APPENDIX C

ISSUES ANALYSIS

Appendix C

CONTENTS

ISSUES ANALYSIS

This section of the Master Plan analyzes issues related to attaining the identified goals and objectives. The analysis will discuss the opportunities and constraints in resolving the resource and land planning issues. Many of the concerns stated in this section are based on comments gathered through public contact and correspondence during the planning process, and from extensive research analysis.

A. General Issues

1. Park and Natural Preserve Uses

Many times, the most desirable areas for park and recreational facilities are also areas of unique and sensitive resources. It is those resources that are most vulnerable and most easily destroyed by inappropriate uses. Consequently, a potential conflict is created between the parks and recreation and the natural preserve elements of Edgewood, since recreational development may adversely impact fragile and highly sensitive habitats.

Since Edgewood is recognized as a park and natural preserve, there are competing concerns that either (1) too much emphasis will be paid to the preserve aspect, at the expense of recreation activities, or (2) too much emphasis will be paid to recreational development, at the expense of resource preservation.

In order to preserve the natural habitats, some visitors believe that more restrictions will be placed on the daily recreational use of Edgewood, and this will eventually lead to the closure of some facilities. In contrast, if more recreation activities are provided, other visitors believe that the additional and continued "wear and tear" on the surroundings will not only negate preservation and restoration efforts, but will eventually lead to the depletion of Edgewood's prime natural resources.

To reiterate, there are existing legal statutes and institutional agreements that set the parameters for this planning process. First of all, Federal and State statutes compel the County of San Mateo to protect Edgewood's rare, threatened, and endangered species and habitats. Secondly, the General Plan guidelines pertaining to "Natural Preserve" (also outlined in Resolution 56062) are also applicable to the sensitive areas within Edgewood. Thirdly, the MROSD Modified Open Space Easement limits the land uses allowed at Edgewood to low-intensity recreational activities. Accordingly, if the protection and enhancement of Edgewood's prime

natural resources are threatened by potential development, resource protection should prevail. In other words, this Plan is designed such that natural resource protection goals would not be compromised by competing or conflicting recreation or development-oriented goals.

This Edgewood Master Plan provides the basis for determining a compatible balance between the recreation and the natural preserve elements of the site. Not only does the Plan identify an acceptable level of low-intensity recreational uses deemed to be congruent with preservation efforts, but more ideally, it prescribes recreational activities which would enhance preservation efforts. For example, an interpretive program is a low-intensity recreational activity that can lead to increased environmental protection.

Locating recreational uses away from environmentally sensitive areas is an effective method for minimalizing impact on the natural resources. Within Edgewood there are areas, such as the vicinity of Old Stage, which are distant from highly sensitive areas. In these locations, recreational impact on sensitive habitats will be minimal.

Recreation uses can also be designed so that related activities and development protect prime natural resources. Within Edgewood, some portions of trails, as well as the service road, cross serpentine grassland and chaparral, or in some cases infringe on the protected species' areas. Methods to harmonize trail use and resource protection are discussed in the 'Trails' section.

2. Value of Protecting Prime Natural Resources

The availability, quality, and stabilization of Edgewood's fragile natural resources are of importance to the people of San Mateo County. The serpentine soils play a vital role in sustaining the ecological system. These soils help to (1) sustain endangered and native plant life, (2) provide habitats for insect and animal species, (3) provide natural ground cover that protects resources from accelerated erosion, and (4) provide opportunities for scientific and educational pursuits.

3. Value of Providing Recreational Opportunities

The parks and recreation system within San Mateo County contribute significantly to the quality of life of its residents and visitors. Nature-oriented open spaces located close to urban areas, such as Edgewood, provide an escape from mental and physical stresses that come with urban living. Participation in activities such as picnicking, camping, nature watching, hiking, jogging and horseback riding not only help in maintaining a healthy community environment, but also in learning

much about the natural environment.

4. Preservation Demands

Natural resources can be quickly lost when disturbed by natural phenomena, as well as human activities. Thus, it becomes vital that natural resources be protected, and where possible, restored. Fortunately, accelerated depletion of natural resources can usually be avoided through appropriate management practices. Protection issues and measures which will guarantee the continued availability of Edgewood's natural resources will be discussed under 'Natural Resource Issues'.

5. Recreational Demands

According to the County's General Plan, there is a need for leisure activities that are easily accessible. A review of previous studies indicates that such demand focusses on access to pedestrian and equestrian trails, general nature study areas, and picnic areas, particularly for the physically impaired and the increasing population of seniors. Nature-oriented parks or preserves have been identified as the preferred type of outdoor recreation area. Edgewood, in its present state, can accommodate many of the foregoing recreational needs and still conform to existing legal and institutional parameters. However, careful attention to siting, design and impact mitigation would be required.

B. Natural Resource Issues

Natural resource management issues include: examining techniques to heighten resource protection, coordinating efforts related to the protection of native plants and sensitive habitats, and, in general, addressing adverse impacts associated with human intrusions.

1. Resource Management Techniques

Natural resource management techniques are available to: (1) preserve and enhance the natural vegetation, (2) promote the restoration of native vegetation, (3) preserve and protect unique species and habitats, and (4) reduce wildfire potential.

At Edgewood, the passive and active techniques include: (1) regulating land use for habitat protection, (2) classifying sensitive habitats, (3) installing protective barriers to create buffers adjacent to sensitive habitats, (4) educating visitors to some

extent, (5) enforcing regulations, (6) hand weeding, (7) mowing and cutting, (8) removal of large specimens by hand, and (9) restoring degraded areas by planting native grasses. To reiterate, these efforts have resulted in the successful revegetation, as well as the successful removal of exotic and invasive plant species in some areas of the site.

Of interest is whether additional protective measures are needed or desired to increase the existing level of protection given to Edgewood's water, soil, plants and animals. There are several management methods tried in preservation areas that are typically applied on a long-term basis, and include: prescription or controlled burning, controlled or managed livestock grazing, biological controls (such as the weevil), biodegradable chemicals (such as glyphosate (Roundup)) and triclopyr (Brush-B-Gon), and mechanical methods (such as mowing).

Since it is doubtful whether one option would be effective at managing all targeted species, a mix of management strategies is usually considered for the long term. Resource management techniques are typically first tried on an experimental basis. Experimentation usually involves: (1) selecting a number of small plots, (2) trying different intensities of the prescribed method over different periods of time or seasons (e.g., summer, winter), and (3) monitoring any impacts on the resource.

With respect to Edgewood, if additional methods are proposed, they must be in compliance with existing agreements, particularly the MROSD Easement which states that burning, spraying, grazing, etc. is not allowed, "except to ... control ... exotics." Moreover, in addition to County-issued permits, USFWS recommends that, if the resource management activity involves even a small amount of 'take', a permit or exemption be obtained (as described under 'Relevant ... Laws Regarding Sensitive Habitats and Endangered Species').

