Pinus radiata*), pyracantha (*Pyracantha angustifolia*), German ivy (*Senecio mikanoides*), and European elm (*Ulmus procera*) (LSA, 1987).

WILDLIFE

Non-Native and Valley Needlegrass Grasslands

The abundance of grasses and forbs in this community produce seeds that attract numerous insects, providing food for graniverous ("grain-eating") and insectiverous ("insect-eating") wildlife species. Within the HNA, this habitat is on steep slopes surrounded by residential areas. As a result, typical ground dwelling species normally associated wtih this habitat may

be lacking. Species commonly found in this habitat include small mammals such as the broad-footed mole (*Scapanus latimanus*), deer mouse (*Peromyscus maniculatus*), and California meadow mouse (*Microtus californicus*); reptile species such as the western fence lizard* (*Sceloporous occidentalis*), western skink (*Eumeces skiltonianus*), and gopher snake (*Pituophis melanoleucus*); and common bird species such as Brewer's blackbird* (*Euphagus cyanocephalus*), American robin (*Turdus migratorius*), American crows (*Corvus brachyrhynchos*), rock doves (*Columba livia*), California quail (*Callipepla californica*), and western meadowlark (*Sturnella neglecta*). Raptors observed or expected to forage on these ground-dwelling species include the red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), great-horned owl (*Bubo virginianus*), and turkey vulture* (*Cathartes aura*).

Amphibians including Pacific tree frog (*Hyla regilla*) and western toad (*Bufo boreas*) may also occur in grassland when adjacent to ponding water or streams.

Northern Franciscan Coastal Scrub and French Broom

Scrub communities support several important food plants including California sage, black sage, poison oak, and various grass species, which in turn support a variety of wildlife species. Small mammals prefering brush vegetation include brush rabbit (*Sylvilagus bachmani*), deer mouse (*Peromyscus maniculatus*), and Audobon's cottontail (*Sylvilagus audubonii*). Reptiles including western fence lizard*, western skink (*Eumeces skiltonianus*), and California whipsnake (*Masticophis lateralis*) are expected to prey on rodents and insects in this habitat. The moderately dense vegetation of these communities provide excellent cover for secretive bird species such as rufous-crowned sparrow (*Aimophila ruficeps*), scrub jay (*Aphelocoma coerulescens*), California quail (*Lophortyx californicus*), Bewick's wren (*Thryomanes bewicki*), California towhee (*Pipilo fuscus*), California thrasher (*Toxostoma redivivum*), and Anna's hummingbird (*Calypte anna*).

Oak Woodland/Forest

Oak Woodland habitat, ranging from moderately open to dense, closed-canopied forests, support terrestrial wildlife species commonly associated with other habitat types within the HNA. The tree canopy provides nesting and resting substrate, and attracts several resident and migratory bird species, including California quail (*Callipepla californica*), acorn woodpecker (*Melanerpes formicivorus*), song sparrow (*Melospiza melodia*), mourning dove (*Zenaida macroura*), Steller's jay (*Cyanocitta stelleri*), Bewick's wren (*Thryomanes* bewickii),

ruby-crowned kinglet (*Regulus calendula*), common flicker (*Colaptes auratus*), titmouse (*Parus inornatus*), Anna's hummingbird (*Calypte anna*), Nuttall's woodpecker (*Picoides nuttallii*), chestnut-backed chickadee (*Parus rufescens*), white-breasted nuthatch (*Sitta carolinensis*), dark-eyed junco (*Junco hyemalis*), orange-crowned warbler (*Vermivora celata*), Townsend's warbler (*Dendroica townsendii*), hermit thrush (*Catharus guttatus*), and downy woodpecker (*Picoides pubesens*). Common passerine bird species include those common in adjacent habitats in addition to yellow-rumped warbler (*Dendroica coronata*) and fox sparrow (*Passerella iliaca*).

Oaks within the woodlands provide habitat for insects and browse and acorns for black-tailed deer* (*Odocoileus hemionus columbianus*), birds, raccoons (*Procyon lotor*), and western gray squirrels (*Sciurus griseus*) during the fall and winter when other food items may be relatively scarce. The variety of shrubs, downed wood, old woodpecker holes, and natural tree cavities provide escape, cover, and denning sites for a wide variety of mammals including western grey squirrel, Virginia opossum (*Didelphis virginiana*), deer mouse (*Peromyscus maniculatus*), and striped skunk* (*Mephitis mephitis*), as well aa bats, including red bat (*Lasiurus borealis*) and hoary bat (*Lasiurus cinereus*).

Raptors known or expected to occur in this community include great horned owl (*Bubo virginiana*), western screech owl (*Otus kenicottii*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Acciieter striatus*), and American kestrel (*Falco sparverius*).

Riparian Scrub

California riparian communities rank among the highest in wildlife species diversity and abundance due to the availability of seasonal fresh water, and the wide variety of wildlife niches provided by the structural habitat diversity and abundance of plant growth. The riparian habitats of the HNA are probably the most valuable wildlife resources within the park, increasing in value where surface water is present, and providing an important wildlife resource for drinking, bathing, and reproduction. Aquatic-breeding amphibians including western toad, Ensatina (*Ensatina eschscholzia*), arboreal salamander (*Aneides lugubris*), and pacific treefrog, and reptiles such as northern alligator lizard (*Gerrhonotus coeruleus*), common garter snake (*Thamnophis sirtalis*), western terrestrial garter snake, common kingsnake (*Lampropeltis getulus*), sharp-tailed snake, (*Contia tenuis*) and western fence lizard* are expected to be more numerous in these areas due to the moist ground conditions,

abundant insect prey, and sources of cover (dead and downed woody material and forest litter). The moist ground conditions also provide suitable habitat for insectivorous mammals such as Ornate shrew (*Sorex ornatus*), raccoon, and striped skunk. Raptors and common passerine bird species utilizing these areas include those common in adjacent habitats.

Eucalyptus Groves

Eucalyptus trees planted in the HNA provide habitat resources such as nesting and perch sites for species of birds common to other habitats within the HNA. In addition, these groves provide birds such as Anna's hummingbird and yellow-rumped warbler with a supplemental supply of nectar during the winter months.

Pampasgrass

Because of the steep terain and sparce vegetation, wildlife use of the quarry is relatively low. Species expected to be common within this area include species more adapted to human environments such as American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), Brewer's blackbird* (*Euphagus musculus*), house mouse (*Mus musculus*), and Norway rat (*Rattus norvegicus*).

SPECIAL STATUS SPECIES

The following provides summary descriptions of each of the special status species potentially occurring within the study area, providing morphological, distributional, habitat requirements, and listing status for each.

Plants

Santa Cruz tarplant (*Holocarpha macradenia*) A category 1 federal candidate, California endangered species, Santa Cruz tarplant is a member of the sunflower family (Asteraceae). This tarplant grows as a spreading, aromatic, and glandular annual herb. Santa Cruz tarplant produces yellow flowers in dense heads from June to October, and occurs in grassy flats and slopes (generally native grasslands) underlain by heavy soils (Munz and Keck, 1968).

