CASCADE CANYON AND WHITE HILL OPEN SPACE PRESERVES DRAFT LAND MANAGEMENT PLAN

FINAL ENVIRONMENTAL IMPACT REPORT

July 2005

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1.0 OVERVIEW CHAPTER

1.1 PURPOSE OF THE EIR

This Final Environmental Impact Report (EIR) addresses the potential impacts of adopting and implementing the Cascade Canyon and White Hill Draft Management Plan, hereafter called "the project." This Final EIR contains the text of the Draft EIR (DEIR) as revised to reflect responses to comments received on the DEIR and revisions of the Draft Plan proposed by Marin County Open Space District (MCOSD) staff. The revisions to the DEIR text are denoted by strikeouts for deletions and underlining for additions. This FEIR also includes all the comments that MCOSD received on the DEIR and responses to those comments. The comments and responses are located at the end of this report.

This EIR has been prepared in conformance with the provisions of the California Environmental Quality Act (CEQA) Guidelines as amended to date. CEQA requires that public agencies prepare and certify an EIR prior to carrying out projects that may have significant effects on the environment (Public Resources Code Section 21080). Preparation of an EIR is the responsibility of the "lead agency," the public agency which has the principal responsibility for carrying out or approving the project (Public Resources Code, Section 21067). Because the County of Marin would need to approve the proposed project, it is the lead agency for the project.

The EIR has been prepared under contract to the County of Marin. This EIR is an informational document which is intended to inform the County (the Lead Agency), other public agency decisionmakers, and the public of the significant environmental effects of the proposed project and alternatives to the proposed project. The County will consider the information in this EIR along with other information presented during the decisionmaking process when making a decision whether to adopt or modify the proposed project or an alternative.

1.2 CONTENTS OF THE EIR

This section of the EIR includes a description of certain aspects of the CEQA process. While this information is not required in an EIR, the authors believe it aids the public in understanding what an EIR is meant to be and what information it must contain. In the past, EIRs varied considerably in scope and substance. A growing body of legal decisions has clarified what impacts are to be examined and how these impacts are to be judged. The discussion here outlines certain basic CEQA concepts.

This EIR addresses all the areas of potentially significant impact as determined by the Marin County Open Space District (MCOSD) in its Initial Study as well as other potential impact areas that CEQA requires an EIR to investigate. The environmental impacts of the project are analyzed for each topic. The *CEQA Guidelines* define the impacts of a project as physical adverse changes from the environmental setting (i.e., existing conditions) that are attributable to the project.

Section 15151 of the *CEQA Guidelines* specifies that "an EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information that enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. What is desired is completeness and a good faith effort at full disclosure."

Recent amendments to the *CEQA Guidelines* (adopted in October, 1998) re-emphasize the fact that the purpose of the EIR "is not to generate paper but to compel governments to make decisions with environmental consequences in mind." Technical perfection is not required, but rather "adequacy, completeness, and a good-faith effort at full disclosure." "CEQA requires that decisions be informed and balanced. It must not be subverted into an instrument for the oppression and delay of social, economic, or recreational development or advancement," (*CEQA Guidelines*, Section 15003, as amended).

A. Significant Impact

In accordance with Section 15143 of the CEQA Guidelines, this EIR focuses on the significant adverse impacts on the environment. Discussion of each major topic includes criteria for evaluating whether an environmental impact is significant or insignificant. As explained in Section 15002 (g) of the CEQA Guidelines, a significant impact on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.

The significance criteria for each topic have been taken from the suggested criteria listed in Appendix G of the CEQA Guidelines. These significance criteria establish standards for determining whether an impact meets thresholds of significance. This EIR lists the thresholds of significance for each area of impact and assesses whether the project's impacts exceed these thresholds. If the impact does not exceed the threshold or if the recommended mitigation measures reduce the impact below the thresholds, then the impact is considered to be less than significant.

The significance of some impacts may be speculative, that is, there is insufficient evidence to determine whether there would be an impact and, if there were, whether the impact would be significant. Section 15145 of the *CEQA Guidelines* states that "If, after through investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusions and terminate discussion of the impact." This direction is important to keep in mind for this EIR since there are arguments over whether certain types of actions occurring on or recommended for the Preserves might increase use of bicycles in one or more areas. Where such issues are raised, this EIR attempts to describe what is known and what is speculated. Where the purported impact is based solely on speculation, the EIR will note this conclusion.

B. Decision on Whether to Approve the Project

The *CEQA Guidelines* provide that public agencies should not approve projects as proposed until all feasible means available (i.e., mitigation measures or alternatives to the project) have been employed to substantially decrease the significant adverse effects of such projects. "Feasible" means capable of being accomplished in a

successful manner within a reasonable period of time taking into account economic, environmental, legal, social, and technological factors (*CEQA Guidelines*, Section 15364). A public agency can approve a project with unmitigated, significant impacts only if it finds that specific economic, legal, social, and/or technological factors make infeasible the mitigation measures or project alternatives identified in the Final EIR for the project (*CEQA Guidelines*, Section 15091).

If there are one or more significant unavoidable impacts that cannot be substantially and feasibly mitigated and the Lead Agency decisionmakers (the Marin County Open Space District Board of Directors) decides to approve the project, the Lead Agency decisionmakers, under CEQA, must prepare a Statement of Overriding Considerations (per *CEQA Guidelines,* Section 15093) setting forth in writing the reasons for approving the project despite the environmental impacts which may result from project construction. This process requires the decisionmaker to balance the benefits of a proposed project against its potential unavoidable environmental impacts in determining whether to approve a project. The Statement is prepared after the Final EIR has been completed and certified as complete and adequate, and it is preserved in the record of the project approval (if the project is approved).

1.3 PUBLIC COMMENT PROCESS

A. Notice of Preparation

The County circulated a Notice of Preparation (NOP) to prepare an EIR for the project in November 2000; the close of the comment period for the NOP was December 22, 2000 The Notice of Preparation is included in Appendix A of this EIR. This NOP included a detailed Initial Study that was used to focus the issues that needed to be addressed in this EIR. The reader should refer to the appended Initial Study to understand why certain potential areas of impact were determined to be less than significant and, thus, not addressed further in the body of this EIR.

In response to this NOP, the City received letters from the following agencies and individuals; these letters, along with a response to where the EIR addresses the issues raised by the commenter, are included in Appendix B of this EIR.

- Christi Rathod
- Paula Byrd
- Town of Fairfax
- Friends of Corte Madera Creek

B. Distribution of the Draft EIR

A public review period of 45 days was provided for the Draft EIR. This review period began on the publication date of the Notice of Completion of the Draft EIR. During the public review period, the Marin County Parks, Open Space and Cultural Commission and the Marin County Planning Commission held public hearings on the Draft EIR. In addition, public agencies and interested individuals were able to submit comments in

writing to the Marin County Open Space District, 3501 Civic Center Drive, Room 415, San Rafael, CA 94903 (attention: David Hansen).

The information contained in this report is considered to be accurate, but it is subject to review and comment by MCOSD, other responsible agencies, and the public. The public is invited to review the document and comment on its accuracy and completeness.

C. Certification of the Final EIR

The public review period on the Draft EIR closed on July 9, 2004. MCOSD then prepared responses to all comments received. Those comments and the responses are included at the end of this document. MCOSD held two public hearings on the adequacy of the Draft EIR. Those public hearings were held on June 21, 2004, before the Marin County Planning Commission, and June 23, 2004, before the Marin County Parks, Open Space and Cultural Commission. The Final EIR will be considered by the Marin County Planning Commission which may recommend certification to the Marin County Open Space Board of Directors ("the Board"; the Board is also the Marin County Board of Supervisors). However, the Planning Commission will not make a recommendation on whether to approve the project or not. The Marin County Parks and Open Space Commission will also make a recommendation to the Board on the adequacy of the EIR as well as the merits of the project. When the Board considers the EIR to be complete and accurate, it will certify the document. The Final EIR must be certified before any action to approve the plan can occur. After the Board has certified the EIR and, if it approves the plan, it will file a Notice of Determination with the State Office of Planning and Research and the Marin County Clerk.

D. Final Management Plan

The Draft Plan for which this EIR was prepared will be revised to incorporate additional information and revised Actions in response to comments received and the Final EIR. The Board will make its decision whether to approve this Final Plan.

1.4 PROJECT LOCALE AND SETTING

A. Cascade Canyon Open Space Preserve

The Cascade Canyon Open Space Preserve consists of approximately 497 acres. As shown on Figures 1 to 3, the Preserve is located west of the Town of Fairfax. The Preserve is drained by three streams - San Anselmo Creek, Cascade Creek, and Carey Camp Creek. These creeks join to become San Anselmo Creek in the canyon bottom located west of the end of Cascade Drive (hereafter called the Cascade Canyon Bottomlands). The Cascade Canyon Bottomlands are the most heavily used portion of the Preserve. In addition to being a major attraction in and of itself, the Cascade Fire Road and trails leading from that road are used by hikers, bicyclists, and equestrians to access public lands west, north, and south of the Preserve.

The Cascade Canyon Bottomlands (Figure 4) are located at an elevation of approximately 200 feet. The Preserve includes uplands to the west, south, and north of the canyon floor with elevations reaching 1,042 feet. Roads and trails beginning on the canyon floor are relatively steep as they climb the surrounding ridges. Vegetation includes large areas of oak woodland, mixed hardwood woodland, grasslands, chaparral, and some redwood forest. The three main streams plus feeder streams support riparian habitat.

The most used public access to the Preserve is from the end of Cascade Drive in Fairfax with less-used accesses from Toyon Road, Bolinas-Fairfax Road, and the end of Canyon Road. The public can also access the Preserve from roads and trails on the Marin Municipal Water District to the west and south and from the adjoining White Hill Open Space Preserve to the north. Members of the Friends of Tamarancho can also access the Preserve from Camp Tamarancho (a property owned and operated by the Boy Scouts of America property) to the north.