2. Other Resource Protection Issues

Another issue associated with resource protection relates to facility, utility, and resource management efforts in general. If persons performing activities such as trail maintenance, utility maintenance, exotic plant removal, and habitat restoration are not knowledgeable about the intricacies of the Bay checkerspot butterfly's mating season, migration, feeding patterns, etc., the host vegetation containing butterfly larvae could possibly become disturbed. With the assistance of government agencies and the scientific community, the County could initiate a program of specific and clearly defined guidelines that fully informs and directs staff, utility providers, and volunteers of ways to avoid and mitigate habitat disruption.

Concern has also been voiced about the unauthorized removal of native plant and seed specimens by, for example, visitors and students on Edgewood field trips. This activity could be to the detriment of preservation and restoration efforts. As such, it may be necessary to restrict the removal of on-site species to habitat restoration or reintroduction purposes only. To ensure this restriction, open space providers usually increase security and environmental awareness efforts.

To verify the effectiveness (or lack thereof) of foregoing resource management endeavors, a monitoring program is invaluable. Monitoring programs are used to track the existence of identified biotic species, and periodically evaluate, for example, whether populations of these species are responding as expected. Monitoring allows for changes in management strategies in order to compensate for any unexpected population trends. Monitoring also addresses the quality and quantity of occupied and potential habitat for the species. USFWS recommends that a monitoring program be implemented every 5 years.

There is also concern that: (1) routine route maintenance operations carried out primarily in the serpentine grassland may be harmful to rare plants, animals and their habitats (this issue will be discussed under 'Trails and Service Road'), (2) off-trail use by visitors may lead to trampling of sensitive areas such as the serpentine bunchgrass habitat which becomes extremely sensitive to traffic damage during summer months (this issue will be addressed under 'Circulation, Parking and Access'), and (3) a potential uncontained fire may threaten not only adjacent neighborhoods, but also sensitive areas (this issue will be discussed under 'Fire Access Route and Fire Management').

C. Recreational Facility Development Issues

1. Amenities to Enhance Visitor Experience

Recreational amenities and facilities are usually installed in parklands to increase overall visitor use and enjoyment. When deciding whether new improvements are appropriate or desirable, park providers usually focus their attention on both providing the necessary support services and assessing whether such facilities are compatible with a site's intended use, setting and character.

a. Old Stage Day Camp. The name "Old Stage Day Camp" does not reflect the primary use of this area which is picnicking. Because the name is misleading, potential visitors may not be attracted to the area if they are unaware that other activities are carried on. One way to increase visitor awareness is to incorporate, to the degree necessary, the primary function of that facility in its name. For

example, to reflect its intended uses, "Old Stage Day Camp" could be renamed "Old Stage Picnic Area and Day Camp." Alternatively, a generalized name reflects a range of activities carried out in an area. For example, if the interpretive center proposed in the 1982 Edgewood Park Master Plan materializes, Old Stage Day Camp could be renamed "Old Stage Recreation Area."

The purpose of the Old Stage area is to cluster the structural facilities and some of the permitted recreational activities on the edge of the site which is furthest from the highly sensitive habitats. Clustering upholds a basic planning objective of the Master Plan -- to preserve (and therefore maximize) open space so as to allow natural processes and desirable ecosystem changes to take place. By clustering, natural resource protection goals will not be compromised, and the impact on the natural environment will be minimized. Appropriate facilities and activities, such as picnic sites and an interpretive center, will be discussed later.

b. ***Trails and Paths.*** In many areas of Edgewood, trails and paths are available for scenic walking, hiking, jogging, and horseback riding. These trails and paths are not as widely used when compared with usage in other County facilities. This is partially because complementary facilities such as benches, bicycle racks, portable toilets, hitching posts and water holes for horses, which are intended for the trail users' safety and convenience, are very limited. Edgewood patrons have expressed a desire for these amenities along the trails, and at on-site and off-site parking areas.

c. ***Signs.*** The extent of Edgewood's resources is relatively unknown to the general public. Information about Edgewood is not strategically placed, and visitors are often unsure about where they can go, what they can see, and where use is restricted. For example, restriction signs in sensitive areas are either lacking, inconspicuous, or have been vandalized. This could result in more degradation than would occur with better information. To facilitate full visitor use and awareness, signs of suitable color, material and content, are valuable in indicating where activities are located, distances, names of all trails, restrictions, etc. To minimize the required number of signs, where possible, they are often placed in areas that are most frequented. Signs that are of a standard format provide continuity by maintaining the connection to the rest of the sign system.

d. ***Benches.*** Two existing benches at Edgewood are located (1) along the Sylvan Loop Trail and (2) along the Ridgeview Loop Trail. These provide an alternative to visitor sitting on the ground when resting or enjoying the view. In sensitive areas, sitting on the ground could foster habitat degradation.

Before siting a bench, park providers usually consider the following factors: (1)

cost, (2) potential for vandalism, including littering and smoking problems, and (3) potential to create either unwanted traffic or an unwanted trail, both of which could have adverse impacts on nearby sensitive areas.

e. Picnic Areas. Edgewood's five picnic sites are not used to their full capacity. The existing picnic sites can accommodate groups of no more than 50 persons. In addition, the picnic area is smaller than originally designed because some picnic sites were removed due to area reconfiguration. Park providers usually select picnic site location based on the quality of their viewscapes, good sun exposure, and available canopy. Moreover, picnic areas that are located as far apart as possible provide for a quiet experience. Picnic sites that contain accompanying furniture such as tables, barbecues and trash containers offer maximum enjoyment to visitors.

f. Interpretive Center. Edgewood's outstanding resources and recreational features offer tremendous possibilities for interpretation. To date, interpretive tours and programs have increased mainly through private efforts. Although the tours are increasingly popular, further promotional activities could appeal to the general public at large.

According to MROSD, the principal type of interpretive use is docent-led hikes and talks. However, interpretive centers are useful in reaching a wider audience as it could serve as the central point for printed materials, and information about all types of educational programs. They are effective in providing year-round services to help educate visitors (such as individuals, families and school and youth groups) and increase their awareness about the importance and value of the natural environment, sensitive and fragile resources, and ultimately, how to protect them.

An ideal location for an interpretive center would be in an area that is most frequently visited. At Edgewood, the amphitheatre area, in the western part of Old Stage is fitting because the facility is presently underused and abused. Alternatively, the meadow area could serve an equally functional purpose.