Once widespread throughout most of the San Francisco Bay Area, the Santa Cruz tarplant is now reported to occur from Santa Cruz, Alameda, Contra Costa, and Marin Counties. Since 1979, several populations of this tarplant have been destroyed of seriously damaged by

agricultural and housing development (CNDDB, 1992). Most of the currently known populations of this species are in conflict with one or several proposed developments.

San Francisco owl's-clover (*Orthocarpus floribundus*) A category 2 Federal candidate for listing, this owl's-clover grows as an open, straw-colored stem, from 10 to 30 centimeters in height. A member of the figwort family (Scrophulariaceae), San Francisco owl's-clover produces thin, white or cream tubular flowers from April to May (Munz and Keck, 1968). The lower lip of this species is abruptly inflated, forming three divergent, spreading sacs two millimeters deep. Suitable habitat for this owl's-clover includes northern Franciscan coastal scrub and valley needlegrass grassland communities within the HNA.

Animals

Monarch butterfly (*Danaus plexippus*) Although the Monarch butterfly is not listed as an endangered or threatened species, the CDFG has listed this butterfly as a species of concern. Its preservation is supported by a number of groups including the Monarch Project of the Xerces Society, the Friends of the Monarch, and the California Monarch Studies. These bright orange butterflies are known to utilize tall relatively protected groves of trees for roosting along the California coast. Potential roosting habitat occurs within the dense eucalyptus groves and oak forest communities on-site.

Alameda whipsnake (*Masticophis lateralis euryxanthus*) Alameda whipsnake, a category 2 Federal candidate and State listed threatened species, prefers riparian areas adjacent to coastal scrub but also occurs in scrubs interspersed with scattered grassy patches in association with rocky hillsides, gullies, canyons, or stream courses. Mainly a snake of the foothills, this species prefers steep slopes of 20 percent or more that are west or south facing. Territory for this whipsnake is generally within 1/8 mile from water. Water sources can include streams or moist ground, such as seeps. Alameda whipsnake is an active diurnal hunter, hunting frogs, lizards, snakes, small mammals, birds, and insects. Spiny lizards, such as western fence lizards, are especially important to the diet of this species. Alameda whipsnake sometimes climbs or seeks shelter among rocks or in a burrow. This species lays eggs from May through July. Suitable habitat for this species occurs throughout the HNA (Beeman, pers. comm.).

APPENDIX B: RESULTS OF FIELD SURVEYS

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MEMORANDUM

DATE: June 1, 1993

TO: Ms. Nona Dennis
Environmental Science Associates
301 Brannan Street, Ste. 200
San Francisco, CA, 94107-1811

FROM: Alan D. Tryhorn ADT
Ben H. LeFebvre

1.0 Introduction

1.1 Purpose and Scope

The El Cerrito Hillside Nature Area (HNA) site (site) comprises approximately 90 acres of open space in the hillside residential area of the City of El Cerrito, Contra Costa County, California. The purpose of this investigation was to evaluate the geologic conditions of the site, paying particular attention to those areas underlying existent or proposed fire trails.

Our scope of work included a review of available documents on file with the City of El Cerrito, historic aerial photographs, and regional geology literature. In addition, a GRC representative conducted a site reconnaissance. Finally, GRC prepared this brief report, summarizing the results of our review and site visit, and including a preliminary geologic map of the site area. No geotechnical borings were performed, nor were samples of bedrock or soils materials submitted for laboratory analysis.

2.0 Methodology

2.1 Literature Review

Available documents were reviewed prior to visiting the site. These included the City of El Cerrito Hillside Natural Area Environmental Assessment (ESA, 1993), a California Division of Mines Special Studies Zones Map (CDMG, 1982), surface geology maps (Dibblee, 1980), and available geotechnical investigations of sites in the near vicinity.

A review of available aerial photos was performed, using resources in the GRC air photo library, and a visit to Pacific Aerial Survey in Oakland, California. See Appendix A for a list of aerial photos.

2.2 Site Visit

A site visit was conducted by GRC on Monday, May 17, 1993. Accompanying the GRC geologist was Mr. Stephen L. Cutright, Fire Chief, El Cerrito Fire Department, and Mr. David Sapsis, Graduate Research Associate in Wildfire Science and Ecology. The site visit included a drive through, under the direction of Chief Cutright, of the central portion of the site, an area bounded on the north by Wildwood Place and on the south by Schmidt Lane, site of the El Cerrito Recycling Center and City of El Cerrito Corporation Yards. Portions of the HNA to the north and south of Wildwood Place and Schmidt Lane, respectively, were not visited, and are outside the scope of this investigation.

Several brief traverses of hillside areas were conducted during the site visit. Particular attention was paid to bedrock conditions, depth and character of soils, and features which might indicate erosion or slope instability.

3.0 Site Description

3.1 Topography

The Hillside Nature Area (HNA) is located in the El Cerrito Hills, El Cerrito, California (Figure 1, Site Vicinity Map). The entire HNA occupies approximately 90 acres of steep, westerly and southerly facing ridge and canyon terrain. Elevations range from about 180 feet above mean sea level (AMSL) to slightly more than 660 feet amsl.

A near-vertical scarp about two hundred feet high dominates the south-west corner of the site within an abandoned quarry area. A recycling center and the City of El Cerrito Corporation Yard are presently located in the floor of the old quarry. The remainder of the HNA is comprised of relatively undisturbed lands; residential development abuts the HNA on all sides. At least two swale areas within the HNA contained flowing water at the time of our site visit.

3.2 Site Geology

The site is underlain almost entirely by bedrock units of the Franciscan Complex. Graywacke sandstone, shale, greenschist, basalt, and traces of serpentine are present. Stratigraphic relations among the various lithologies are complex; some units appear to be separated by near vertical or horizontal shear zones.

In the area immediately west of Kent Drive, a rhyolitic tuff unit was observed in the fire trail cut. It is of unknown age and association. Quartz veins at varying orientations were present within the rhyolite body.

The sandstones are generally massive, and, just north of the quarry, they are altered to a meta-graywacke. Shales are thinly bedded. Neither sedimentary unit is fossiliferous.

Massive basalt, containing foliated blueschist-filled shear zones, was observed in the old quarry area. Masses of greenschist were present above the basalt in the quarry face.

All units contain northwest and/or northeast striking, steeply dipping joints . Bedding orientation, where present, generally strikes northwest, and dips northeast.

Contacts among differing lithologies, e.g., sandstone and shale, sandstone and rhyolite appear to have served as incision points for stream drainage development. Streams appear to be deeply incised into bedrock, though vegetation is very dense, obscuring relations.

Soil thicknesses on the site are generally less than one foot, though along ridge noses as much as four feet of colluvial material is present. Colluvium invariably contains abundant rock material, ranging in size from coarse gravel to cobbles. There is some variation in the soil composition according to underlying bedrock, but generally, the soils appear to be sandy silts with some clay. There was little evidence of shrink-swell behavior in the soils.