B. White Hill Open Space Preserve

The White Hill Preserve abuts the north edge of the Cascade Canyon Preserve. The Preserve consists of approximately 390 acres that wrap around the west side of the Camp Tamarancho property. Elevations range from 320 feet along the Preserve's east edge to 1,430 feet at White Hill.

The Preserve is mainly uplands and contains feeder streams of Cascade Creek, Fairfax Creek, and Lagunitas Creek. Vegetation types consist of redwoods, chaparral, extensive grasslands, and oak and mixed hardwood woodlands.

Public access is provided from Sir Francis Drake Boulevard at the east end of White Hill Fire Road and at the Sherwood Forest entrance further north. Public access is also possible from Cascade Canyon Open Space Preserve to the south, the Gary Giacomini Preserve to the west (though there are two small private ownerships on the road between the Giacomini Preserve and the White Hill Preserve), and, for Friends of Tamarancho, from Camp Tamarancho to the south or east.

1.5 PROJECT DESCRIPTION

A. History of Project

Prior to the initiation of this Draft Management Plan, MCOSD conducted a number of meetings to discuss use of the Preserves with the community. The County Trails Committee held a meeting in Fairfax on June 12, 1997. People attending this meeting expressed a number of concerns they wished examined including illegal bike use of trails, trail closure on Red Flag Days (i.e., high fire hazard days), people trespassing over private property to access the Preserves, erosion problems, bicyclists' needs not being accommodated, the need for additional monitoring, and overuse of the Preserves. A second meeting was held on July 23, 1997. Similar concerns were raised. At a third meeting on October 29, 1997, MCOSD presented a program of actions for the Cascade

Canyon Preserve. One of the principal recommendations was the preparation of a Draft Management Plan.

The planning process for the Draft Management Plan began with consultant team members gathering baseline data regarding the status of wildlife, vegetation, and other natural resources on the Preserves. Geologic constraints and erosion problem areas were mapped. All public and unofficial Preserve entrances were visited, and all trails and fire roads were walked and reviewed. As a result of these preliminary reviews, a series of large maps were developed showing the vegetation, location of special status wildlife species (i.e., rare, endangered, threatened, or otherwise sensitive wildlife species), location of areas of significant erosion, and trail locations.

These maps were presented to the public at an initial public scoping meeting held on December 2, 1998. The meeting was attended by approximately 35 people. At this meeting, the plan consultants also described the proposed planning process, proposed user counts (i.e., the number of people using certain critical trails), and the recommended goals for future use of the Preserves. The comments received included:

- Bicyclists are causing damage to natural resources along Preserve trails.

- The Preserves were being overused by bicyclists causing conflicts with other users. Other participants stated that bicycle use of the Preserves was not a significant problem.

- The Plan should address bicyclist use of trails across private property near the Preserves and how to protect private property rights.

- Bicyclists should obtain a license to use the Preserves.

- The Plan should address the risk of wildfire escaping the Preserves and burning residences.

- In addition, there were a number of questions requesting clarification of the scope of the study and the status of various resources and improvements on the Preserves.

Subsequent to this meeting, the plan preparers were invited to attend a neighborhood meeting held on January 10, 1999; the meeting was attended by 30+ people. This meeting was not open to the public. At this meeting, a number of residents in the neighborhood near the end of two trails on private property in the area (called the Ridge Trail and the Holly Trail) stated their concerns about the number of bicyclists using the two trails and traveling through their neighborhood. Numerous recommendations to eliminate or reduce the effects of bicycle riding were offered. There were also some people present who stated that bicycling in the area was not a significant problem.

During the period after the initial scoping meeting, the plan preparers also received written correspondence and telephone calls from a number of local residents. The primary concerns raised in these letters and conversations revolved around the issue of bicycle use on the Preserves, especially on certain non-recognized single-track trails. "Non-recognized" trails are trails that were not constructed or maintained by MCOSD.

Informal meetings and discussions were also held with representatives of MCOSD, the Bicycle Trails Council of Marin, the Boy Scouts of America, the Marin Municipal Water District, the Town of Fairfax, the Marin County Fire Department, the Girl Scouts of America, the Trails Preservation Council, the National Marine Fisheries Service, the Marin County Department of Public Works, and the Marin Horse Council.

Based on the initial inventory of resources and these meetings and conversations, the planning team developed a preliminary set of recommendations regarding future use and resource protection for the Preserves. These preliminary recommendations were assessed by the planning team's experts in botany, wildlife biology, fire ecology, and geology to determine whether proposed actions would adversely affect any resource. The recommendations were amended to eliminate or reduce effects to natural resources.

Some of these observations and recommendations were presented to a group of local residents who attended a field trip on the Cascade Canyon Preserve on September 18, 1999. All individuals who attended the initial scoping meeting or who had otherwise contacted the report authors or expressed interest in the planning process were invited to attend this field trip. Thirteen people attended.

These recommendations were then presented to a second public scoping meeting held at the Fairfax Women's Club on April 17, 2000. Thirty-four individuals attended this meeting.

Subsequent to this meeting, the Plan authors reviewed all comments received, and reconsidered and amended preliminary recommendations. The revisions and amendments are all included in the Draft Management Plan.

Subsequent to the completion of the Draft Management Plan, an Initial Study was prepared to determine the potential environmental impacts that could result if the Draft Plan were implemented. On the basis of that Initial Study, MCOSD concluded that preparation of an EIR was required prior to considering whether to adopt the Draft Management Plan.

B. Goals of the Plan

MCOSD proposes to adopt a Draft Management Plan to guide land management of the Cascade Canyon and White Hill Open Space Preserves. To guide development of the Draft Management Plan, MCOSD developed a list of four management goals. These goals were reviewed by members of the community during the initial public scoping meeting, and no changes to the goals were recommended. Thus, actions recommended in the Draft Management Plan are intended to fulfill the following four goals. The goals are listed in order of their priority, with Goal 1 being the most important and Goal 4 the least important.

Goal 1 Preserve and enhance the native plant and animal communities, geologic, hydrologic, and historic resources, and the scenic values of the Cascade Canyon and White Hill Preserves.

Goal 2 Consistent with Goal 1, maintain and enhance opportunities for public recreation, education, and aesthetic enjoyment of the Cascade Canyon and White Hill Preserves.

Goal 3 Consistent with Goal 1, reduce the threat of wildfire to the surrounding community.

Goal 4 Consistent with Goals 1 and 2, minimize and reduce the impacts of Preserve use on the surrounding communities.

These goals are considered the "objectives" of the project. In addition to these four objectives, MCOSD staff has specifically requested that the Management Plan be consistent with the Trails Element of the *Marin Countywide Plan* and include a proposal to construct two trail segments at the north end of the White Hill Preserve that would connect Sir Francis Drake Boulevard to White Hill Fire Road on the west side of the Preserve. These trail segments will be considered for multi-use. These two trail segments are discussed in more detail below under the Trails Program.

The Draft Management Plan contains nine programs that provide specific management recommendations to address the four goals. The Plan also contains substantive environmental information and other background data that were used in developing the recommended actions. As the text of the Draft Management Plan is 109 pages long, it is not reproduced in its entirety in this Project Description. The Project Description focuses on the actions recommended in the Draft Plan. Much of the environmental data included in the Draft Plan are incorporated in the later sections that assess the environmental impacts that might result from Plan implementation. The complete Draft Management Plan along with the separately bound *Appendix to the Draft Plan* are available for public review at the offices of MCOSD, Room 409 in the Marin County Civic Center, San Rafael, CA 94903. The nine programs include:

- The Biodiversity Management Program describes existing natural resources on the Preserves and how those resources will be protected and enhanced.

- The Fire Management Program describes the methods to be used to decrease the risk from fire ignition and the damage that could be caused by a fire starting on the Preserves.

- The Access Program describes public access to the Preserves.

- The Trails Program describes the existing and proposed trail system on the Preserves.

- The Use Program describes allowed and prohibited Preserve uses.

- The Sign and Information Program describes the type and location of signs recommended for the Preserves.

- The Enforcement Program describes proposed methods of enforcing Preserve rules and regulations.

- The Monitoring Program describes monitoring actions required for the other programs.

- The Implementation Program describes administration of the Preserves and the schedule for recommended improvements.

Recommended actions for the nine programs are summarized below.

C. Biodiversity Management Program

This program describes recommended actions needed to address a variety of potential impacts to natural resources on the Preserves. This program contains five separate sections addressing botanical, wildlife, soils, water, cultural, and aesthetic resources. The various problems and issues regarding vegetation and actions recommended in the Draft Plan are summarized below.

1. Vegetation

a. Broom and Other Invasive Non-Native Species

Populations of broom are established in a number of areas of the Preserves. Unless efforts are made to reduce these populations, they will continue to expand and displace native plant habitat. The major populations are shown on Figure 6 in the Draft Management Plan and described in detail in the Draft Management Plan. There are also populations of other non-native invasive species, including yellow starthistle, purple starthistle, fennel, broom, and hardinggrass, which if not controlled or eliminated will expand and displace native plant habitat.

b. Douglas Fir Invasion

Due to an absence of fire on the Preserves, Douglas fir seedlings have invaded oak woodlands. If this expansion of fir is not controlled, oak woodlands (which are a less common habitat type on the Preserves) could be displaced due to the shading caused by the firs.

c. Trail and Road Displacement of Vegetation

Past construction of roads and trails has displaced native vegetation. Increased use of roads and trails over the past 10-15 years has also resulted in some vegetation displacement as the trails and roads are widened by increased use. To address this past loss of vegetation as well as decrease erosion and provide additional wildlife habitat, a number of trails and roads are recommended to be officially closed. These recommended closures (as shown on Figure 5 of the Draft Plan) include:

Recognized Trails

1. Cut Trail. This 600-foot long trail is a shortcut trail between Cascade Fire Road and Middle Road Fire Road. This trail is not needed for access, and the trail contains areas of erosion plus its closure would provide additional wildlife and vegetative habitat.

2. Happersberger Ridge Trail. This 2,000-foot long trail is very lightly used and traverses an area that otherwise receives little human intrusion. It is recommended for closure to provide additional wildlife habitat. West of the Preserve boundary, this trail travels across MMWD lands. The trail on MMWD property is a non-designated and non-maintained trail which MMWD does not sign at its western terminus.