The construction and operation of an interpretive center require significant financial expense, agency discussions, and commitment. Due to ongoing budgetary cutbacks experienced by many parks and recreation departments, planned interpretive centers often do not materialize. Thus, it would be more practical and economical to consider the construction of a small-scaled or temporary structure. In terms of commitment, much effort is needed in developing and operating interpretive programs. This has been MROSD's experience in developing an interpretive center at Skyline Ridge Open Space Preserve. Staff and volunteer help is essential in providing interpretive services since it may not be financially feasible

to employ an on-site naturalist. Regarding Edgewood, even if the construction of an interpretive center is feasible, final approval will be subjected to MROSD design review requirements, as well as the preparation of an environmental document to determine and mitigate significant adverse impacts, if any, as required by the California Environmental Quality Act. Although an interpretive center could still serve as an official meeting place for interpretive programs, further investigation on the specifics of the center and the nature of interpretation at Edgewood, nevertheless, is necessary.

In the absence of interpretive centers, nature interpretation often assumes a more passive form. Trail signs, displays and printed information are made available to the public at convenient locations, both on-site and off-site.

g. Toilet Facilities. For public safety and convenience, a bench and a toilet provided in the same area makes for an optimum rest stop along a route. Edgewood patrons have expressed a need for a portable toilet since the only existing facility is at Old Stage Day Camp. Horses and bicycles are not officially allowed in this area.

Toilet facilities considered ideal in open space areas are those requiring no chemical pollutants, and minimum maintenance. Composting toilets allow human waste, toilet paper and organic material to break down naturally. In addition to being odor-free, they are environmentally safe since they require no septic system, water holding tank, or chemicals, and produce no pollutants. The principal deterrent to siting a toilet is the potential for vandalism.

When siting a toilet, park providers usually consider the following factors: convenience and accessibility for disabled patrons, nearness to other facilities, and separation from sensitive habitats.

h. Edgewood/Cañada Roads Staging Area. Because of accessibility to the Edgewood Trail to enter Edgewood, it has been suggested that the junction of Edgewood Road and Cañada Road be transformed into a staging area. Situated near the Cañada Trail Head, this area provides off-shoulder parking for about 20 vehicles, in an angle perpendicular to Edgewood Road. To enter Edgewood, visitors follow the Edgewood Trail via the I-280 underpass. This off-site area is fully utilized not only by Edgewood visitors, but also by people using Cañada Road for bicycling, especially on the first, third and fourth Sundays from March to October. Thus, any proposed facilities could be shared by both user groups. Amenities could include a low-maintenance portable toilet, bench, interpretive kiosk, bicycle rack, and expanded parking along Edgewood Road. Before plans for a staging area could materialize, the following must be investigated: (1) ability to

obtain an encroachment permit from County Public Works to utilize the area for such purpose, (2) safety factors involved in crossing the street, (3) parking area expansion (4) proper siting of proposed facilities, (5) potential environmental impact posed by increasing access through the western side of Edgewood, and (6) costs.

2. Edgewood Maintenance Facilities

The existing service area and ranger station, located in the same structure as the washroom stalls, is heavily used and does not fully serve current needs. As such, a ranger must go some distance to another County park facility in order to borrow or retrieve equipment. This is time when the ranger is not able to patrol Edgewood. Relocating the present ranger facility to one of the nearby on-site ranger residences, or establishing an off-site service area could reduce this lost time.

3. Trails and Service Road

Erosion can accelerate quickly where trails are steep or poorly located in relation to topography, and where trail traffic is particularly heavy around facilities and trail heads. Soil erosion is further exacerbated when wet trails are disturbed by maintenance vehicles, joggers and horses. Moreover, simultaneous use of narrowed trails by joggers or hikers and equestrians increases erosion at the outer edges of trails. The use of unauthorized trails and pathways also contributes to erosion problems.

Of particular concern is erosion that occurs in portions of routes located in serpentine grassland which contains sensitive plant and butterfly habitats. These areas can be easily disturbed or degraded by human activities and developments. As noted by USFWS, it is difficult to entirely eliminate adverse impacts that could result from recreational, resource management, and maintenance activities. It is likely that such activities would result in small amounts of "take," as discussed previously under "Relevant ... Laws Regarding ... Sensitive Habitats and ... Species."

a. ***Route Maintenance Activities.*** Especially during the wet winter months, well-maintained trails are essential in preventing soil erosion hazards and habitat disruption, as well as in providing access for maintenance and emergency vehicles. To ensure the safety of trail users and resource protection, the following options for maintaining and repairing all-weather trail surfaces have been explored. These options are preferred when the material found at a trail site is inadequate. All are deemed to be environmentally protective and aesthetically compatible with serpentine soils and associated plant and animal species. In selecting an option, it

is important that the physical (runoff) and chemical (nutrient) characteristics of a site be altered as little as possible.

Native Materials

1. Native rock and soil are most biologically and chemically compatible for trail surfaces in sensitive habitats. Based on MROSD's trail building and maintenance experience, avoiding the movement of on-site materials is a primary objective. Thus, the redistribution of native rock and soil could have an equally devastating impact on the areas where such materials are to be excavated. To avoid on-site excavation, a common practice of GGNRA is to 'stockpile' on-site materials when a natural occurrence, such as a landslide, takes place. Another constraint to using native on-site materials to repair serpentine tread trails is that state law prohibits excavation, relocation and compaction of serpentine soils if the asbestos content of that soil exceeds 5%. At present, the level of asbestos content in Edgewood serpentine soils is unknown and would need to be determined if this option is to be pursued. As an alternative, off-site serpentine soil is available from a Bay Area landfill, but its use will be subject to a Health Department oversight because of the soil's asbestos content.

Non-Native Materials

2. Quarried Basalt: The standard rock used in County parks for all-weather trail surfaces is State Class 2 3/4" basalt from Langley Hill Quarry in Woodside. This rock is durable, and binds and compacts well on the trail surface. According to Dr. I. Murarka's testimony (Attachment C-1, No.1), the chemistry of quarried basalt would pose no threat to the Edgewood ecosystem and is suitable for use with serpentine soils since quarried basalt is alkaline, and chemical decomposition occurs only in geologic time scales.

   California Native Plant Society maintains that this rock introduces or promotes exotic plant growth. However, conversations with quarry personnel and transport drivers indicate that this may not be true since (1) the basalt results from virgin rock seams that have undergone intense heat and pressure, and (2) it is unlikely that seeds may become attached to the rock during the short haul period.

3. Quarried Granite: Quarried granite is another standard material used for trails in some preserves, including GGNRA's Marin Headlands. Quarried granite is locally available from Pilarcitos Quarry near Half Moon Bay. Large boulders can be blasted to usable sizes and placed in the trail bed

foundation, before being covered with on-site native material. This procedure is effective in maintaining durability and subsurface drainage. As with quarried basalt, Dr. Murarka has stated that the chemistry of quarried granite would pose no threat to the Edgewood ecosystem.

4. Chert: Chert, an equally durable inert rock, is another non-native rock option. According to Paul Heiple, a local geologist (Attachment C-1, No.2), chert contains only those elements that are already present in serpentine, and is harder, therefore more durable, than both granite and basalt. Also, chert has a lower probability of leaching or breaking down chemically than both basalt and granite. Chert is found within Edgewood, and is available from quarries in Sonoma and Contra Costa Counties.