3.3 Site Seismicity

There are no known active faults on the site. An ancient shear zone appears to separate basalt from graywacke in the north west wall of the quarry. The nearest active fault is the Hayward fault, located less than 2,500 feet to the east (CDMG, 1982; Hall and Melody, 1992). The Hayward fault is capable of producing a magnitude 7.0 or greater earthquake. In the event of a major earthquake on the Hayward fault, or one of several other active faults within the San Francisco Bay area, the HNA would be subjected to strong to violent ground shaking.

4.0 Discussion and Evaluation

4.1 Geologic Hazards

4.1.2 Bedrock

The varying lithologies on the site appear, generally, to be stable under the present slope conditions. We did not observe areas of significant slope ravelling or bedrock failures. The existing fire trails do not appear to have initiated ravelling or other structural failure in the bedrock. Upgrading of existing fire trails and grading of additional trails is not likely, in our opinion, to adversely affect, or to be adversely affected by, bedrock conditions on the site.

4.1.3 Soils

Existing fire trails, while incised slightly by rilling due to storm runoff, were generally in good condition, due, in part, to the shallow depth to bedrock (less than six inches in most areas). Soils appear to have a relatively low potential for erosion. Streams in swale areas appeared to have eroded headward only slightly across fire trails. Soil conditions on the site do not present a significant hazard to the upgrading and/or expansion of the fire trail network as proposed within the HNA.

4.1.4 Landslide

The site is bounded to the north and south by large, ancient landslides (Radbruch & Case, 1967; Nilsen, 1973, Dibblee, 1980). The uphill extensions of Potrero Avenue and Moeser Lane approximately follow the former pathways of these slides. Portions of the slides are shown on Figure 2, Site Geology Map.

In the area immediately to the northwest of Kent Drive are two colluvial debris flow landslides on slopes traversed by existing fire trails (PSC, 1989) (See Figure 2, Site Geology Map). The northern of the two slides was repaired during preliminary grading for a proposed residential development. A second slide was encountered during grading operations and had to be repaired, as well (Todd Teachout, City of El Cerrito Engineer, personal communication, 1993). Both slide repairs involved overexcavation of slopes to depths as great as fifteen feet, installation of deep keyways into stable bedrock, placement of subdrains at depths of twelve to fifteen feet, and benching of fill into competent rock. Slide repair appeared to include the downslope area underlying the proposed fire trail.

Our library search of historic air photos indicates that shallow colluvial debris flows may have occurred elsewhere on the site (See Figure 2, Site Geology Map). These appear to be old, presently stable features, and are not considered to present a risk.

4.2.0 Seismic Hazards

4.2.1 Fault Rupture

There are no known active faults on the site. There is no impact to the fire trails from fault rupture beneath the site.

4.2.2 Ground Shaking

The effects of strong ground shaking include liquefaction, settlement, lateral spreading, and landslide. Of these, the most significant effect to the site is landsliding. However, based on the results of our field reconnaissance and aerial photo review, the slopes appear to be generally stable. The potential for seismically-induced landsliding appears to be minimal.

Within the old quarry area, there may be some risk associated with rockfall during an earthquake. There are no existing or proposed fire trails in the quarry area, but, fire and public safety vehicles are maintained in a City of El Cerrito Corporation Yard located within the quarry. There is a potential for damage to City property during an earthquake.

5.0 Conclusions and Recommendations

Based on the results of our review of available documents and aerial photos, site visit, and reconnaissance mapping, it is our opinion that the proposed upgrade and/or expansion of the existing fire trail system, properly designed and constructed, should be feasible.

We recommend that the El Cerrito City Engineer, or a designated representative, monitor all grading work. Areas of concern during grading include:

- Spoils generated by grading of trails may be used to create a berm on the outer shoulder of the trail, or may be removed from the site; spoils should be kept out of stream areas at all times.

- Cut slopes in rock should be laid back to reduce the potential for cut bank failure. In areas of colluvium thicker than one (1) foot, cut slopes should be further laid back.

- All grading work should be restricted to the dry season, i.e., May to October, to forestall potential erosion of fresh slopes in trail cut areas. Freshly graded slopes should be protected from erosion with hydroseeding and drainage control measures.

- All stream crossings should be protected by placement of a culvert beneath the fire trail (these are already in place in existing trails), and if deemed necessary by the City Engineer, peak runoff calculations should be performed to determine the minimum size of culvert needed for each crossing.

- Most of the existing fire trails are cut into bedrock. There may be areas of proposed new trail that will rest on colluvial soils. In this event, some engineering of the trail may be required, e.g., overexcavation of material and compaction, with properly engineered fill. Onsite material may be used where appropriate.