3. Burnt Tree Trail. This trail is not heavily used, and the north-south section of the trail is quite steep, particularly as it nears the intersection with Creekside Fire Road. It is recommended that a new trail section be constructed from the northeast corner of the trail to extend east to meet Creekside Fire Road near the intersection of Creekside Fire Road and the Connector Fire Road. The north-south section of the trail will then be closed. This closure is recommended to reduce erosion and to provide additional wildlife habitat.

Non-Recognized Trails

4. White Hill. A steep trail that follows an old firebreak down the north side of White Hill should be closed. The south end of this trail should be blocked to prevent people from traveling downhill.

5. Northeast Corner of White Hill Preserve. A non-recognized trail has been constructed to connect two sections of White Hill Fire Road where it leads off public property. A new trail constructed to meet MCOSD trail standards is proposed to the south of this existing trail, and the existing trail should be closed as it is too steep and eroding.

6. Trails Paralleling White Hill Fire Road. There is a series of trails that parallel White Hill Fire Road north of White Hill. Most of these non-recognized trails are acceptable, but there is one section that cuts a road switchback that has a deep gully likely caused by bike use; this trail should be closed.

7. Trail Between Cascade Creek and Wagon Wheel Trail. This trail is very steep, following an old firebreak for part of its length. It has the potential for significant erosion and should be closed. The south end of this trail is very indistinct and does not need to be signed, but the north end should be signed.

8. Cascade Canyon. This trail starts at the top of Cascade Falls at the northern end of the recognized Cascade Canyon Trail and extends about 1,600 feet on MCOSD property and then onto MMWD property to the Inkwells location. The section of the trail on MCOSD property is recommended for closure to eliminate erosion and to enhance wildlife use of the Cascade Canyon Bottomlands. If MMWD agrees, that portion of the trail on its property should also be closed. As is discussed in subsequent sections of the Plan, closure of this trail is contingent on designating the Split Rock Trail as a recognized trail for hikers and equestrians. If it is determined that Split Rock Trail should not become a recognized trail (due to a policy decision that it is unwise to legitimize public use of an illegally built trail or because of a conviction that bicycle use cannot be adequately controlled on the trail), then Split Rock Trail would be closed, and the upper Cascade Canyon Trail would be designated a recognized trail.

9. Connector Between Cul-de-sac Trail and Ridge Trail. This trail contains steep slopes which are eroding and are unsafe for travel. The trail accesses Ridge Trail that is not on MCOSD property and which some neighbors in the Ridge Road area wish closed.

10. Extension of Blue Ridge Fire Road. Immediately north of the east end of Wagon Wheel Trail, users are developing a new trail up an old firebreak to connect two sections of Blue Ridge Fire Road. This trail is excessively steep and eroding, and should be closed.

11. Parallel Trails on Toyon Fire Road. One trail parallels Toyon Fire Road near its southeast corner and climbs a very steep grade to a rock outcropping and then to Pam's Blue Ridge Trail. It is very steep and eroding. The southern extension of this trail that extends off MCOSD property should also be closed

to enhance wildlife use of the area. The second trail is a short-cut trail that crosses a loop in the road.

12. Canyon Trail Skid Road. An old skid road that intersects Canyon Trail about 100 yards from the bridge should be closed. This road is steep and eroding.

13. Trails West of Pam's Blue Ridge Trail. There is a trail system that starts near the southern or eastern terminus of Pam's Blue Ridge trail and travels west and north through the heavily wooded canyon area between Pam's Blue Ridge Trail and Middle Road Fire Road. This trail system should be closed primarily to enhance wildlife use.

d. Cascade Canyon Bottomlands

The Cascade Canyon Bottomlands along San Anselmo Creek receive more intense visitor use than all other parts of the Preserves. A portion of the area herein called the Cascade Canyon Bottomlands was part of the Elliott Nature Preserve which the Town of Fairfax transferred to MCOSD in February 1987. Vegetation in this area has been displaced by the road system and the several recognized and non-recognized trails in the area. Various improvements are needed to restore vegetation in this area.

e. Illegal Trail Construction

Most of the trails on the Preserves were constructed by user groups. More recently, certain users have illegally constructed new trails on the Preserves. This Draft Plan identifies options for dealing with these existing illegal trails as well as recommendations for guarding against future construction of such trails.

f. Sudden Oak Death Syndrome

Sudden Oak Death Syndrome (SOD) is present on the Preserves and has affected many susceptible tree species. Many trees have succumbed to this disease, and it is likely that more will die in the future. How to protect susceptible species from this disease is currently unknown.

g. *Recommended Actions*

The Biodiversity Management Program contains the following 27 actions to address loss of vegetation and botanical diversity

i. Broom

MCOSD will strive to remove broom from the Preserves. When broom is removed, removal should be per the following priority list:

BV-1. In constructing the fuel reduction zone system, broom plants within the treatment zone should preferably be pulled, and, if this is not feasible, given the size of the patch, cut. Cut or pulled plants can be spread on the surface and burned after the first rains make it safe to do so. "First rains" mean the first autumnal rains that typically occur in October or early November. These rains provide sufficient moisture in standing vegetation to retard the ability of any fire

escaping the burn pile from quickly spreading into nearby standing vegetation. The roads would not be muddy or impassable after these early rains. The piled plants must be sufficiently dry prior to burning. The plants that are cut will resprout and new seedlings will sprout. New plants should be pulled and resprouts cut about every two to three years. Several thick stands along the proposed Toyon Fire Road fuel reduction zone and the Cul-de-sac Fire Road fuel reduction zone are south facing grassland stands. These stands can be cut in the late summer rather than pulled; the cut plants should be subsequently burned.

It is recognized that there will be a tendency to cut these broom plants rather than pull them in order to facilitate fuel reduction zone construction. However, MCOSD should be aware that cutting these large plants will cause them to resprout, and the resprouts are more difficult to pull then the original plants. In addition, fuel reduction zone construction can open up areas to the spread of broom. Given the goal of eradicating this plant, MCOSD should strive to pull as many broom plants within the fuel reduction zones as possible.

BV-2. Annually remove new broom seedlings from the area historically free of broom, namely the west half of Cascade Canyon Preserve and the south half of White Hill Preserve. This is a high priority for broom removal.

BV-3. Monitor the small patch where plants were removed in February, 2000. This patch is located approximately 325 feet west of the junction of White Hill Fire Road and Sherwood Forest Fire Road. Handpull any new seedlings. Monitor the stands where volunteers or MCOSD have previously removed broom, including Canyon Trail and Middle Road Fire Road. Pull the few plants along the Concrete Pipe Road, the single invader on Pam's Blue Ridge Trail, and the single plant on Middle Road Fire Road.

BV-4. Pull or cut the large broom plants on White Hill Fire Road near the repeater station. Cut or pull smaller plants. Many of these plants are on a south-facing slope where cutting could be successful. This action should include removing the smaller population to the south near the property line with Camp Tamarancho. Large plants that are cut should have the remaining trunks cut vertically by a knife or machete or otherwise have the bark between the cut and the ground macerated. This technique has been shown to substantially reduce the ability of these large plants to resprout. Ideally, large plants are cut in the late summer or early autumn while their food stores are at their lowest point. Remove new seedlings as they appear. If resources are available, the large broom plants would be piled on top of the seedbed and burned to "flush" the seedbed. New seedlings resulting from "flushing" can be removed with a weedeater.

BV-5. Pull or cut plants along Creekside Fire Road.

BV-6. Pull the scattered plants west of Ridge Trail (a trail on private property to the east of the Preserve boundary) and the one patch on the non-recognized connector trail between Cul-de-sac Trail and Ridge Trail.

BV-7. Pull the broom in the one patch on Cul-de-sac Trail north of the junction with the non-recognized connector to Ridge Trail.

BV-8. Pull plants along the non-recognized trail that intersects the Toyon Fire Road near its southeast corner.

BV-9. Pull the broom on Cul-de-sac Trail in the first patch south of the junction with the Ridge Trail connector trail. Remove invading seedlings from the larger patch to the north along this trail.

BV-10. Once the Toyon Fire Road fuel reduction zone is constructed, broom plants north and west of this road should be pulled or cut to prevent broom from extending into the interior of the Preserve.

BV-11. As resources become available, the following stands should be attacked; they are listed in order of priority: 1) the two stands east of the intersection of White Hill Fire Road and the non-recognized Martha McCormack Trail; 2) stands along Toyon Fire Road that were not removed during fuel reduction zone construction; 3) stands not removed during construction of the fuel reduction zone along Toyon Tanks Fire Road; 4) stands in the woodlands on the Cul-de-sac Trail Ridge down to Ridge Trail; 5) stands along the east side of the White Hill Preserve between Sir Francis Drake Boulevard and White Hill Fire Road; and 6) stands along the south edge of the Cascade Canyon Preserve between the Middle Road Cut Trail and the Toyon Tanks Fire Road.

BV-12. All the stands listed under No. 11 above should be visited to remove young seedlings that are expanding the populations. While the main stands may not be treated until more efficient control techniques are identified and/or substantial resources are available, every effort should be made to ensure that these stands do not expand.

BV-13. The District should establish a process whereby visitors can report new broom populations not identified in this report. It is possible that this work could be done by the Environmental Stewards. The stewards or District staff should handpull or cut these small populations. The stewards or District staff should monitor treated areas each year to remove new seedlings. The stewards or District staff should establish a volunteer program to pull and cut broom and to monitor treated areas. It is recognized that there are many public land agencies who have volunteer programs for broom removal and other restoration activities and that there is likely not a large pool of available volunteers. However, it is possible to sign up local residents who have a particular interest in the Preserves in their neighborhood. Many of the broom stands are small and can be removed and monitored by a small number of people. The main aim is to provide the volunteers with a target stand that can be removed and monitored within a reasonable amount of effort. One does not want to start with some of the large stands that would require thousands of hours to treat.

ii. Yellow Starthistle and Other Exotics

There are a number of other aggressive non-native species on the Preserves that MCOSD will strive to eradicate. Recommended actions include:

BV-14. Wherever possible, yellow starthistle plants should be hoed out or cut. If cut, the cutting should occur when the flowers have opened and plants should be cut at ground level. The area should be revisited to re-cut any plants that reflower. At this time, the only known populations are a few plants at the north end of Toyon Fire Road and a small population in the flat area at the Sherwood Forest entrance to the White Hill Preserve.