Non-Rock Techniques

5. Wood chips: Wood chips have been suggested since they can absorb water on a trail. Staff research indicates that wood chips do not provide an adequately firm base for all-weather trails. Moreover, it is not suitable for areas with steep slopes, and where there is equestrian traffic.

6. Duck Walks: In areas where seasonal seeps regularly create a mushy or saturated trail surface, a raised trail is preferable. Slightly raised walkways or "duck walks" are commonly made of redwood or pressure treated fir, and are used in other Bay Area preserves, notably the GGNRA. Because the walkways are raised, foot or equestrian traffic would not impact on sensitive areas. Although these walkways require low maintenance, they may not be suitable in areas of steep inclines.

In conjunction with the above alternatives, it is feasible to consider restoring the trails to multi-use trail width standards that were applied when the Edgewood trails were originally built.

As with any activity, USFWS recommends that if the trail maintenance activity involves even a small amount of 'take', a permit or exemption be obtained (as described under 'Relevant ... Laws Regarding Sensitive Habitats and Endangered Species'). In addition, it should be determined if existing or proposed County-wide operating and maintenance standards are applicable to Edgewood, or whether Edgewood-specific standards would be more appropriate due to Edgewood's sensitive environment. This can only be determined after pertinent issues raised have been resolved.

b. ***Rerouting.*** Another method to avert environmental disruption is rerouting that portion of trails and the service road which infringe on sensitive areas. Where optimum resource protection is sought, this method may not be suitable. Instead, route closure may be considered as a more direct means to attaining resource protection. If, however, some degree of route access is to continue, this method may apply, but it may only be feasible if an alternative route through a non-serpentine area exists.

c. ***Sylvan Way Access.*** Sylvan Way Access is used by residents in adjoining neighborhoods and is considered hazardous. Also of concern is that this entry point is situated on private property. To reiterate, Parks and Recreation Division is currently attempting to obtain an easement for this property. If they are unsuccessful, it may be possible to relocate the entry point to a nearby public right-of-way adjoining the Edgewood boundary. With respect to public safety and convenience, it has been suggested that in addition to providing a directional sign, a bridge can be constructed across the creekbed, linking to both sides of the terrain. As an alternative, stairs can be constructed to overcome the steepness of terrain, and a less elaborate bridge be built on either edge of the creekbed. If none of the suggestions are feasible, it may be necessary to close this entry point.

4. Circulation, Access and Parking

Edgewood is very accessible from any direction. Traffic congestion presents no threat when accessing the site, and it is not expected to be a future issue since no development is anticipated on nearby lands. However, the circulation problem occurs inside, not outside, Edgewood. Although part of Edgewood's charm is its almost casual circulation system, visitors have expressed difficulty in deciphering between authorized and unauthorized entrance points, pathways, and trails. Visitors also expressed concern that there are neither sufficient parking spaces to accommodate their needs on busy days, nor any direct public transportation to the site.

Techniques aimed at improving Edgewood's internal accessibility for full visitor use include determining (1) how to modify and improve the existing system for vehicles, bicycles (to Old Stage), equestrians, and pedestrians, (2) how and where to provide safety and accessibility improvements, (3) how to minimize traffic and parking impacts on adjacent neighborhoods, and (4) how to remove physical barriers for disabled people. All techniques are discussed in conjunction with the aim of maintaining environmental compatibility.

a. ***Unauthorized Access Points and Routes.*** As previously discussed and illustrated on Figure 9, there are several unauthorized entry points and routes

within Edgewood. Similar to authorized trails, unauthorized trails which cross sensitive areas are of particular concern. For example, Trail 1B is one of the most popular unauthorized trails in Edgewood. Since the trail crosses a butterfly habitat, the County historically has tried to restrict its use. However, visitors continue to access it to reach a desirable viewpoint.

Generally speaking, some visitors believe that unauthorized routes exist because authorized routes do not serve the public adequately. Thus, these now-customary entry points and routes should be formally authorized. However, the County believes that if these points and routes continue to exist, their use could lead either to continued trampling and erosion of sensitive areas, or in some cases, safety hazards.

In the interest of preserving and enhancing overall environmental quality of an area, these unauthorized entry points and routes should not be accepted as authorized. Their closure would also be consistent with the goal of preserving Edgewood's prime natural resources.

On the other hand, because of the inherent attraction to some areas, e.g., unique views, visitors most likely will continue to be drawn to these. Consequently, if an unauthorized route is closed, and less than adequate enforcement ensues, degradation of that area may continue. Short of redesignating an unauthorized trail, some park providers pursue a controlled access approach. This could entail: (1) placing protective barriers along the route so that visitors to not wander off authorized areas, (2) providing interpretive information to educate visitors, (3) providing directional and restriction signs, and (4) increasing enforcement through staff and volunteer patrols to help monitor and discourage unsanctioned activities.

Possible basic guidelines for selecting an unauthorized route to be controlled are: (1) if multiple unauthorized routes to the same destination exist, preference should be given to the route located furthest away from sensitive habitats, (2) it should link to an existing authorized trail, (3) if a controlled route instead of route closure presents a better means of environmental protection.

b. ***Route Closure.*** Though route closure has been identified several times as a means to avert environmental impacts, it is a long, time-consuming and difficult task to accomplish. Since the "old" routes are already defined, visitors will be inclined to use them, ignorant of the fact that a route has been closed. In addition, placing multiple signs along a route may detract from the site's natural ambiance. Thus, before route closure can be enforced, it is necessary to examine the existence of methods that have not only been proven to be effective, but also environmentally and aesthetically compatible.

c. ***New Routes and External Linkages.*** To improve internal circulation, it has also been suggested that new internal trails be constructed. In addition, if regional trail linkages proposed by the Trails Advisory Committee were to materialize, it may be necessary to create new trails for such purposes. If new trails are allowed, they must be restricted to areas of low vulnerability and risk so as to protect ecological resources.

d. ***Parking and Transportation Amenities.*** There are one on-site and several off-site parking lots available for use by Edgewood visitors. Consequently, overflow parking occurs on other County and governmental agencies' lands, and adjacent neighborhoods. The off-site parking lots do not provide bicycle racks to accommodate cyclists.

Providing parking for bicycles and buses at entrances could ease the parking situation, and at the same time, encourage the more "environmentally friendly" modes of travel. Any provision of additional on-site or off-site parking spaces should be discussed with relevant parties such as Public Works and San Francisco Water Department, so that future siting and design would cause the least possible site disturbance, as well as minimize safety hazards.