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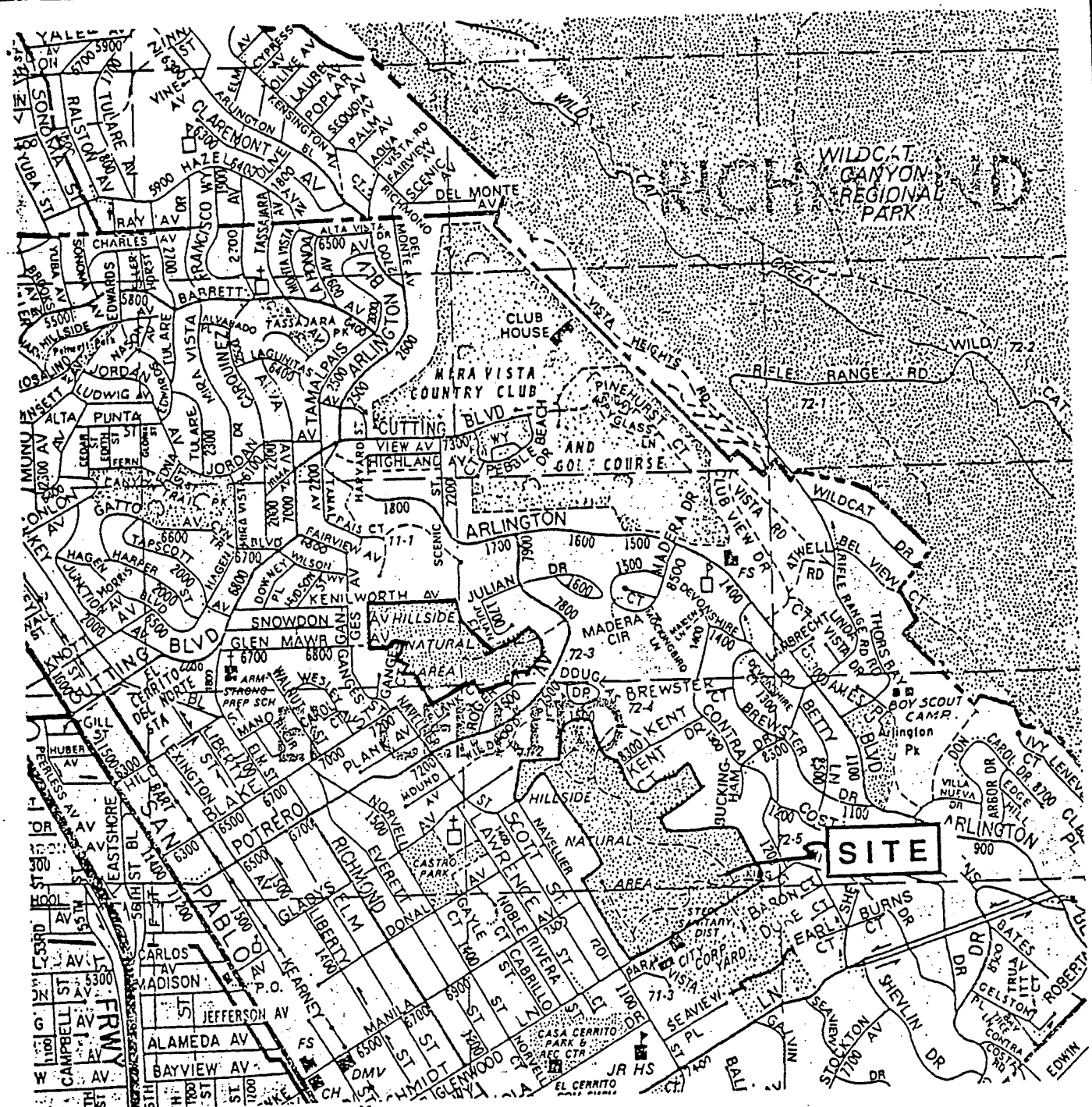
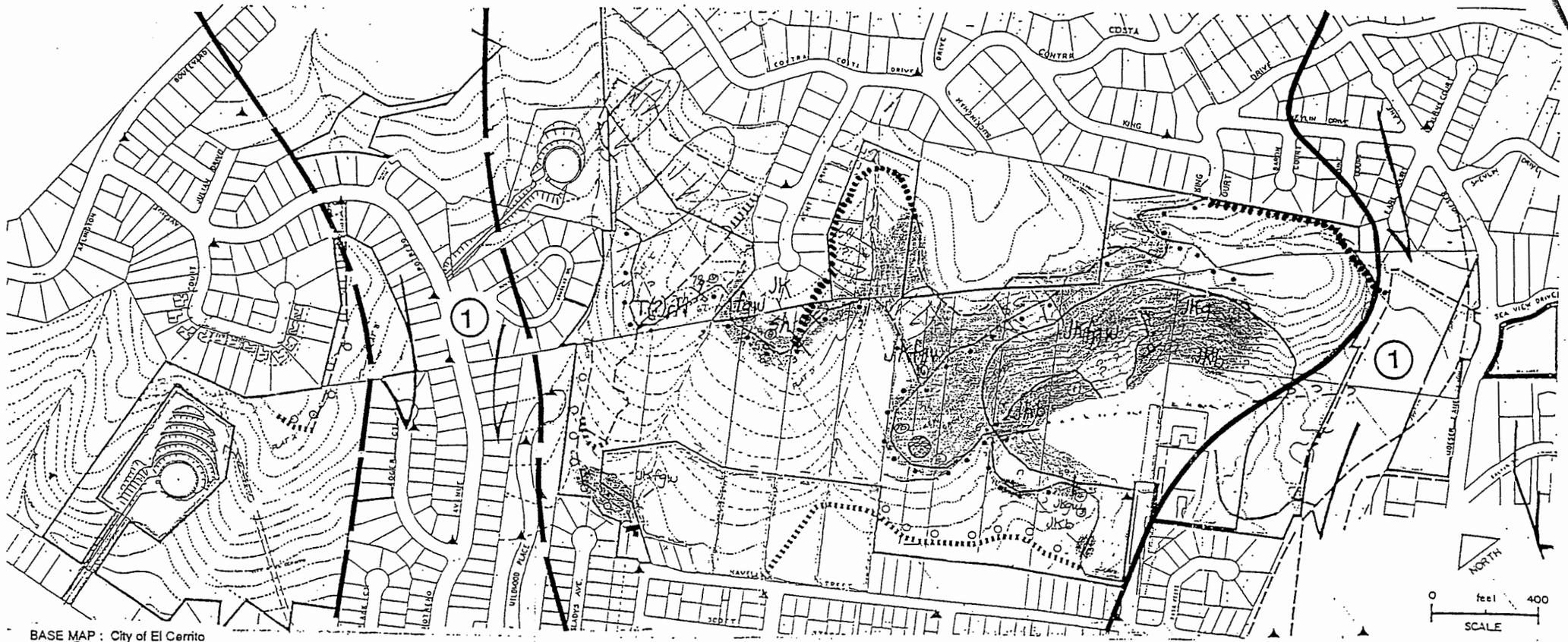
APPENDIX A
AERIAL PHOTO RESEARCH

Film #	Scale	Date
SF-Area	1:12,000	1992
AV3817-06-1 & -2	1:36,000	4/30/90
AV2640-08-10 & 11	1:12,000	5/15/85
AV1377-08-12 & 13	1:12,000	7/7/77
AV995-06-10 & -11	1:12,000	5/18/71
AV710-08-23 & -24	1:36,000	4/20/66
AV334-11-49 & -50	1:9,600	7/2/59
AV119-08-14 & -15	1:10,000	8/14/53
AV11-01-7 & -8	1:20,000	3/24/47



REFERENCE : Base from Thomas Bros Maps

Geo/ Resource Consultants, Inc. GEOLOGISTS / ENGINEERS / ENVIRONMENTAL SCIENTISTS 505 BEACH STREET, SAN FRANCISCO, CALIFORNIA 94133	SITE LOCATION MAP FIRE HAZARD REDUCTION PLAN - GEOTECHNICAL EVALUATION HILLSIDE NATURE AREA CITY OF EL CERRITO, CALIFORNIA	FIGURE 1
Job No. 1799-000 Appr. _____ Date 5/28/93		



BASE MAP : City of El Cerrito
① : Tor H. Nilsen, 1973

EXISTING FIRE ROADS
PROPOSED FIRE ROADS
EXISTING WATER LINES (OUTLETS)
PROPOSED WATER LINES (OUTLETS)
EXISTING FIRE HYDRANTS

EXPLANATION

- T(?)rh - Tertiary (?) rhyolite
- JKfgw - Franciscn graywacke sandstone
- JKsh - Franciscan shale
- JKb - Franciscan basalt
- JKg - Franciscan greenchist
- 59 Strike and dip of bedding
- 82 Strike and dip of jointing
- ① Numbered locations of field observations
- Geologic contact, dashed where uncertain, dotted where inferred
- Landslide features, mapped from aerial photos and/or previous geotechnical investigation

Geo/ Resource Consultants, Inc.
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Job No. 1799-000 Appr. _____ Date 5/28/93

SITE GEOLOGY MAP
FIRE HAZARD REDUCTION PLAN -
GEOTECHNICAL EVALUATION
HILLSIDE NATURE AREA
CITY OF EL CERRITO, CALIFORNIA

FIGURE
2

A. Arnold, Ph.D.

Entomological Consulting Services, Ltd.