BV-15. The small number of other invasive exotics should be hoed out, when identified. Any pyracantha should be cut.

iii. Douglas Fir Invasion

In order to maintain oak woodlands on the Preserves, it will be necessary to remove Douglas fir in certain locations where the fir, if left to grow, would shade out and kill the oaks.

BV-16. The District should periodically monitor its oak woodlands. If the current fungus/beetle epidemic ends or does not appear to kill substantial numbers of oaks, it is recommended that, as time permits, invading firs in oak woodlands be cut or pulled by staff and/or volunteers and that the status of the succession be monitored to ensure the long-term survival of these oak woodlands. Small firs can be handpulled or lopped off (since they do not resprout). Larger trees can be cut down with a chainsaw. If there is access to the area where the trees are cut, they can be removed and used for roadway lining or other uses on the Preserves or provided as firewood.

iv. Meadow Restoration

Several meadow areas on the Preserves have been impacted by past use. The following three actions are recommended to restore and/or enhance these affected meadow areas.

BV-17. Additional trees should be planted in the small meadows along the Cascade Fire Road between the first and fourth crossings of that creek to provide shading of the stream. Consider converting the meadow inside the Cascade Drive gate to a woodland and riparian vegetation.

BV-18. The area that is located at the Sherwood Forest entrance should be restored. In the past, spoils from roadwork on Sir Francis Drake Boulevard have been spread in this area. With these spoils came seeds of several non-native invasive plants. All these invasives should be removed, the site disked or otherwise prepared, and the area reseeded with a perennial grass and wildflower mix, using species native to the Preserves.

BV-19. An area at the west end of the High Water Trail (shown on Figure 17 in the Plan) should be replanted with grasses and herbs, using species native to the Preserves. Temporary fencing will be needed to establish the new planting. Signs will be needed to inform people to stay on the trail in this area.

BV-20. The 13 trails listed in Section-C-1-c (Trail and Road Displacement of Vegetation) above should be closed. Trail closure should include signing and where necessary structural blocking. When it can be demonstrated that users are obeying these closure rules, MCOSD should monitor the trails to determine if they are naturally revegetating. If they are not, then MCOSD should consider replanting these trails as resources become available.

BV-21. During construction of new trails and the road realignment, every effort will be made to eliminate the need to remove trees. Trails and roads shall be constructed no wider than needed for safety so as to minimize vegetation loss.

BV-22. When the southernmost section of Blue Ridge Fire Road is realigned, revegetate the abandoned section.

BV-23. To reduce the effects of trail and road widening in the Cascade Canyon Bottomland, the District could line sections of the trails and Cascade Fire Road that have been widened or are in danger of being widened with logs, downed trees, or other available material to reduce the travel width. Trees may need to be placed on supporting rocks or other material so that runoff from trails and roads can travel beneath the trunks. By lining sections of Canyon Trail, Cascade Fire Road, and High Water Trail with these downed trees, users will be restricted to narrower road and trail sections, thus reestablishing the historic trail and road widths.

BV-24. Future grading of fire roads shall be limited to grading only that portion of the fire road actually needed for vehicle travel. Equipment operators shall be instructed to follow best management practices for wildland dirt roads, including not grading the edges of the roads except where needed to provide proper road drainage.

BV-25. Erosion-control netting shall be placed on the old fire trail that has become a non-recognized trail that leads from near the top of White Hill to the White Hill Fire Road. Native grasses and wildflowers shall be planted on this netting to control erosion and reestablish native vegetation.

BV-26. District staff and/or Environmental Stewards shall monitor the Preserves on an ongoing basis to identify any illegal trail construction. If such construction is found, MCOSD should immediately block the completed trail and, where practical, restore the trail to its pre-existing condition.

v. Oak Mortality

BV-27. If and when methods for controlling the current epidemic attacking oak trees on a landscape scale are identified, MCOSD shall consider implementing those techniques if the epidemic is shown to affect large numbers of trees on the Preserves.

vi. Special Status Species

BV-28: The MCOSD staff ecologist will visually survey all construction sites (trails, fuel reduction zones, etc.) for special status species before the project begins. If special status species are found, the staff ecologist will recommend measures to avoid impacts and assess the area after completion of project to determine the effectiveness of the mitigation.

2. Wildlife

a. Sensitive Wildlife Areas

The Preserves provide habitat used by a wide variety of wildlife species, including several special status species. Past road and trail construction has fragmented the wildlife habitat. Consistent with Goal 1, the Draft Plan recognizes the need for additional areas where there is not frequent human presence. Five Sensitive Wildlife Areas (SWAs) have been identified to enhance wildlife use of the Preserves.

b. Chaparral

The Preserves contain areas of chaparral habitat which supports numerous ground-nesting bird species which are extremely vulnerable to unleashed dogs.

c. Streams and Streambank Vegetation

San Anselmo Creek, Carey Camp Creek, and Cascade Creek in the Cascade Canyon Bottomlands support steelhead. The roads and trails in this area erode and cause sedimentation of the creek adversely affecting the steelhead as well as other aquatic species. Use of the Cascade Fire Road requires crossing the creeks five times. Crossing the creek when water is resent disturbs sediments and increases turbidity.

d. Dogs

Dogs running out of control chase, scare, and potentially harm wildlife, especially smaller animals and nesting birds. The effect of dogs on wildlife is well known and is one reason why dogs are not allowed in wilderness areas of most national parks.

User counts in the Cascade Canyon Bottomlands (described in the Use Program of the Draft Plan) showed that the number of trips by dogs through this area was greater than the number of bicyclist trips. There is heavy dog use of the Preserves (relative to overall use patterns), particularly in the Cascade Canyon Bottomlands.

e. *Recommended Actions*

i. Dogs

BW-1. All entries to the Cascade Canyon Preserve shall be signed that dogs are required to be on leash at all times within the Preserve. Entrances to White Hill Preserve shall be clearly signed that dogs are to be kept on leash unless on fire roads. The signs should state the penalty for uncontrolled dogs, and state that the Preserves are patrolled and citations are issued.

BW-2. The following trails/roads should be signed at both ends to state that dogs must be kept on leash on these trails/roads to avoid harm to groundnesting birds.

a. Blue Ridge Fire Road from the west junction with Wagon Wheel Trail to the Camp Tamarancho property line and then from the east end of Wagon Wheel Trail to Middle Road Fire Road
b. Wagon Wheel Trail
c. Pam's Blue Ridge Trail
d. Cascade Fire Road west of Cascade Creek
e. Burnt Tree Fire Road
f. Split Rock Trail, or, if this trail is closed and the upper Cascade Creek Trail is left open, then the latter trail

BW-3. Periodically patrol the Preserves and issue citations to dog owners not complying with restrictions. Monitor dog use.

ii. Trail and Road Closures

iii. Sensitive Wildlife Areas (SWA)

BW-4. Designate the Cascade Canyon Preserve as a Sensitive Wildlife Area. Require that dogs be on leash and not be allowed off trails or roads within the Preserve. Signs will be placed at existing entrances to the Preserve (on recognized trails, fire roads, and non-recognized trails) denoting that the area is an SWA. Non-recognized trails recommended for closure will include information on the closure sign that use of this trail is prohibited due to its entry into an SWA.

iv. Steelhead

BW-5. Depending on the annual resources available, MCOSD should conduct erosion control actions recommended in the Geology Section. The approaches of Cascade Fire Road to each stream crossing should be rocked and runoff from the road above the approaches should be diverted so that it does not flow down the road into the creek. Rocking these approaches and conducting other recommended erosion control actions on Cascade Fire Road, High Water Trail, and other trails near the main stems of San Anselmo, Cascade, and Carey Camp Creeks are the first priority.

BW-6. MCOSD should minimize use of the Cascade Fire Road during the period that there is water in the creek. Rangers patrolling the area should walk the area

except in case of an emergency. All non-emergency trips should be eliminated when there is water in the creek at the road crossings.

BW-7. Work with the Friends of Corte Madera Creek, the Town of Fairfax, MMWD, and other interested parties to seek funding to prepare a Steelhead Restoration Plan for Corte Madera Creek and funding to implement actions recommended in that plan. To the degree resources are available, implement restoration actions recommended for the Preserves.

BW-8. MCOSD should conduct additional monitoring of steelhead trout and habitat adjacent to trout-supporting streams in the Cascade Canyon Preserve. The monitoring should evaluate steelhead habitat and develop baseline data on the condition of San Anselmo and Cascade Creeks within the Preserve. The monitoring should also identify problems, if any, that may be interfering with steelhead migration and reproduction. Finally, the monitoring should include habitats adjacent to the streams to establish baseline conditions of these areas, and to characterize existing impacts to steelhead habitat. The monitoring of adjacent habitat should focus on the trails, roads, and biologically sensitive areas near the creeks within the Preserve. The District should work with the Friends of Corte Madera Creek, MMWD, Department of Fish and Game, National Oceanic and Atmospheric Administration, and other relevant organizations to finalize the monitoring protocol, fund, and implement this program.

v. Spotted Owl

BW-9. Trail construction shall be conducted only after a wildlife biologist has surveyed the area for nesting spotted owls. If owls are found nesting, trail construction shall not begin until the owls have left the nest. No trees over 12 inches in diameter (DBH) shall be cut in this area.

vi. Woodrats

BW-10. When constructing the new connector trails at the north end of the White Hill Preserve, the route shall be checked by a biologist familiar with woodrat nests. The trail should be routed to stay at least 50 feet away from any woodrat nest unless it is simply not feasible to relocate the trail section.

vii. Environmental Stewardship Program

BW-11. Environmental Stewards should be educated regarding wildlife use of the Preserves and the presence of special status species.

viii. Public Education

BW-12. Any brochures should describe these species and how certain non-recognized trails have been closed to enhance wildlife use. The brochures should particularly point out the potential impacts of free ranging dogs and the need to keep dogs on leash on all trails, especially through chaparral areas.