It has been suggested that shuttle buses for transporting visitors between off-site parking and an entry point during the peak visitor season should be examined. However, the provision of direct transport to the site is not the responsibility of Parks and Recreation Division and in any case, a solution is most probably precluded by fiscal constraints. Thus, visitors may have to rely on SamTrans as the primary means of public transportation.

e. ***Bicycle Access.*** Mountain bikers have expressed interest in accessing Edgewood's trails. However, others believe that bicycles are not an appropriate activity in Edgewood because (1) they would pose an environmental as well as a public safety hazard; (2) would disrupt the "sense of isolation" provided to visitors; and (3) extensive bicycle access is already provided in many connected regional parks, preserves, recreation areas and shorelines.

In the early 1980's, bicycle access at Edgewood was tried for the service road. However, bicyclists failed to stay in their designated area. Not only did they endanger the health of an Edgewood visitor, they also caused damage to many off-track areas.

f. ***Access for the Physically Challenged.*** The Americans with Disabilities Act mandates equal access for persons with disabilities. It is difficult to provide access to the physically challenged at Edgewood due to the combination of fiscal

constraints and steep topography.

Disabled visitors have suggested that a switchback ramp heading toward Pulgas Ridge Open Space be placed above the Park-and-Ride lot. At present, there are steep grades leading from this parking lot to Pulgas Ridge. However, the intervening land is owned by San Francisco Water Department. Thus, any proposals must begin with discussions with relevant agencies.

Alternatively, a bridge could be constructed across Edgewood Road. In addition, an all-access route could be constructed from the top of Edgewood Road. Although MROSD is not a grant-making agency, it has been suggested that an MROSD Grant could be obtained for construction purposes. Others have suggested that additional picnic and toilet facilities be located in the meadow near the Old Stage parking area.

g. ***Added Access to Old Stage Day Camp.*** Equestrians and cyclists have requested access to use the picnic areas and washroom facilities at the Old Stage Day Camp. Allowing access for these user groups may also serve as an alternative to the placement of the portable toilet facility previously discussed. To meet their needs, it has been suggested that amenities such as a bicycle rack, hitching post or tie station, and a rake be made available. However, the following factors should be considered in deciding whether to allow access to these user groups: (1) Ability to locate an adequately flat area large enough to accommodate horses on a tie station; for safety reasons, such area should be away from picnickers. It has been suggested that rest stops for horses be located in the North Hill area where a tie rack previously existed, or at the intersection of Edgewood Trail. This is similar to procedures at other parks permitting equestrians, such as Costa Ranch in San Jose. (2) Even though a rake would be provided, horse manure may still present a sanitary problem. The manure inflicts unwelcomed odors on Old Stage users and the ranger residences. Regular waste disposal and constant cleaning of this area would be consideration factors.

h. ***Access for Public Service Providers.*** An unplanned fire in Edgewood could spread toward adjacent residential areas or into sensitive habitats. The rate at which fire would spread depends on factors such as wind velocity, topography and fuel levels.

There are several fire-related concerns pertaining to Edgewood. First of all, the fuel load build-up in Edgewood's biotic communities could be a fire hazard. Generally, excessive, unmanaged and uncleared chaparral old growth and deadwood, as well as highly flammable dry grasses present a fire threat. Controlled burning and grazing have both proven effective in reducing fuel loads elsewhere. With respect

to Edgewood, however, it is uncertain whether these methods are suitable.

Secondly, limited emergency fire access within Edgewood is of concern. If a fire were to ignite in the interior of a site as large as Edgewood, fire prevention trucks would have to make their own route, i.e., cut the most direct path to the fire. This practice may unavoidably trample sensitive habitats. A defined emergency access route which employs existing routes within a site can eliminate the need to drive across untouched areas. Moreover, a prescribed route can enhance response time for fire prevention and rescue.

Another related concern is the threat of fire due to barbeques and campfires in the Old Stage area. Under these circumstances, the most effective method of prevention is frequent patrolling, heightened visitor awareness, and volunteer help.

Before any decisions could be made, consultations with knowledgeable agencies and institutions (such as U.S. Fish and Wildlife Service, California Department of Fish and Game, and Stanford University's Center for Conservation Biology), and public service providers (which include emergency response, utility, and park maintenance personnel) are necessary to undertake a thorough assessment of the fire risk and to map out the best access route which minimizes impacts on sensitive areas.

ATTACHMENT C-1

POTENTIAL IMPACTS
OF USING
IDENTIFIED NON-NATIVE ROCKING MATERIALS
IN SERPENTINE GRASSLAND

1. Potential Impact of Using Basalt or Granite Quarry Stone for Trail Construction and Maintenance in a Serpentine Grassland -- Dr. Ishwar P. Murarka, July 30, 1996

2. The Case for Using Intert Materials to Rock Trails in Edgewood Park. Paul Heiple, Geologist, January 24, 1997

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CREDENTIALS

1979	M.B.A.	The University of Chicago, Illinois	Management Science
1971	Ph.D.	Oregon State University, Corvallis	Soil Science / Statistics
1968	M.S.	Oregon State University, Corvallis	Soil Science / Statistics
1964	M.A.	University of Calcutta, India	Geography
1962	B.A.	University of Calcutta, India	Honors in Geography

22 years of research with prestigious national & private research institutions

Life Membership in honorary academic society Sigma XI -Chapter at Large

Membership in professional societies:

Biometrics Society
American Society of Agronomy
Soil Science Society of America
American Society for Testing of Materials (D19 & D34)
American Geophysical Union
Council for Agricultural Science and Technology - Life Member

Over 100 publications (bibliography available on request)

OBJECTIVE

As a Certified Professional Soil Scientist, I have been asked to review and comment on information provided for the purpose of determining the potential impact of using either basalt or granite quarry stone for trail construction and maintenance in a serpentine grassland. I have relied upon the soil descriptions provided by published literature and generally known to be associated with the rock types under consideration. I have neither taken soil samples, nor have I analyzed them. I have been asked to prepare this paper for consideration by a non-technical audience. I am providing this information at no cost, as a public service.

COMMENTS

Weathering is defined as the mechanical disintegration and chemical break down of rock materials that occurs when they are exposed to freeze-thaw cycles, pressure changes, exposure to water, chemical reactions, and other influences at the earth's surface.[1] Both result in microscopic cracks along grain boundaries and within grains and occur at differing rates, Rates of rock weathering can be estimated by a variety of direct and indirect techniques. Direct techniques include laboratory studies. These tend not to be as accurate as other methods for predicting true environmental behavior, but are faster and less costly.[2] The relationship between weathering, rind thickness and age also provides a direct measure of rock weathering rates. Indirect methods require solution of a mass balance equation to account for gains and losses of nutrients in a watershed, and are useful for all elements except phosphorus. They are usually long term field studies and are very costly. References reviewed involved a variety of methods.