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10 June 1993

Nona B. Dennis, Vice President
Environmental Science Associates, Inc.
301 Brannan Street
Suite 200
San Francisco, CA 94107-1811

RE: El Cerrito Hillside Natural Area Fire Hazard Reduction Plan
Site Reconnaissance for Monarch Butterfly Habitat

Dear Nona:

This letter reports on my habitat assessment for the Monarch Butterfly, *Danaus plexippus*, (Lepidoptera: Danaidae), at the El Cerrito Hillside Natural Area (ECHNA), located in El Cerrito, CA. I can briefly summarize my assessment by stating that portions of the ECHNA and neighboring parcels possess important components of an overwinter roosting site for the butterfly; namely, the preferred trees for roosts, an abundance of favored nectar plants, sheltered areas, and a potential source of water. However, most overwinter roosting sites are generally located within about one-half mile of the coast. As this site is located about three miles from San Francisco Bay, it may be situated too far inland and at too high an altitude to allow the butterfly to use it as an overwintering roost site. Because my assessment was conducted at a time of year when no butterflies would be expected to roost there, I recommend that a follow-up survey be conducted during the appropriate time of year to confirm whether the butterfly actually uses this site as an overwinter roost.

The remainder of this letter provides pertinent background information on the butterfly and features of typical roosting sites, and describes my survey methods, findings, and recommendations for the Fire Hazard Reduction Plan in greater detail.

BACKGROUND INFORMATION

Due to its near worldwide distribution and annual migration behavior, the Monarch butterfly is one of the best known insects in the world. Its annual migrations to California and central Mexico are legendary. However, this phenomenon is threatened due to loss of habitat in areas favored by the butterfly to spend the winter months. Thus, conservation of overwintering sites of the Monarch has become a top priority for the International Union for

the Conservation of Nature and Natural Resources (IUCN). In the U.S.A., entomological and conservation organizations have been lobbying Congress to recognize the butterfly as our national insect. At this time, however, Monarchs are not specifically protected under federal or state laws.

Monarchs cannot survive the colder winter months of most parts of North America. For this reason, Monarch butterflies travel to their wintering areas during the fall months of each year. Monarchs that live west of the Rocky Mountains migrate to coastal areas of California, while those that live east of the Rockies travel to a few sites in the mountains of Central Mexico. In coastal California, overwintering sites range from northern Baja California to southern Mendocino County. Although most overwintering sites in California are usually located within one-half mile of the coast (Weiss et al. 1991, Nagano and Lane 1985), roosts have been found as far inland as Bakersfield in Kern County (Davenport 1983), Saline Valley in Inyo County (Nagano and Lane 1985), and Fairfield in Solano County (Fadem and Shapiro 1979). In the East Bay, there are several unconfirmed or historical reports of Monarch roosts near Pinole, Richmond, Berkeley, Albany, Alameda, San Leandro, and Hayward (Nagano and Lane 1985).

In California, clustering behavior begins once migrating Monarchs reach their overwintering sites in the fall. Two types of clustering occur: a) temporary aggregations that are transient clusters of short duration; and b) permanent roosts that are long term (past the winter solstice) hibernal clusters which also possess the environmental conditions that allow the butterflies to mate in January and February before their spring dispersal (Urquhart 1960). In the fall months, typically in September and October, numerous, generally small temporary aggregations are formed, especially in areas where nectar plants are plentiful near the coast. Several years ago, nearby Albany Hill served as a temporary roosting site. Monarchs at many of these sites disperse to permanent roosting sites, as nectar sources, air temperature, and day length decrease. Some sites may serve as permanent roosts one year, temporary aggregations another year, or a mixture of the two. Also, some locations may occasionally not be used for either purpose.

Both types of cluster sites are usually situated close to the coast, usually within one mile of the shoreline and often within one-half mile. Sites are characterized by groves of trees of mixed height and diameter, with an understory of brush. Often there is a small clearing within a stand of trees, or formed by a combination of the trees and surrounding topography, to provide shelter for the butterfly. These overwintering sites protect the butterfly from wind and freezing temperatures, plus exposure to the sun. The vegetation serves as a thermal "blanket" which moderates extreme weather conditions (Calvert and Brower 1982).

Recent research has demonstrated that forest canopy structure is a primary determinant of microclimatic conditions in forest stands, and is undoubtedly an important factor in the Monarch's selection of particular locations as overwintering roosts (Leong 1990; Sakai et al. 1989; Weiss et al. 1991).

A number of cluster sites in coastal California are located in groves of introduced trees. Favored trees for Monarch roosts include, Blue Gum (*Eucalyptus globulus*), River Gum (*E. camaldulensis*), Monterey Pine (*Pinus radiata*), and Monterey Cypress (*Cupressus macrocarpa*), although a number of other native and introduced species of trees are also utilized. Clusters typically form between about six and 75 feet above ground.

Cluster sites are protected from winds by a combination of tree cover and topography. Gullies, canyons, and the lee sides of hills, are areas where Monarchs will roost, if the appropriate tree cover is present. Although the butterflies are inactive on colder, rainy, or foggy days, they will fly from the cluster on warmer, sunny days to obtain the water and nectar that are needed to sustain the butterflies through the winter. Thus, a nearby source of water and an abundance of winter-blooming nectar plants are also important factors in determining where the butterflies will roost. Monarchs can obtain water from natural or man-made bodies of water, runoff from sprinklers, and dew on vegetation (Nagano and Lane 1985). Important nectar plants at many winter roosting sites include, *Eucalyptus* trees, Coyote Bush (*Baccharis*), wild mustard (*Brassica*), and Bottlebrush (*Callistemon*), although other native and introduced species will be used if available.

In concluding this discussion, I would like to emphasize that although a number of basic features are important determinants in the suitability of a particular location to serve as an overwinter roosting site by the Monarch butterfly, there is also an interaction of these and other factors which is only beginning to be understood by researchers. Also, because features of a site can change due to the growth of trees and understory vegetation, thinning or removal of trees, removal of brush, changes in nectar plant abundance, etc., Monarch usage of a particular site may vary from year-to-year and for longer durations. Indeed, new roosting sites continue to be discovered in California as conditions become favorable, even in areas where roosts were not previously observed. Similarly, when habitat quality at locations, which previously supported winter roosts, deteriorate, Monarchs will cease to roost at these sites. Clearing of brush and thinning of trees are common vegetation management practices that have adversely impacted Monarch roosting sites, even on public lands (Nagano and Lane 1985; Weiss et al. 1991).

STUDY SITE AND METHODS

Study Site.

The ECHNA is a 90-acre open space in the heart of the City's hillside residential area. It consists of five hillside parcels and interspersed ravines and swales. Topography is characterized by steep, hilly terrain. Elevation ranges from about 200 to 630 feet above sea level. Six intermittent drainages occur at the sites.

A quarry was formerly operated near the south-central portion of the site. Today, the primary use of the site appears to be passive recreation by neighboring residents.

The site supports a mixture of native and introduced species of trees, shrubs, forbs, and grasses. Plant communities observed at the site included non-native grassland, Valley Needlegrass grassland, coastal sage scrub, Coast Live oak woodland, riparian scrub, and eucalyptus groves. Dense stands of Pampas grass (*Cortaderia selloana*) and French Broom (*Cystisus monspessulanus*) were also noted in some portions of the site.