3. Soil Erosion

The Draft Management Plan contains a detailed survey of existing erosion problems on the trails and roads of the Preserves (contained in the *Appendix to the Draft Management Plan*).

a. *Recommended Actions*

BS-1. As time and resources permit, all improvements recommended in Appendix D (of the Draft Management Plan) should be implemented. Priority ranking should be given to fire roads beginning with Cascade Fire Road and then extending to Middle Road Fire Road, Toyon Fire Road, Blue Ridge Fire Road, White Hill Fire Road, and Creekside Fire Road. All road improvements (i.e., waterbars, outsloping, rolling dips, etc.) shall be constructed using best management practices, which are currently described in the guidelines recommended in the *Handbook for Forest and Ranch Roads* (Weaver and Hagans, 1994). All trail erosion control shall be conducted using best management practices, which are currently described in the guidelines set forth either in the *Trail Manual for the Maintenance and Operation of Trails in the East Bay Regional Park District* (McDonald, 1995), *A Handbook on Trail Building and Maintenance* (Griswold, 1996), or *Trails Handbook* (California Department of Parks and Recreation, 1998).

District staff shall prioritize recommended improvements to concentrate on the most significant problems, recognizing that when working on a significant problem on one road or trail, it may be more efficient to do other work in that area even if the nearby problem areas are not as significant as problems elsewhere. Priority shall be given to roads and trails nearest the main stems of San Anselmo Creek, Cascade Creek, and Carey Camp Creek. The roads and trails in the canyon bottom shall be addressed first.

BS-2. Realign and reconstruct the southernmost 500 feet of Blue Ridge Fire Road as shown on Figure 5.

BS-3. Realign and reconstruct the southernmost 300 feet of the connector trail between the Concrete Pipe Fire Road and the Carey Camp Loop Trail (see the subsequent Trails Program for additional discussion of this trail realignment). Survey the boundary of the Preserve in this area and relocate the trail onto the Preserve where necessary.

BS-4. Realign and reconstruct the easternmost 300 feet of the Martha McCormack Trail (see the subsequent Trails Program for additional discussion of this trail realignment).

BS-5. The list of recommended actions was based on field surveys conducted during a specific period. New erosion locations are likely to occur in the future and will need to be addressed as they become evident. In addition, the list of actions does not identify each small area of rutting. These areas should be addressed in the field when crews are moving between the larger, more important erosion control projects. In general, these smaller areas of erosion can be controlled with the addition of waterbars.

BS-6. All existing single track trails, except for the Wagon Wheel Trail, should continue to be off limits to bicycles. If new multi-use trails are considered in the future, MCOSD will construct the trails using best management and design practices, which currently are described in the *MCOSD Multi-Use Trail Demonstration Design Guidelines* (adopted on October 27, 1993).

BS-7. In conjunction with routine patrol and maintenance, MCOSD shall monitor roads and trails for erosion and implement control practices as warranted. Control measures that are completed shall be monitored to ensure they function properly. Non-recognized trails that are closed shall be monitored for use, and additional fencing or blockading should be provided if warranted. If trails show excessive erosion due to horse use, then these trail sections shall be closed to horses during the period the soils are wet. All multi-use trails should be monitored. If bike or equestrian use causes significant erosion that cannot be managed with typical management practices, the trail section(s) shall be closed during the period when the soils are wet.

4. Water

The Preserves contain the headwaters of several streams. The main problems with these streams involve sedimentation from roads and trails as well as natural landslides and erosion.

a. *Recommended Actions*

BH-1. Review the final geologic report prepared for the Friends of Corte Madera Creek Watershed once it is completed. If that report recommends landslide remediation or other sediment control reduction on the two Preserves beyond those recommended in this Draft Plan, MCOSD shall consider implementing those recommendations, as resources become available.

5. Cultural Resources

An archaeological analysis was prepared for the Preserves and is presented in its entirety in the *Appendix to the Draft Management Plan*. To summarize that report, no known archaeological resources exist on the Preserves. One historic-era feature is present - the old North Pacific Coast Railroad tunnel dug through the ridge that extends north from White Hill.

a. *Recommended Actions*

BC-1. Any trail or road construction, fuel reduction zone construction, or prescribed fire in areas of "high" sensitivity (as shown on the map in Appendix B of the Management Plan) shall be done only after the area to be disturbed is inspected by a professional archaeologist. The archaeologist should recommend what actions should be taken to investigate, protect, and/or record any identified cultural resources prior to constructing the improvement.

BC-2. If archaeological or historical resources are uncovered during any trail construction, fuel reduction, or other action, a qualified archaeologist shall examine the find and make recommendations regarding its treatment.

6. Aesthetic Resources

The major aesthetic impact on the Preserves is the loss of vegetation caused by fire road construction. A secondary problem is the concentration of dog feces in the area immediately west of the end of Cascade Drive.

a. Recommended Actions

BA-1. A sign should be installed in the area immediately west of the Cascade Drive entrance requesting dog owners to collect their dog's feces and to remove those feces from the Preserve.

D. Fire Management Program

A principal management concern is the risk of a wildfire starting on or crossing the Preserves and destroying neighboring residences. The combination of steep slopes, flammable vegetation, restricted emergency vehicle access, and periods of severe fire weather create a substantial fire hazard on the two Preserves. Because the Cascade Canyon Preserve is bordered on the south and east by homes, there is a significant risk if a wildfire ignites. To determine the risk to residential areas, fire modeling was prepared for the Draft Management Plan to show what areas would burn under severe weather conditions. The Draft Management Plan and the *Appendix to the Draft Management Plan c*ontain a full description of the fire modeling. To reduce the fire hazard and of fire ignitions, a series of actions are recommended as summarized below.

MCOSD is working closely with Marin County Fire Department and other local fire agencies in order to identify and implement policies and practices for fire management measures on all of the Open Space Preserves in the County. These discussions include identifying the appropriate role for the District in managing open space land and adjoining private property. Once the District adopts these policies and practices, they will apply to all lands and become another tool that the District will use to identify management requirements for all of its land, including Cascade Canyon and White Hill Open Space Preserves.

1. Fuel Reduction Zones

A key tool for reducing the fire hazard is to provide locations where likely fires can be safely attacked. The consulting fire ecologist identified the locations listed below where fuel reduction zones could be constructed to facilitate fire suppression agency response to predicted wildfires. The main objective of these recommendations is to provide a fuel reduction zone along existing roads along the southern border of Cascade Canyon Preserve. These fuel reduction zones will act to slow the fire as it moves south and to provide a safer location for fire suppression agencies to take a stand. The locations of the proposed fuel reduction zones are shown on Figure 6. The basic description of these fuel reduction zones is provided below.

- Middle Road Fire Road Fuel Reduction Zone. Construct a fuel reduction zone along the Middle Road Fire Road from its western intersection with Cascade Fire Road to its intersection with the Middle Road Cut Trail. The fuel reduction

zone will extend 100 feet from the road on the uphill side and 50 feet on the downhill side. Understory shrubs will be removed beneath the trees and limbs removed as high as can be reached (at least 8-10 feet).

- Middle Road Fire Road Cut Trail Fuel Reduction Zone. Continue this fuel reduction zone down the Middle Road Cut Trail for about 200 feet; this section of the trail is an old road and is drivable by fire equipment. The fuel reduction zone will then proceed to the east along an old road bed out onto an open grassland. The fuel reduction zone will be extended to the east as far as possible to where the grassland ends and the slope descends to a stream. A bulldozer should be used to improve the old road bed to allow fire vehicle access along this old road bed; this will require only minor grading as the road bed is in relatively good shape. The old road does not need to be established as a road per se. It simply needs minor grading to allow fire truck access, and can be allowed to revegetate with grass.

- Toyon Tanks Fire Road Fuel Reduction Zone. From the westernmost entrance of Toyon Drive, construct a fuel reduction zone along the road that accesses the MMWD water tank (Toyon Tanks Fire Road). Starting at Toyon Drive, this fuel reduction zone will be 100 feet wide on the east or uphill side of the road until the road intersects Pam's Blue Ridge Trail. From Pam's Blue Ridge Trail, the chaparral (comprised almost entirely of chamise) on the downhill side of the trail and road would be cut and pile burned to the top of the ridge to the west of the MCOSD property line. MCOSD should investigate whether the property owner whose residence is below this chaparral patch wishes to participate in the construction of the fuel reduction zone so that the portion of the chaparral that extends onto private property can also be treated. From where the chaparral ends (traveling south) to the water tank, the woodland will be limbed, and the understory cleared for 50 feet. On the east side of the road from the water tank to Pam's Blue Ridge Trail, the understory would be cleared for 50 feet.

- Toyon Fire Road Fuel Reduction Zone. A fuel reduction zone of 200 feet in width would be constructed all along the Toyon Fire Road from Toyon Drive to the Camp Tamarancho property line. Areas of woodland will be thinned and pruned as described previously. Where shrubs occur in grasslands, scattered shrubs will be left. Areas with thicker stands of shrubs would be thinned so that shrubs do not occupy more than 30% of the groundcover. All broom would be removed. When selecting what native shrubs would be removed, the focus would be on removing broom, then chamise, then baccharis, and then other shrubs.

- Toyon Residence Perimeter Fuel Reduction Zone. A fuel reduction zone would be constructed around the private property that is located between Toyon Tanks Fire Road and Toyon Fire Road. This fuel reduction zone will be constructed at the property line and be 100 feet in width. The vegetation is relatively open oak woodland. This fuel reduction zone will connect the fuel reduction zones along the two fire roads.