Elemental release from rock weathering is highly variable and strongly dependent on the primary mineralogy of the rock. The larger the particle grain size, the more difficult the rock will be to weather. Small pieces of rock or small size minerals weather more rapidly than large pieces because of their greater surface area.[3] In addition, degree of fracturing and chemical zonation of mineral grains are important controls.[4]

Because granite, basalt and serpentine are all base-saturated rocks (alkaline in nature with pH of about 8), their chemical composition is similar. Weathering processes should produce soils with similar elemental constituents. Both basalt and granite contain larger particle sized elements than does serpentine which will cause them to weather slower in comparison to the serpentine.[5] Half inch diameter basalt or granite are commercially available from quarries in San Mateo County nearest the Edgewood Park and Natural Preserve which has the serpentinite grasslands of concern. Of these two quarry stones, the basalt mimics the chemistry of the serpentine soil closest, is the hardest of the three rocks being compared (due to higher iron content) and has the largest grain fractions. The weathering rate of granite has been calculated at 10^{-16} per meter squared per meter per second. This is extremely slow. Studies in California have demonstrated mineral grain depletion and destruction of pyroxene and hornblende take more than a hundred thousand (10^{5}) years. Depletion of these minerals takes several hundred thousand years in the same soils.[6]

To construct a simple analogy, if one took either of these quarry stones and placed them in a glass of water to stimulate decomposition, you might begin to see mechanical changes in 300-400 years. Chemical changes would take a thousand years. The geochemical and geological effect of use of either stone to rock trails in a serpentine soil where grasslands predominate will be non-detectable and probably not measurable except in geologic time scales.

In a practical sense, the use of these quarry stones in the trail bed of a park which will receive "light" use (defined as pedestrian, equestrian and bicycle) the effects of walking or riding on such rocks may create some minor forms of mechanical weathering. Over

time, the most likely outcome is compaction of the rocks into the trail bed. This could have a positive effect of hardening the trail bed.

The climatic zone in which this property is located is Mediterranean, receiving 10-30 inches of rainfall annually, predominantly during winter months. It lies in the rain shadow of the Santa Cruz mountains. These factors may further limit potential weathering of quarry stone used.

It is understood that trails account for 7.5 miles of track approximately three feet wide and that the majority of trails are not to be rocked. Less than 0.3% of the area of Edgewood are in trails in the grasslands of concern. The straying of on occasional stone from a trail bed into the grassland could conceivably alter the surface tension of clays and increase water infiltration potential. However, the effect would likely be much less than that caused by deer hooves during the course of their grazing.

Because transportation costs are often determined by weight, using close sources will be most cost-effective when use is indicated. Langley Quarry which supplies the basalt is located in Woodside; Pilarcitos Quarry which supplies the granite is in Half Moon Bay, both reasonably approximate to the site.

I believe that the information above is an accurate interpretation of the references provided. I understand that the original source material is being provided to the audience of interest along with this review and analysis.

Ishwar P. Murarka, Ph.D.
Certified Professional Soil Scientist

7-30-96.
Date

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1. Crook p. 395
2. Suarez, p.2
3. Clayton, Nutrient Supply, p. 75
4. Colman, Chemical Weathering p. 3-4, 37
5. Cleaves, p. 437
6. Clayton, Nutrient Supply, p.80, 91 and Colman, Chemical Weathering p. 1

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January 24, 1997

To: Lynn Fritz

From: Paul Heiple
441 Conil Way
Portola Valley, CA 94028

Subject: The case for using inert materials to rock trails in Edgewood Park.

The subject of trail maintenance in Edgewood Park causes a great deal of controversy between those who want to use the park for recreation and those who want Edgewood Park to be manly a preserve. The concern of the conservationist is the introduction of foreign materials into the serpentine areas. It is feared these materials would alter the soils allowing foreign species to invade the areas of serpentine endemic species. Over time the altered soil and the foreign species would slowly but inexorably replace the endemics.

It is for this reason, the Friends of Edgewood suggested in their draft master plan for Edgewood Park using only locally derived materials that are of similar composition to the bedrock surrounding the trail. The San Mateo County Trail Users Group (SaMTUG) in their July 30, 1996 and August 1, 1996 letters suggested the use of serpentine, basalt, gabbro and granite as possible materials that could be used to rock the trails and secured the services of a soil scientist to help with these suggestions. The use of granite and basalt are suggested because they are readily available on the crushed stone market and, in the opinion of SaMTUG's soil scientist, slow weathering enough to pose no danger to the surrounding soils from their difference in chemistry as compared to serpentine.

None of these solutions struck me as being acceptable. Local serpentine is usually highly fractured and would not stand up well to constant foot and horse traffic. The result would be muddy trails that are the problem now. Basalt contains calcium feldspars that could contribute an element into the surrounding soils that serpentine soils are lacking and that many plants need to grow. Granite contains potassium feldspars, another element that is essential to many plants and is lacking in serpentine soils, as well as calcium. The assertion that weathering of these rocks is so slow that it could be ignored was based upon conditions that are not going to be found on the trails where these rocks are going to be placed. Even if the rates are slow, the changes will take place over time and slowly alter the chemistry and mineral composition of the surrounding soil.

As a geologist interested in preserving the plants of Edgewood, it occurred to me that the debate was ignoring the use of an inert material that contains only elements that are already present in serpentine and is harder than both granite and basalt. Chert is just such a material and it one of the rock types found in the Franciscan Rocks that make up the bedrock of Edgewood Park. Chert is found in Edgewood Park along the Clarkia Trail and on the Sylvan loop as rocky outcroppings. It is resistant to weathering and erosion and produces a poor sandy soil when it does weather.

Chert is composed of one mineral, cryptocrystalline quartz. The chemical composition is silicon dioxide with a few impurities. Goldman, 1959 wrote about cherts'

superior properties as a concrete aggregate. In that work, several chemical analyses were performed. The results show that the Franciscan cherts are 93.5% to 95% SiO_2. Other oxides present are Al_2O_3 2.2% to 2.3%, FeO and Fe_2O_3 1.2%, MgO .7%, CaO .1%, Na_2O .4%, K_2O .5%, H_2O .9%, and MnO .2%. Quartz is one of the hardest of the commonly occurring minerals in the earths crust. It does not have cleavage planes so that fracturing the mineral is difficult. The chemical inertness is attested to by the large amounts of quartz sand found on the earth's surface.

Franciscan chert is composed of the shells of radiolarians, one celled creatures who's shells are made of silica. These shells accumulated on the ocean floor at great depth and have been pushed up on the edge of the continent by the forces of plate tectonics. Beds of these cherts are common in the Franciscan rocks, the jasper of jasper ridge is chert.

Chert would not add any significant amounts of nutrient elements to the serpentine rocks. Silicon is a major percentage element in serpentine so its addition will not change significantly add to the soil chemistry. The only consequence might be the dilution of the toxic element found in serpentine soils and the increase of sand to the soil as the chert breaks into smaller pieces. These effects should be confined to the trail area and not spread into the surrounding serpentine soils.