Methods.

The project site was visited on June 5th and 6th. The entire site was surveyed by hiking. Neighboring residential areas were also inspected by walking along the streets.

During my survey, I noted the presence of various plants and features that are known to be important to the Monarch butterfly at known overwinter roosting sites (see BACKGROUND INFORMATION). In particular, I searched for the favored trees that are used as roosts, sheltered areas within the groves of roosting trees, nectar plants, water sources, and areas with an understory of brush.

HABITAT ASSESSMENT

All of the biotic and physical features that characterize Monarch overwinter roosting sites were observed at the ECHNA. Favored roosting trees, including Blue Gum, Monterey Pine, and Monterey Cypress, were observed growing in abundance in portions of the ECHNA. More open, but sheltered areas were observed at several locations among the denser stands of trees. Understory brush was prevalent at scattered locations throughout the site. Favored winter nectar plants of the Monarch butterfly, including Blue Gum, Bottlebrush, Coyote Bush, and Wild Mustard, were also common, both on site and on neighboring residential parcels. Several neighboring homes had Bottlebrush or other winter blooming plants among their landscaping. At the time of my site visits, water was present in three of the intermittent drainages. Although these water sources may not be perennial, I suspect that

one or more of these may be spring fed.

Collectively, this combination of essential features suggests that Monarch butterflies could use the ECHNA as either a temporary or permanent overwinter roosting site. The mixture of vegetation types, and sources of water in close proximity to the trees, which could serve as potential roosts, is also favorable because the butterflies would not have to stray far from their roosts to obtain the necessary nectar and water. Favored nectar plants grow both on site and in the yards of neighboring homes. Due to the presence and abundance of Blue Gum (in the groves of trees on site and off site), Bottlebrush (primarily in yards of neighboring residences), Coyote Bush (in brushy areas on site and off site), and Wild Mustard (in grassy fields on site), nectar would be available to any roosting Monarch butterflies at this site throughout the fall and winter months.

Conversely, a couple of factors suggest that the ECHNA may not be suitable as an overwinter roosting site for the Monarch butterfly. First, the ECHNA is located approximately three miles inland from San Francisco Bay. As I noted earlier, most temporary and permanent roosting sites are located within one mile of the immediate coast, and often within one-half mile. Secondly, the site is situated between approximately 200 to 630 feet elevation. Like most of the San Francisco Bay area, El Cerrito rarely experiences freezing temperatures that would be deadly to overwintering Monarchs. Nonetheless, hillside areas are probably slightly colder, on average, than shoreline areas. Thus, the average winter temperatures, and the extremes of winter temperatures at the ECHNA may not favor usage of this site by the Monarch butterfly. Finally, the site is situated on the coastal side of the East Bay hills rather than on the leeward side, which would offer better protection from winter winds and storms. Despite the pockets of sheltered openings within the denser stands of some groves of trees at the ECHNA, the overall site aspect and exposure may not be favorable for establishment of an overwinter roost by the Monarch.

Finally, I should note that although the 90-acre ECHNA is the primary focus of the Fire Hazard Reduction Plan, the Monarch butterfly, if it roosts at this site, would not necessarily limit its overwintering activities to just the ECHNA. Along the northern, eastern, and southern boundaries of the ECHNA are additional parcels of open space or areas where some or all of the roosting activities could occur. Also, favored nectar plants, especially Bottlebrush, grow in the yards of neighboring residences. Thus, if the Monarch butterfly does roost during the winter at the ECHNA, it may be due to a combination of on site and off site factors, which may require some special planning efforts to insure the butterfly's continued future use of the ECHNA.

EVALUATION OF POTENTIAL IMPACTS AND RECOMMENDATIONS FOR PROJECT PLANNING

Because my habitat assessment was conducted at a time of year when Monarch butterflies do not utilize their overwintering sites, my assessment cannot conclusively demonstrate whether the butterfly utilizes the ECHNA as an overwinter roosting location. Although portions of the ECHNA possess all the important features of overwinter roosting sites, it is located farther inland from the immediate coastal areas generally preferred by the Monarch butterfly.

Implementation of the Fire Hazard Reduction Plan for the ECHNA would result in the thinning and pruning of eucalyptus and other trees, removal of some understory brush, and the creation of buffers or fire breaks in the grassland and other portions of the site. Although these management techniques are important to reduce the spread of fire, for the reasons previously discussed, they would alter the characteristics of a good overwinter roosting site by reducing the available shelter in groves of trees, altering the thermal blanket effect, and reducing the availability of nectar plants.

Because of the high fuel load, but uncertainty about usage of the ECHNA by the Monarch, I recommend that some vegetation management activities to reduce the fire hazard be implemented at this time, but that full implementation should not occur until the site can be reinspected during the fall and winter months (at least past the Winter Solstice) when the Monarch butterfly might use the site as an overwintering roost. For example, creation of buffers and fire breaks in grassland areas during the summer months would not interfere with the Monarch butterfly's roosting activities which typically begin in September. Wild mustards and other forbs in these grassland portions of the ECHNA that might be visited by Monarchs for nectar, will grow in these areas with the onset of winter rains. Similarly, groves of trees that lack understory brush, could be thinned and pruned as necessary because Monarchs are unlikely to utilize such groves for roosting due to the absence of a thermal blanket afforded by understory brush. However, other portions of the ECHNA, such as the Quarry Hill Eucalyptus grove should not be managed for fire hazards at this time, because of its potential to support overwintering roosts of the Monarch due to the presence of appropriate trees, sheltered areas, understory brush, water, and nectar plants. If Monarchs are not observed to utilize this and other potentially suitable portions of the ECHNA during the fall and winter months, then vegetation management activities to reduce the fire hazards in these areas could be implemented upon completion of the recommended follow-up survey to detect overwintering roosts of the butterfly.

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If you have any questions regarding my habitat assessment, please give me a call.

Sincerely,

Richard A. Arnold

Richard A. Arnold, Ph.D.
President

Richard A. Arnold, Ph.D.
President

Entomological Consulting Services, Ltd.

104 Mountain View Court, Pleasant Hill, CA 94523 • (510) 825-3784 • FAX 827-1809

24 January 1994

Nona B. Dennis, Vice President
Environmental Science Associates, Inc.
301 Brannan Street
Suite 200
San Francisco, CA 94107-1811

RE: El Cerrito Hillside Natural Area Fire Hazard Reduction Plan
Status Surveys for Overwintering Monarch Butterflies

Dear Nona:

This letter reports the results of my recent surveys for overwintering Monarch butterflies at the El Cerrito Hillside Natural Area (ECHNA), located in El Cerrito, CA. Briefly, no Monarch butterflies were observed during my surveys, which indicates that this species is not using the ECHNA as an overwintering site. For this reason, implementation of the fire hazard reduction plan should not have any adverse impact on the Monarch butterfly.