- Cul-de-sac Fire Road Fuel Reduction Zone. Once the four fuel reduction zones listed above are constructed, a secondary fuel reduction zone would be

constructed on the Cul-de-sac Fire Road from Toyon Fire Road to its north end. From this terminus, the fuel reduction zone would be constructed cross-country to the MCOSD property line near Ridge Road. The recommended route for this cross-country portion of the fuel reduction zone is to start about 125 feet down the Cul-de-sac Trail (from the end of Cul-de-sac Fire Road) and construct the fuel reduction zone to the east through an open bay woodland to the property line. This fuel reduction zone would be 200 feet wide (100 feet on either side of the road and then 200 feet where it travels cross-country).

- Cascade Fire Road Fuel Reduction Zone. A fuel reduction zone would be constructed along Cascade Fire Road west of its crossing of Cascade Creek. This fuel reduction zone is intended to enhance the safety of fire vehicles using this road and is not intended to be a fuel reduction zone. This recommendation is consistent with the recommendations of the *Mount Tamalpais Area Vegetation Management Plan* which calls for a similar fuel reduction zone on the MMWD-owned portion of this road. This fuel reduction zone would be 30 feet wide on each side. This fuel reduction zone construction should be coordinated with MMWD as there is no point in constructing it on MCOSD lands unless the fuel reduction zone is continued all the way to the western terminus of Cascade Fire Road. The portion of this fuel reduction zone that is on MCOSD property would be about 3,100 feet long.

The fuel breaks will be constructed by hand crews and/or a mechanized mower.

2. Chaparral Treatment

A second approach to reducing the hazard is to directly manipulate the vegetation on the Preserves to reduce the amount of flammable fuels. In general, the Preserves' vegetation mosaic is not as hazardous as many locations in the region (e.g., the southern slope of Mount Tamalpais). This is because the Preserves contain a limited amount of chaparral (about 85 acres). Chaparral is the most hazardous vegetation type as it burns with high intensity and, under proper conditions, burning brands are driven by winds to other locations starting new fires.

To reduce fire hazard, MCFD staff has suggested cutting of the large stands of chaparral on the Preserves and burning the cut material in piles. MCFD staff believes that reducing the fuel load in these chaparral stands will substantially reduce the risk of a wildfire traveling off the Preserves. MCOSD should consider fuel reduction of these chaparral stands, however, even if this work were conducted there would be the need for the previously recommended fuel reduction zones. Even if the chaparral were cut and burned, fires could ignite in grasslands or other habitats and spread off the Preserves.

3. Other Actions

The Draft Plan describes how neighboring homeowners can reduce area fire hazard by clearing and thinning vegetation around their homes. The Plan also addresses the issue of a potential increase in fire hazard resulting from trees dying from Sudden Oak Death Syndrome.

4. *Recommended Actions*

FM-1. The fuel reduction zone system described previously should be constructed. The higher priority for fuel reduction zones includes: 1) Middle Road Fire Road, 2) Middle Road Fire Road Cut Trail, 3) Toyon Tanks Fire Road, and 4) Toyon Fire Road fuel reduction zones. Fuel reduction zones should be constructed with hand crews and/or a cutting machine. The small patch of chamise off Toyon Tank Fire Road can be cut and pile burned. Fuel reduction zones should be constructed using hand labor and a mowing machine. The use of goats is not recommended.

FM-2. Once this main fuel reduction zone is constructed, the fuel reduction zone along Cul-de-sac Fire Road and east to the Preserve boundary as well as the fuel reduction zone along Cascade Fire Road should be constructed.

FM-3. If desired, chaparral stands can be cut and subsequently the cut material can be piled and burned. Any cutting and pile burning of chaparral will avoid cutting and burning of special status species of plants. In addition, the following measures would apply:

- No cutting will be allowed within 50 feet of any watercourse.
- No cutting and burning will be allowed during the bird nesting season.
- An erosion control plan shall be developed prior to cutting and implemented prior to October 15 of any year.

FM-4. Fuel reduction zones should be monitored annually. Broom seedlings and resprouts should be re-cut about every two years (or annually if resources are available). The re-cutting can either be done with a large mowing machine or by hand crews with weed whips. Broom plants that are cut or pulled should be burned in the late autumn after the first rains.

FM-5. The District should continue to provide notice to neighboring private property owners informing them of the possibility of the property owners conducting fuel reduction on MCOSD property adjacent to their property.

FM-6. MCOSD is working closely with Marin County Fire Department and other local fire agencies in order to identify and implement policies and practices for fire management measures on all of the Open Space Preserves in the County. These discussions include identifying the appropriate role for the District in managing open space land and adjoining private property. Once the District adopts these policies and practices, they will apply to all lands and become another tool that the District will use to identify management requirements for all of its land, including Cascade Canyon and White Hill Open Space Preserves. Fire management is also an evolving science and the District's fuel reduction priorities may change base on new information, scientific research, or state or county guidelines.

E. Access Program

There are 11 recognized public entrances to the Preserves as well as numerous non-recognized access points and four access points from the adjacent Camp Tamarancho property owned by the Boy Scots of America. Parking is limited at and near all access points. One area that contains substantial parking is near the Sherwood Forest entrance. Existing turnouts on Sir Francis Drake Boulevard provide sufficient space to park 100+ vehicles. These turnouts are near the area where a new trail is proposed to connect Sir Francis Drake Boulevard with Sherwood Forest Fire Road. If this new trail is constructed, it can be connected to trails on the Loma Alta Open Space Preserve via an undercrossing beneath the new bridge recently constructed on Sir Francis Drake Boulevard.

1. *Recommended Actions*

A-1. Monitor use of the new access. Work with the Marin County Department of Public Works to monitor parking adequacy and safety at turnouts near the access.

F. Trails Program

The Preserves contain 10 miles of fire protection road and 6 miles of recognized trails (recognized trails are trails that MCOSD has constructed and/or maintain). In addition, there are approximately 3 miles of well-used non-recognized trails and several miles of little-used non-recognized trails (non-recognized trails are user-built trails that MCOSD does not maintain). The trails and roads are shown on Figure 5. The existing recognized trail/road system provides adequate access to most parts of the Preserves, including most significant natural features and scenic vistas.

The Preserves include a number of user-built, non-recognized trails. The Draft Plan recommends closure of a number of these trails to restore vegetative cover, reduce the potential for increased loss of vegetation by future use of the trails, increase wildlife habitat, and reduce erosion. In addition, there are 3 recognized trails recommended for closure. The 13 trails recommended for closure were previously described in the Biodiversity Management Program.

The Draft Plan also recommends the construction of two new trails, and reconstruction of portions of three existing trails and one fire road. It is noted that the trail corridors shown on Figure 7 of the Draft Management Plan were conceptual at the time that Plan was prepared. Because this EIR must assess the potential impacts of these new trails and road, the EIR preparers worked with MCOSD staff to define the location and extent of the new trails. Figure 5 in this EIR shows the corridors within which the new trails would be constructed. The description of the trails presented below contains more precise data on the amount of trail that would be constructed within each corridor.

- Construct a new trail in the northwest corner of the White Hill Open Space Preserve to connect two existing segments of White Hill Fire Road. This trail would bypass that portion of the existing White Hill Fire Road where it crosses onto private property. This trail could be a multi-use trail. If it were a multi-use trail, it would be up to 5 feet wide with an average grade of 5% and require construction of approximately 1,800 feet of new trail. MCOSD staff requested that this trail be included in the Draft Management Plan as it is called for in the Countywide Trail

Plan. So long as the trail does not cause significant environmental impacts, it is an objective of MCOSD to provide this trail connection.

- Construct a new trail between Sir Francis Drake Boulevard and the end of the Sherwood Forest Fire Road. This trail would provide access to the new undercrossing beneath Sir Francis Drake Boulevard, providing access from both that public street and Loma Alta Open Space Preserve to the east. This trail could be a multi-use trail. If it were a multi-use trail, it would be up to 6 feet wide with an average grade of 7% and require construction of approximately 3,400 feet of new trail. MCOSD staff requested that this trail be included in the Draft Management Plan as it is called for in the Countywide Trail Plan. So long as the trail does not cause significant environmental impacts, it is an objective of MCOSD to provide this trail connection.

- Construct a new trail segment at the south end of the Connector Trail between Concrete Pipe Fire Road and Carey Camp Loop Trail. This realignment is needed to address a very steep section at the southernmost end of the trail. This trail would be 24 inches wide with an average 8.5% grade and require about 175 feet of new trail.

- Reconstruct the east end of the Martha McCormack Trail. A new trail section is needed to address an overly steep section at the east end of this trail. In addition, the Draft Management Plan recommends that this currently non-recognized trail be redesignated as a recognized trail. This trail would be 24 inches wide with an average 8.5% grade and require about 175 feet of new trail.

- Construct a new trail connection between Burnt Tree Trail and Creekside Fire Road. The existing portion of Burnet Tree trail south of the new connection would then be closed. This new trail connection is recommended to provide additional wildlife habitat and eliminate erosion in steep portions of Burnt Tree Trail. This trail would be a single -track trail of 24 inches width. Average grade would be 7-10%. About 3,300 feet of new trail would be constructed

- Construct a new section of road at the south end of Blue Ridge Fire Road. This new section of road would eliminate the overly steep section at the south end of this fire road. The road would be 8-10 feet wide. It is estimated this road would be about 1,200 feet long.

The Draft Plan also recommends redesignation of the Split Rock Trail as a recognized trail. The Draft Plan describes how trails would be constructed using best management practices. Bicycle use of the Preserves would continue to be limited to fire roads, the Wagon Wheel Trail (where bicycle use if currently a permitted use), and, if MCOSD approves, use of the two new multi-use trails at the north end of the White Hill Open Space Preserve. Trails must be closely monitored for damage caused by bicyclists and equestrians.

1. *Recommended Actions*

T-1. Construct a new trail from Sir Francis Drake Boulevard to the Sherwood Forest Fire Road (within the trail corridor shown on Figure 5). Consider multi-use of this trail. If multi-use is allowed the trail shall be constructed per MCOSD standards for multi-use, and the trail shall be constructed and maintained so as

not to generate substantial erosion. Consider closing this trail to bicyclists and/or equestrians when soils are wet, if there is evidence of significant erosion.