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Rapp, J. S. et. al. 1990 "Mines and Mineral Producers Active in California 1988 - 1989" California Division of Mines Special Publication #103

APPENDIX D

DESCRIPTION OF PREFERRED ALTERNATIVE

Appendix D

CONTENTS

THE PREFERRED ALTERNATIVE

A. Review of Alternative Plans

The planning process involved developing three alternatives for future resource protection and recreational development at Edgewood. The alternatives included different mixes of low-intensity recreation and resource management activities. Each alternative varied in their emphasis, but all were consistent with existing legal parameters. A detailed description and evaluation of these alternatives are on file at the County's Parks and Recreation Division.

Through a series of public hearings, the San Mateo County Parks and Recreation Commission considered the alternatives to select a preferred plan. Since much of Edgewood's habitats, vegetation, and wildlife form a natural preserve in an urban setting, the Commission advocated protection, preservation, and enhancement of sensitive resources as the primary emphasis, and coexistence with recreational activities as secondary. The Board of Supervisors largely supported this approach, but sought to improve the coexistence of recreation and resource preservation. The planning process culminated with the Board adopting a balanced management plan where protecting, preserving and restoring Edgewood's natural resources is the primary objective.

B. Description of the Preferred Alternative

The final Master Plan, i.e., the preferred alternative, allows existing low-intensity recreation activities to continue, and limited complementary site improvements to be constructed. Incompatible land uses, disturbance of sensitive habitats, erosion, trespassing, vandalism, and fire hazards are minimized or prohibited.

The proposed plan and its attendant policies are divided into the following categories: (1) definitions and designations (2) permitted uses, (3) natural resource protection, (4) operations and maintenance, (5) access, parking, and associated amenities (6) interpretive activities, (7) coordination activities, and (8) plan monitoring and amendment.

1. DEFINITIONS AND DESIGNATIONS

The Master Plan defines and designates the following key terms:

I) Low-Intensity Uses are defined as passive recreation uses which will not create direct or cumulative adverse impact on Edgewood's natural environment. Although not limited to the following, uses include on-trail

hiking, walking, jogging, horseback riding, nature observation (including birding), education, docent-led group tours, and picnicking and camping in the Old Stage Day Camp area.

ii) Sensitive Habitats are defined and designated as areas which (1) include, or potentially could include, rare or unique species of animals or plants, or (2) has a unique or special biological value, and is easily subject to degradation or disturbance. As a guideline, habitats considered to be sensitive are those containing or having the potential to contain species legally protected and listed by U.S. Fish and Wildlife Service as endangered, or threatened, and/or listed by California Department of Fish and Game as rare, threatened, endangered, or candidate for listing.

At Edgewood, sensitive habitats consist of: areas of serpentine soils; riparian corridors; wetlands; bird nesting and feeding sites; and areas of special scientific study.

iii) Authorized Trail is defined as those trails which are designated for permitted low-intensity uses by the public, and maintained to a standard considered safe by County Parks and Recreation Division. Existing trails designated as authorized include: Clarkia Trail, Edgewood Trail, Ridgeview Loop Trail, Serpentine Loop Trail, Sylvan Trail, Inspiration Heights Trail, Franciscan Trail, and Trail 1B.

iv) Viewpoint is defined as a location along an authorized trail which affords a distinctly scenic view of either Edgewood's natural landscape, or landscape of land beyond Edgewood. In addition, a viewpoint must be accessible by an authorized trail, and their views may include the hills, swales, wetlands, streams, serpentine grassland and associated wildflower field, San Francisco Bay, and San Francisco Watershed.

All designations for sensitive habitats, authorized trails and viewpoints would be determined by Parks and Recreation Division.

2. PERMITTED USES

To ensure that the goal of protecting Edgewood's natural resources is attained, only low-intensity recreation activities and which are conducive to Edgewood's environment are allowed. Permitted uses include the low-intensity recreation activities previously identified, as well as resource management activities, and operations and maintenance activities. These uses and activities would only be permitted (1) in designated areas providing they do not adversely impact on sensitive habitats, (2) is compatible with the site's natural resources, and (3) if such uses encourage a more environmentally-friendly lifestyle for the people of San Mateo County.

Community-sponsored runs or walks would be allowed only by permit from the Parks and Recreation Division. Other related uses or development could be considered by the Parks and Recreation Commission at a public hearing, subject to finding that such uses or development conform with the goals and objectives of this Master Plan.

Alternately, uses that may adversely impact on Edgewood's natural environment would be prohibited. Prohibited uses include high-intensity recreation uses, livestock grazing, the walking of accompanied animals (except for guide dogs on a leash), and after-hours use. Cyclists, although excluded from using all trails within Edgewood, are permitted access to bicycle racks in the Old Stage Day Camp area. Enforcement of all prohibited uses would be mandatory. Individuals violating permitted uses at Edgewood would be cited and prosecuted, without exception.

3. NATURAL RESOURCE PROTECTION

Steps will be taken to protect, preserve, and enhance Edgewood's rare and unique biota. The Plan prescribes coordinating the efforts of existing Parks and Recreation committees and organizations, notably the Trails Advisory Committee, Fish and Wildlife Committee, and other recognized stakeholder groups, to prescribe the optimal set of methods for protecting Edgewood's natural resources.

Some of the primary tasks would be to compile, and update on a regular basis, a comprehensive inventory of Edgewood's natural resources, including soils, water, and plant and animal species. With knowledge derived from the inventory, an evaluation of existing and potential resource management strategies would then be undertaken. This exercise would determine the best means to actively or passively control and eventually eliminate invasive or exotic vegetation, restore and/or enhance identified degraded areas with native species, and protect and preserve existing sensitive habitats. Approval of any proposed management strategy shall rest with the Parks and Recreation Commission.

To further promote the survival of native vegetation, the collection of native plant and seed would be restricted specifically to the restoration of damaged habitats and other recovery activities. Species collection is often undertaken by the scientific community and knowledgeable volunteers. The County would ensure that necessary permit approval and consultation with Federal and State authorities have been undertaken.

Past overgrazing has degraded areas of Edgewood. Consequently, livestock grazing, although considered to be a successful resource management method in some open spaces, would be prohibited.

Non-native (including feral) animals would also be removed from Edgewood. These animals usually survive by killing and eating native plant and animal species. Consequently, all animal species, including domesticated animals which are not identified by knowledgeable institutions such as Sequoia Audubon Society as native, would be removed from Edgewood, and taken to appropriate animal control centers.

Finally, Parks and Recreation Division would ensure that anyone violating Federal, State, and local laws pertaining to endangered species and sensitive habitats is prosecuted to the full extent of the law. Increased security, with the help of volunteers, would also ensure that violations do not occur.