My surveys were conducted on January 2nd, 5th, 7th, 9th, and 12th, 1994. The timing of my surveys coincided with dates when Monarchs were overwintering at known overwintering locations in northern California. This was confirmed by contacting the Natural Bridges State Park, near Santa Cruz, and the Asilomar State Park, near Monterey, which are locations where the Monarch annually overwinters.

Weather conditions for my surveys were generally quite good, with temperatures ranging from about 58 to 70 degrees Fahrenheit. On a couple of days, I had to wait for the fog to burn off, but I was able to spend 20 hours of sunny, warm, and calm weather at the ECHNA site to conduct my survey. During my visits, other insects and butterflies, notably Painted Ladies, Sulphurs, and Buckeyes, were active. If Monarchs had been present in the ECHNA, they should have been actively flying as the aforementioned butterflies were, which would have enabled me to readily observe them. In addition to searching for flying adults, as I hiked throughout the various sectors of the ECHNA, I also used binoculars to visually search the canopies of trees, especially Blue Gum, where overwintering clusters of Monarchs aggregate. Finally, I also inspected areas where winter-flowering nectar plants of the Monarch, notably Blue Gum and Bottle Brush, were observed. My surveys of nectar plants also included nearby residential neighborhoods surrounding the ECHNA,

where the Bottle Brush was frequently used in the landscaping of several neighboring residences.

Throughout my surveys, no Monarch butterflies were observed. These findings indicate that Monarchs butterflies do not use the ECHNA as an overwintering site. For this reason, implementation of the proposed fire hazard reduction activities of the ECHNA should not adversely affect the Monarch butterfly.

If you have any questions regarding my survey, please give me a call.

Sincerely,

Richard A. Arnold

Richard A. Arnold, Ph.D.
President

BEEMAN & ASSOCIATES
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Lafayette, CA. 94549
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Specializing in Wildlife Status and Monitoring Field Surveys

July 10, 1993

Nona B. Dennis
Vice President
Environmental Service Associates, Inc.
301 Brannan Street, Suite 200
San Francisco, CA. 94107-1811

RE: El Cerrito Hillside Natural Area Fire Hazard Reduction Plan (ESA Project #920492) - Site Review for Alameda Whipsnakes

Dear Nona Dennis:

As per your letter, dated May 5, 1993, I performed a comprehensive habitat survey on the site to determine the possible presence of the Alameda Whipsnake within this hillside area.

The Alameda Whipsnake (AWS) (*Masticophis lateralis euryxanthus*) is listed as a threatened species by the California Department of Game, and as "Candidate 2" under Federal Endangered Species Act which makes it eligible for listing on the federal registry as well. A species listed as a Category 2 Candidate when present information indicates that that proposing to list the species or subspecies as threatened or endangered is probably appropriate, but complete conclusive data on biological vulnerability and threat is not currently available. Habitat loss is considered to be the foremost significant reason for its decline.

The AWS is a large slender snake (up to 60+ inches), wary, elusive, fast-moving, diurnal species that has a narrow neck a relatively broad head with large eyes. Color is black to dark brown above, with a distinct orange to yellow-orange stripe down each side to or beyond the vent. In this subspecies of *M. lateralis* the lateral stripes are one and two half-scale rows wide. The forward portions of the ventral surface are orangish, and the posterior portions are cream grading to pinkish on the underside of the body and tail.

It feeds primarily on lizards, but it will also take other snakes, frogs, mice, and birds. This snake is an active forager, hunting on warm sunny days when its major prey species, the Western Fence Lizard (*Sceloporus occidentalis*) is also active. This snake displays a characteristic behavior of elevating the head often during foraging, presumably for the purpose of spotting prey and/or predators.

The AWS prefers chaparral or coastal scrub habitat, with a west to south to east facing exposure, usually containing grassy patches, and rocky outcroppings, but can also be found in gullies or stream courses near their preferred habitat. Most sightings have been within 600 feet of moist areas (e.g. riparian corridors, seeps, springs), which may be

required for egg deposition. Males become active in mid-March to mid-April, while most females usually are encountered somewhat later (late May-June). This difference in activity may be the result of males travelling greater distances while actively seeking females in the early spring.

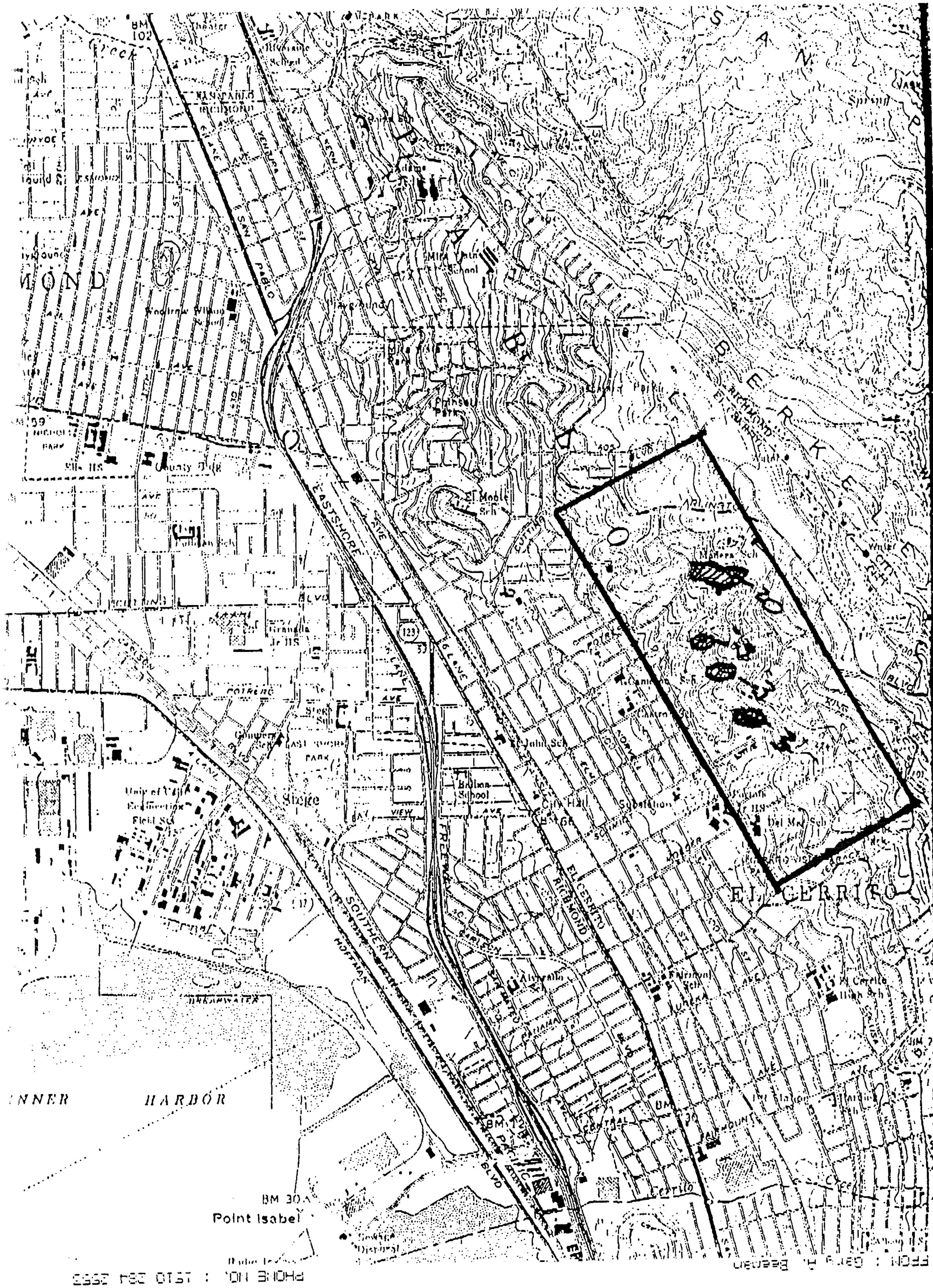
I performed four habitat field surveys on this site between February 13 and June 25, 1993. This site contained four prime AWS habitat parcels, three parcels of 3± acres and one parcel of 20± acres. (Attached is a site map denoting the locations of these prime habitat areas) The 20± acre parcel, located to the north of the other parcel sites, consists of scrub composed mostly of Scotch Broom (*Cytisus scoparius*) and Coyote Brush (*Baccharis*). The other three parcel sites, consist of a mixture of Coyote Brush, Monkey Flower (*Mimulus*), Poison Oak (*Rhus diversiloba*), and Chamise (*Adenostoma fasciculatum*). The other land surrounding these four prime AWS habitat parcels, but within the survey area, was rated at highly unlikely to poor AWS habitat, but that habitat may be used as AWS corridors between these four prime habitat sites at various times. This survey site was additionally evaluated using the Beeman/Mullen AWS Habitat Index System. AWS have been found approx. 2.5 miles southeast in Tilden Park, Contra Costa County.