T-2. Construct a trail connector in the northwest corner of the White Hill Preserve within the trail corridor shown on Figure 5. Consider this trail for multi-use. If multi-use is allowed the trail shall be constructed per MCOSD standards for multi-use, and the trail shall be constructed and maintained so as not to generate substantial erosion. Consider closing this trail to bicyclists and/or equestrians when soils are wet, if there is evidence of significant erosion.

T-3. Finalize an agreement with the Boy Scouts of America to allow public access over the approximately 750 feet of White Hill Fire Road that crosses their property.

T-4. Coordinate with MMWD regarding maintenance and use of Split Rock Trail. Provide fencing and a stile at the north end of this trail to block bicycle use. The fencing can be placed at the Preserve boundary or, with the permission of MMWD further to the north (for example at the crossing of Cascade Creek). The trail will be signed to prohibit bicycle use.

T5~~6~~. Designate the Martha McCormack Trail as a recognized trail.

T-6. Seek to acquire a public easement over the two private properties crossed by White Hill Fire Road west of the White Hill Preserve.

T-7. Construct a new eastern section of the Burnt Tree Trail within the corridor shown on Figure 5. Close the southern section of that trail as shown on Figure 5.

G. Use Program

The Draft Management Plan describes existing MCOSD use policies. The results of user counts done during preparation of the Draft Management Plan are presented along with a comparison of use rates for the Preserves as compared to other similar public parks. The Draft Plan then examined a number of use issues that had been raised by attendees at scoping meetings, including: "overuse" of the Preserves, affect on natural resources resulting from purported "overuse,' conflicts between bicyclists and other users, impacts of Preserve use on adjacent neighborhoods, and use impacts on the Cascade Canyon Bottomlands. These issues will be re-visited in later sections of this EIR.

1. *Recommended Actions*

Use of the Preserves will continue to conform to MCOSD use policies. The only additional recommendation not described in other programs is described below.

U-1. Place signs at the west end of Cascade Fire Road (on MMWD property), the junction of the east end of Wagon Wheel Trail and Blue Ridge Fire Road, and

the junction of Toyon Fire Road and Middle Road Fire Road stating that the Cascade Canyon Fire Road exit requires four stream crossings which can be hazardous during high water. The signs should state that patrols of trails in the canyon bottom are conducted and citations issued for bicycles that use those trails.

H. Signs and Information Program

This program contains a lengthy list of sign that are needed to protect resources, ensure compliance with MCOSD regulations, and provide information to users. It also includes recommendations to improve MCOSD's dispersal of information about the Preserves.

1. *Recommended Actions*

a. Signs

S-1. The signs recommended on Table 1 should be installed when MCOSD has the time and resources. In general, signs are a low priority for this Draft Plan given the other more important improvements required for resource protection, fire hazard reduction, and public access. All signs listed in Table 1, except for signing to prohibit bikes on single-track trails, trail closure signs (when the trail is closed), and new signs at public entrances, are Priority 3; the no bike and new entrance signs are Priority 1). Table 1 designates the priority of each sign, so that the District knows which signs to install first as time and resources allow. Table 1 describes four types of signs: 1) a sign that simply denotes "trail" with a directional arrow, 2) a no bike logo sign, 3) a trail sign which should include arrows with destinations, and 4) MCOSD entrance signs which describe allowed and prohibited uses and use restrictions. Table 1 presents a separate priority ranking for signs, ranging from Priority 1 to 3. Again, all signs except bike signs, trail closure signs, and new entrance signs are Plan Priority 3.

In addition to the signs described in Table 1, the following signing is recommended (most of these recommended signs have been listed in previous recommended actions. They are summarized here:

S-2. Signs on all newly constructed trails shall inform users if the trail is closed to bicycles and/or equestrians for all or part of the year, then this should be noted.

S-3. All entrance signs should include the new sign that clearly describes allowed dog use. The sign should explain that dogs are to be kept on leash at all times in Cascade Canyon Preserve and on all single-track trails in the White Hill Preserve. On fire roads dogs are to be kept within control on the fire road and that they cannot stray from the fire road. The signs should state that such controls are necessary to protect wildlife from injury or harassment, as it is hoped that people will be more willing to obey the restrictions if they know the reason why the restriction is required. The signs should state the penalty for noncompliance and that the District patrols for compliance and issues citations.

S-4. Public entrances should be provided signs that describe bike use on the Preserves. It should state that citations are issued.

S-5. All non-recognized trails traversing chaparral areas should be closed and signed to indicate that human presence on these trails can displace or injure ground-nesting bird species.

S-6. All recognized trails and fire roads through chaparral should be signed to require that dogs be kept on leash to avoid injury to ground-nesting birds. The previous section on Wildlife listed the trails affected by this requirement.

Table 1

Recommended Signing

Cascade Canyon Preserve Trail Junction	Trail Sign[1]	No Bike Logo Sign[2]	Trail Name Sign[3]	Entr-ance Signs[4]	Other Signs and Notes[5]
E. end of Canyon Trail	x[6]	x		x	There is an entrance sign both at the end of the paved street and at the preserve boundary.
Canyon Trail at intersection with cutoff road to Cascade FR	x	x			
W. end of Canyon Trail	x	x			
Both junctions of the Carey Camp Loop Trail with Canyon Trail		N1[2]	N3[2]		There are currently no signs at any junction along this trail. **Needs a trail name sign.**
Both ends of the Concrete Pipe Cut Trail	N2	N1		N2	**The junction of this trail with Concrete Pipe Road should have a sign stating that it is an access to Cascade Canyon Preserve.**
E. End of Concrete Pipe Road					**There is a sign on the gate in from Bolinas-Fairfax Road that says Protection Road, No Parking, but there is no sign at this entrance or on Bolinas-Fairfax Road denoting that Concrete Pipe Road is a public access road that leads to MCOSD property. MCOSD may wish to consider such a sign and confer with MMWD about installing this sign.**
W. end of Happersberger Ridge Trail	x	x			**This trail is recommended for closure and should be so signed.**
E. end of High Water Trail	x	x	N2		
Junction of High Water Trail and Cascade FR between second and third crossing	x	x			
W. end of High Water Trail	x	x			
E. end of Cascade FR			N2	x	**Install road name and destination sign.**
W. end of Cascade FR			N3[2]	x	**Install road name and destination sign.**

Table 1 (continued)

Recommended Signing

Cascade Canyon Preserve Trail Junction	Trail Sign	No Bike Logo Sign	Trail Name Sign	Entr-ance Signs	Other Signs and Notes
S. of end Cascade FR to Cascade Falls			N2		**Install sign to identify the route to Cascade Falls**
Top of Cascade Falls					**This trail is recommended for closure and should be so signed.**
E. end of San Anselmo Creek Trail	x	N1			
S. end of Split Rock Trail	N1	x	N1		**A trail sign, no bike sign, and a name sign should be installed (N1). Similar signs should be placed at the north end of this trail where it enters MCOSD property (N1). The cutoff trail to the Inkwells should be signed for no bikes (N1).**
N. end of Cut Trail between Cascade FR and Middle Road FR		x			**This trail is recommended for closure and should be so signed.**
S. end of Cut Trail between Cascade FR and Middle Road FR					**This trail is recommended for closure and should be so signed.**
W. end of Middle Road FR			N2		
N. end of Middle Road FR Cut Trail	x	x			**This junction should state that the trail dead-ends and there is no outlet. A sign at the preserve boundary should state that there is private property beyond the sign.**
S. end of Middle Road FR Cut Trail					**No signs are recommended at this junction as it is adjacent to a private residence.**
S. end of Blue Ridge FR			N2		**Install road name.**
N. end of Blue Ridge FR			N2	x	**Install road name. A warning sign to bicyclists about stream crossings on Cascade FR should be installed (N1)**

Table 1 (continued)

Recommended Signing

White Hill Preserve Trail Junction	Trail Sign	No Bike Logo Sign	Trail Name Sign	Entr-ance Signs	Other Signs and Notes
S. end of Burnt Tree Trail	x	x	N3		
W. end of Burnt Tree Trail	x	x	N3		
S. end of Creekside FR					**This road is recommended for closure and should be so signed.**
E. end of Middle Road FR			N2		**A road name sign should be installed.**
S. end of Toyon Tanks Fire Road			N3	x	Existing signs are: a fire danger warning sign, a no parking sign, and a pet owners sign.
S. end of Pam's Blue Ridge Trail		N1	N2		
E. end of Pam's Blue Ridge Trail	x	x	N2		
S. end of Toyon FR			N2	x	Existing signs are: a fire danger warning sign, a no parking sign, a sign explaining bike rules, and a pet owners sign.
W. end of Cul-de-sac FR			N2		
S. end of Cul-de-sac Trail	N1	N1	N2		The trail and "no bike" sign that was at this junction was recently vandalized and removed. There is a sign where the non-recognized connector trail between Cul-de-sac Trail and Ridge Trail cuts off that says "end of public property."
N. end of Cul-de-sac Trail		x	x		
N. end of Toyon FR			N2	x	**Install road name sign.**
Both ends of Connector road between Toyon FR and Creekside FR					**This road is recommended for closure and should be so signed.**
N. end of Creekside FR				x	**This road is recommended for closure and should be so signed.**
N. end of Burnt Tree FR			N3		

Table 1 (continued)

Recommended Signing

White Hill Preserve Trail Junction	Trail Sign	No Bike Logo Sign	Trail Name Sign	Entr-ance Signs	Other Signs and Notes
E. end of Blue Ridge FR			N3	x	There is an entrance sign just south of the Wagon Wheel Trail junction.
Wagon Wheel Trail			N2		There are currently no signs at either end. **The trail should have a trail name sign at each end.**
Junction of Blue Ridge FR and roads leading to Camp Tamarancho				N2	**MCOSD entrance signs should be placed at each entrance.**
W. end of Blue Ridge FR			N3	N2	
E. end of White Hill FR			N2	N2	
S. end of Sherwood Forest FR			x		**This sign should direct users to Sir Francis Drake Boulevard and Loma Alta Preserve if the new trail is constructed to join the street and this fire road.**
W. end of Martha McCormack Trail.		N1	N1		**If this trail is designated a recognized trail, it should be signed and point users to Sir Francis Drake Boulevard.**
E. end of White Hill FR			N2	x	
E. end of Martha McCormack Trail		N1	N1	x	**If trail is designated a recognized trail, then it should have a trail name sign.**

Notes:

1 "Trail Sign" means there is a small sign that says "trail."