4. OPERATIONS AND MAINTENANCE

Year-round use of authorized trails by joggers, hikers, and equestrians would continue, except when temporary closure becomes necessary for safety, maintenance, or resource management/protection reasons, as determined by the Parks and Recreation Director. Temporary trail closure would not exceed 30 days. If it does exceed 30 days, continued closure would require approval by the Board of Supervisors.

The Parks and Recreation Division would ensure that hazardous conditions resulting from trail erosion is minimized. All routes which have been designated as authorized would be repaired and maintained on a regular basis so as to conform to original trail design for all-weather trails.

The Plan prescribes that where material found at a trail site is inadequate, the following criteria be applied in determining the most environmentally protective and appropriate ways to maintain a durable all-weather trail surface. Selecting trail maintenance materials shall be in the following order of preference:

a. Use of Native Materials for Trail Surfaces: Native soil and rock are preferred for all trail surfaces in Edgewood since they are most biologically and chemically compatible. Therefore, native materials shall be collected and used when trail rebuilding is necessary, provided that it is not habitat disrupting or involves excavation, and that the serpentine soils do not exceed 5% asbestos content (State limit).

b. Alternatives to Native Materials: Where native materials cannot be used, or where, for example, inadequate drainage conditions exist, the Plan requires chemically inert rocks -- quarried chert, quarried basalt, and quarried granite (in that order), or raised wooden walkways or

duck walks.

These locally-available quarried rocks are not only durable, but contain only elements present in serpentine. They will not change or significantly add to the soil chemistry. Raised walkways or duck walks constructed of redwood or pressure treated fir are effective for use in wet areas, or where minimal impact on habitats is desired.

Unauthorized trails are those trails which are not designated as authorized. All unauthorized trails and any future unidentified trails, would be permanently closed and restored to their natural state.

Edgewood's resources will be further protected through regular maintenance efforts, and aggressive enforcement of visitor use regulations, particularly with respect to the prohibition on after-hours use, bicycles, dogs, and use of unauthorized trails. Additionally, the Plan seeks to increase public awareness of restrictions through staff and volunteer efforts, and by posting appropriate signs and protective barriers.

The erection of additional interpretive, regulatory and directional signs is also essential in helping to protect Edgewood's sensitive habitats. Signs would be strategically placed at prominent locations; they should of suitable color, material and content, indicate where activities are located, distances, names of all trails, restrictions, etc.

Protective barriers would be required to restrict access to sensitive habitats where unlawful visitor access is likely. Protective barriers would be compatible with the surrounding environment, and as such, it is suggested that they be a low split-rail fence, or ground-hugging row of logs.

In summary, the key resource protection efforts include (1) increasing enforcement through staff and volunteer patrols, (2) providing interpretive, directional and restriction information, and (3) placing protective barriers along sensitive habitats where visitor incursions are likely. When violations occur, individuals would be cited and prosecuted, without exception.

5. ACCESS, PARKING, AND ASSOCIATED AMENITIES

Promoting the use of nearby off-site parking areas, and providing parking for bicycles and buses would greatly ease the parking situation, and at the same time, encourage more ride-sharing. In particular, the Plan seeks to continue to use the County-owned gravel area adjacent to the Old Stage Day Camp parking lot. Off-

site parking areas and entry points would also be retrofitted with bicycle racks, and efforts would be made to keep Sylvan Way Access open.

At the intersection of Cañada Road and Edgewood Road, near Cañada Trail Head, the Plan promotes establishing a staging area. Amenities would include a low-maintenance portable toilet, bench, interpretive kiosk, bicycle rack, and expanded parking along Edgewood Road. These facilities would likely be utilized by cyclists using Cañada Road, as well as Edgewood visitors.

To the extent feasible, the Plan also seeks to reduce hazards encountered in reaching site facilities situated on gentle slopes. Where physical deterrents cannot be overcome, by providing at minimum, an accessible (low-maintenance composting) toilet, benches, and picnic areas in the Old Stage parking area. When providing amenities, the Plan would strive to meet the minimum Americans with Disabilities Act requirements for disabled visitors

Four trailside bench locations (two existing and two proposed) are identified in the Master Plan. Two benches are presently sited at a viewpoint along Sylvan Trail, and along Ridgeview Loop Trail, respectively. Potential new bench sites are suggested for designated viewpoints (Points A and B, Figure 3) along Inspiration Heights and Ridgeview Loop Trails. However, before a new bench can be placed, the Parks and Recreation Commission, at a public hearing, must determine that there is a compelling reason to place a bench at any of these two locations. In addition, when new bench placement occurs, it would be subject to an initial 12-month review, at which time continuance would be determined by the Commission.

Finally, the Plan recommends that the need for, and location of a service provider access route be evaluated. Such a route would enhance response time in providing emergency services while employing existing routes to the maximum extent possible, and eliminating the need to drive across untouched and/or sensitive areas.

6. INTERPRETIVE ACTIVITIES

The Master Plan promotes interpretive activities that inform and educate visitors about Edgewood's uniqueness and special resources.

In particular, the Plan prescribes interpretive opportunities which include: docent-led hikes and tours, birding activities, the distribution of educational brochures, placement of descriptive displays or signs and information kiosks along trails, entrances and staging area.

The interpretive center would provide a year-round setting for educational and

research activities. It would be effective in reaching a wider audience by serving as a central point for printed materials, and information about docent programs. In addition, the interpretive center would help to promote direct community involvement in efforts to protect Edgewood.

7. COORDINATION ACTIVITIES

In order to efficiently and effectively provide the services outlined in this Master Plan, it is essential that the cooperation and participation of surrounding park, open space, recreation, and service providers. These include: Midpeninsula Open Space District, Golden Gate National Recreation Area, San Francisco Water District, Stanford University's Center for Conservation Biology, Filoli Center, PG&E, and CDF Fire.

Volunteer efforts at Edgewood are also quite beneficial. Parks and Recreation would support and coordinate diverse stakeholder volunteer programs that protect and restore Edgewood's biota, ensure that the site is properly maintained, restore habitats, and maintain trails. Among others, volunteer organizations include California Native Plant Society, California Oak Foundation, Committee for Green Foothills, Friends of Edgewood Natural Preserve, Jack Brook Horse Camp Coordinating Council, Los Viajeros, San Mateo County Mounted Patrol, San Mateo Trails Users Group, Sequoia Audubon Society, Sierra Club, Volunteer Horse Patrol, and West Coast Horse Association.

8. PLAN MONITORING AND AMENDMENT

When necessary and economically feasible, the Plan would be regularly monitored and evaluated to measure its effectiveness toward meeting the stated goals and objectives. If changes are to be made, the Plan's amendment process requires approval by the Parks and Recreation Commission, and the Board of Supervisors, at a public hearing.

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Peterson, Taylor. Thomas Reid and Associates.

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