If habitat disturbance is performed in or near these four prime AWS habitat sites because of work performed for this El Cerrito Fire Reduction Plan; mitigation for the AWS would probably be required by the California Department of Fish and Game. Several on-site mitigation and habitat management techniques could be implemented to insure no negative impact on AWS populations resulting from fire reduction work performed on this site. The following are some possible habitat management techniques that could be used for mitigation:

1. Building rock piles to create refugia for AWS and/or prey species.
2. Burning or cutting openings in closed scrub canopy to improve AWS and/or prey species habitat.
3. Planting additional native scrub habitat.
4. On-site supervision of work performed in prime AWS parcel sites.
5. Install undercrossings under new roads built near AWS prime areas and/or near suspected AWS corridors.

Sincerely,

Gary A. Beeman



FROM : Gary A. Beeman

PHONE NO. : 1510 524 3552

October 19, 1993

Mr. Brian Hunter
Regional Manager, Region 3
California Department of Fish and Game
P.O. Box 47
Yountville, California, 94599

RE: Alameda whipsnake and Monarch butterfly habitat mitigation for the City of El Cerrito Hillside Natural Area

Dear Mr. Hunter:

The purpose of this letter is to request informal consultation with the Department of Fish and Game concerning potential impacts to biological resources within your perview. This letter follows several un-successful attempts to initiate such consultation by telephone.

The City of El Cerrito (City) owns a 90-acre public open space in the heart of the City's hillside residential area. This is called the El Cerrito Hillside Natural Area (HNA). The HNA, located near the northern end of the Berkeley and Oakland Hills, occupies a portion of a steep slope within the San Pablo Ridge, surrounded completely by residential development. Elevations range from 200 feet to over 630 feet above sea level. The El Cerrito Fire Department has long been concerned about the potential of a fire originating on the HNA and spreading to adjacent privately owned undeveloped land and neighboring residential areas, or, conversely, originating outside the HNA and being carried by the HNA to neighboring residential areas.

In November of 1992, the City selected ESA to assist the City in completing the plan for fire hazard reduction within the HNA, and to conduct preliminary review of the plan under CEQA. The Draft Fire Hazard Reduction Plan (FHRP) recommends three types of fuel modifications within the HNA. These are mechanical, hand labor, and controlled burning. The FHRP is based in part on a previously prepared Vegetation Management Plan (LSA, 1987) and incorporates the results of two background reports prepared by ESA, and an assessment of the El Cerrito fire protection system for the HNA prepared by the City Fire Department. The ESA background reports are (1) a Fire Hazard Analysis (FHA) prepared by ESA subconsultant David Sapsis (ESA/Sapsis, 1993) and (2) a preliminary Environmental Assessment (EA). Each of these reports is enclosed for your review.

The EA identified two special status animal species as having potential to occur within the HNA: Alameda whipsnake and Monarch butterfly. ESA contacted biologists Gary Beeman and Dr. Richard Arnold to conduct limited habitat surveys for these species. The following presents a summary of their findings. Copies of the original reports are enclosed for your review. ESA biologists also conducted appropriately timed surveys for special status plant species on the site and found no evidence of their presence.

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Gary Beeman performed four habitat surveys between February 13 and June 25, 1993 to determine the potential presence of Alameda whipsnake within the HNA. He determined that the HNA contains three parcels (approximately 3 acres each) that are considered good habitat for Alameda whipsnake. An adjacent parcel containing likely habitat is approximately 20 acres in size. The City proposes to reduce fuel loads and, at the same time, enhance Alameda whipsnake habitat by using prescribed burning in limited areas to open dense scrub canopy and create mosaics. In addition, rock piles would be built to create refugia for Alameda whipsnake and/or its prey species. In addition, the City would clear a band of vegetation to buffer homes from vegetation fuels on the HNA. Although this may reduce scrub habitat suitable for supporting Alameda whipsnake, it would also deter snakes away from homes and household pets that prey on this species.

Dr. Richard Arnold performed a habitat assessment of the HNA for Monarch butterfly on June 5 and 6, 1993. He determined that suitable habitat for this species occurs within the HNA. Dr. Arnold will conduct surveys this winter to determine if portions of the HNA are actually utilized by Monarchs. The City is proposing a temporal separation of fuel reduction and Monarch roosting if Monarchs utilize portions of the HNA.

ESA is completing a Negative Declaration for the proposed FHRP and would greatly appreciate your review of the enclosed documents and input on the draft mitigation measures outlined for Alameda whipsnake and Monarch butterfly. We (City staff, ESA, and ESA subconsultants) are available to visit the site with Department representatives at your convenience. We hope to complete the Negative Declaration after Dr. Arnold conducts the sinter survey in December but would prefer your imput before the Negative Declaration is circulated.

Thank you for your assistance and if you have any questions concerning the project or proposed mitigations please contact myself or Nona Dennis (Project Director) at (415) 896-5900.

Sincerely,

Nancy Barbic
Project Manager

c: Patrick O'Keefe, City of El Cerrito Community Development Department
Steve Cutwright, City of El Cerrito Fire Chief
Gary Beeman, Beeman and Associates
Dr. Richard Arnold, Entomological Consulting Services, Inc.