2 "No Bike Logo Sign" is a logo of a bicycle with a line drawn through it.

3 "Trail Name Sign" means a sign that tells the name of the trail and/or contains directional arrows describing what trail or road is in particular direction from that junction.

4 "Entrance Sign" refers to standard signs at MCOSD entrances. The Sign Recommendations add additional signs that need to be placed at these entrances.

5 Text in **bold** indicates locations where signs are needed and explains additional signing recommendations.
N1 = first priority;
N2 = second priority,
N3 = third priority.

6 "x" = the sign currently exists at this location.

S-7. Signs will be placed at existing entrances to the Cascade Canyon Preserve denoting that the Preserve is a Sensitive Wildlife Area. Non-recognized trails recommended for closure will include information on the closure sign that use of this trail is prohibited due to its entry into an SWA.

S-8. On “Red Flag” days, the District will temporarily install large, clear signs at most entrances warning users that there is fire hazard on the Preserves warning users that there is fire hazard on the Preserves.

S-9. A sign should be placed at the intersection of Middle Road Fire Road and Middle Road Cut Trail stating that the trail deadends at private property and there is no access to Cascade Drive.

b. Information

S-10. The MCOSD website and map for the Preserve shall be amended to clearly show public access, recognized trails, and roads and to explain use restrictions.

S-11. MCOSD should maintain contact with the various user groups and inform them of trail closures. MCOSD should request that bicycling and equestrian groups inform their members of closures as well as request that users obey MCOSD restrictions on bike use of single track trails.

I. Enforcement Program

This program includes discussion of existing enforcement responsibilities, existing patrol efforts, citations issued, and enforcement issues, particularly revolving around illegal bicycle use.

1. *Recommended Actions*

E-1. Given the concerns of neighborhood residents about illegal bike use on the Preserves, it is recommended that MCOSD continue to conduct additional patrols on the Preserves until such time as complaints about illegal bike use are minimal or MCOSD determines that illegal use of trails on these Preserves is no greater than other Preserves equally deserving of attention. The following trails should be patrolled.

- Split Rock Trail
- Canyon Trail
- High Water Trail
- The two Cut-off trails on Middle Road Fire Road
- The two new connector trails at the north end of the White Hill Preserve

Less frequent checks can be made on trails between the canyon bottom and the Concrete Pipe Fire Road, San Anselmo Creek Trail, Cul-de-sac Trail, Pam's Blue Ridge Trail, Wagon Wheel Trail, Burnt Tree Trail, and various non-recognized trails that are occasionally used by bicyclists.

E-2. MCOSD shall continue to maintain clear records of the number of public complaints (including how many are issued by the same person), the response to those complaints, the number of enforcement incident reports, and the number of citations issued for all code violations.

E-3. MCOSD shall continue to patrol other fire roads and trails and cite users who do not obey speed limits and other use restrictions. If MCOSD determines that there is an increased number of accidents or illegal speeding involving bicyclists, MCOSD shall consider closing affected trails or roads to bicycle use.

J. Monitoring Program

This program describes the recommended monitoring activities to ensure that other recommend actions are successfully implemented.

1. *Recommended Actions*

a. Fire Hazard

- Monitor areas where fuel reduction zones are constructed to determine when vegetation has regrown to a hazardous condition so that re-treatment is required. Because the fuel reduction zones will generally be constructed in relatively open woodlands or grasslands, it is not necessary to establish transects and quantitatively measure regrowth. The monitoring should be done by MCOSD staff in consultation with MCFD personnel.

b. Infrastructure

- Monitor signs and entrance improvements on a periodic basis. Damaged signs and entrance improvements should be fixed as soon as possible. This work can be done by either the Environmental Stewards or MCOSD staff.

- Monitor roads and trails after the winter storms have passed. Identify additional erosion control measures required to fix identified erosion sources or unstable slopes. This work can be done by either the Environmental Stewards or MCOSD staff.

c. Erosion Control

- Monitor the effectiveness of all erosion control improvements recommended in this Plan. Rehabilitate or improve control features that have become damaged or do not operate properly. This should be done following the winter storm season with corrections made prior to the onset of the next rainy season. This monitoring should be conducted by MCOSD staff.

d. Vegetation

- Monitor areas where broom has been removed. Cut new seedlings (can be easily done with a weedwhip) during the summer. Record new sightings and remove broom if a small population. Monitor larger stands and remove outliers to prevent stand expansion.

- Monitor meadow restoration and other restoration projects.

- Monitor the effectiveness of lining trails and Cascade Fire Road to prevent trail and road widening in the Cascade Canyon Bottomlands.

e. Wildlife

- For cutting and pile burning in chaparral, monitor to ensure nesting birds are not affected.

f. Non-recognized Trails

- Continue to mMonitor for the construction of new non-recognized trails. When identified, these trails should be immediately closed and blocked and, if feasible, restored. Environmental Stewards and MCOSD staff should monitor to determine the presence of such trails. MCOSD staff can close the trails and conduct restoration work.

- Those non-recognized trails recommended for closure should be monitored to determine the effectiveness of the closure. If the monitoring shows the trails are still receiving substantial usage, then additional closure improvements (e.g., physical blockades and/or restoration) shall be implemented.

g. Enforcement

- MCOSD shall continue to maintain records of incidents and citations to determine whether patrolling is reducing illegal bike incidents.

- MCOSD shall continue to also keep clear records of other complaints and incidents regarding illegal use (e.g., dogs). If new trails are constructed for multi-use, MCOSD should keep clear records of all complaints about user conflicts on these trails. If after further review, MCOSD concludes that the complaints are substantial, MCOSD may choose to restrict usage of these trails.

h. Use

- MCOSD staff or interns should periodically conduct user counts at the locations surveyed for this management plan. This will allow MCOSD to determine if overall usage or usage by a particular user group increases or decreases. This information will also allow MCOSD to gain a general idea of the changes in use rates that may be applicable to other Preserves.

K. Implementation Program

This program describes how the existing Environmental Stewardship Program should be expanded to allow volunteers to do more of the work needed for the Preserves. It then includes a priority list for the other actions recommended in the Draft Management Plan. These priorities are shown on Table 2. The program ends with preliminary cost estimates for conducting the recommended actions.

Table 2

Priority for Implementing Recommended Actions

Recommended Action		**Priority[1]**
Biodiversity Management Program		
BV-1	Remove broom in fuel reduction zones.	1
BV-2	Monitor broom stands.	1-O[2]
BV-3	Remove broom stands in areas historically free of broom.	1
BV-4	Monitor and remove small several broom stands.	2
BV-5	Remove broom on Creekside FR.	2
BV-6	Remove broom west of Ridge Trail.	4
BV-7	Remove broom on northern Cul-de-sac Trail.	3
BV-8	Remove broom on non-recognized trail south of Toyon FR.	4
BV-9	Remove broom on southern Cul-de-sac Trail.	3
BV-10	Remove broom north and west of Toyon FR.	3
BV-11	Remove broom in larger stands.	4
BV-12	Remove broom seedlings around large stands to prevent expansion.	2
BV-13	Monitor and remove any new broom stands found on the preserves.	1-O
BV-14	Remove yellow starthistle.	1
BV-15	Remove other exotic plants.	1
BV-16	Monitor oak woodlands for Douglas fir invasion.	3
BV-17	Revegetate meadows west of Cascade Drive entrance.	2
BV-18	Restore meadow at Sherwood Forest entrance.	2
BV-19	Restore disturbed area at west end of the High Water Trail.	2
BV-20	Close Cut Trail, Happersberger Ridge Trail, and 10 listed non-recognized trails.	1
BV-21	Protect trees when constructing trails and roads.	A[3]
BV-22	Revegetate the abandoned section of Blue Ridge FR.	3
BV-23	Line widened sections of Cascade FR and 2 trails to decrease travel width.	2

Table 2

Priority for Implementing Recommended Actions

Recommended Action		Priority
BV-24	Grade fire roads to minimum width.	1-O
BV-25	Restore the non-recognized trail on the north side of White Hill.	3
BV-26	Monitor for illegal trails and, if found, restore.	1-O
BV-27	Implement controls for oak disease(s) once effective landscape level controls are identified.	2-O
BV-24	Survey construction sites to avoid impacting special status species.	1
BW-1	Sign entrances about dog restrictions and penalties.	1
BW-2	Sign trails and fire roads through chaparral requiring dogs to be on leash.	1
BW-3	Patrol for illegal dog use.	1-O
		1
BW-4	Designate Cascade Canyon Preserve as a Sensitive Wildlife Area.	1
BW-5	Conduct erosion control measures.	1 to 4
BW-6	Minimize vehicle use of Cascade FR.	1-O
BW-7	Develop a steelhead plan.	
BW-8	Avoid nesting spotted owls during trail construction.	A
BW-9	Avoid woodrat nests during trail construction.	A
BW-10	Educate Environmental Stewards about wildlife sensitivity.	1-O
BW-11	Include information about wildlife sensitivity in new brochures for the preserves.	2
BS-1	Implement recommended erosion control actions on roads and trails.	1 to 4
BS-2	Realign and reconstruct the southern 500 feet of Blue Ridge FR.	3
BS-3	Realign and reconstruct the southern 300 feet of the connector trail to Concrete Pipe Road.	3
BS-4	Realign and reconstruct the eastern 300 feet of the Martha McCormack Trail.	3
BS-5	Remediate currently unidentified small areas of erosion.	1 to 4
BS-6	Any new connector trail that is opened to multi-use should be properly engineered and constructed.	A
BS-7	Monitor roads and trails for erosion. Close trails to equestrians and/or bicyclists if severe erosion is identified.	1-O

Table 2

Priority for Implementing Recommended Actions

Recommended Action		Priority
BH-1	Consider implementing additional erosion control measures that may be recommended in the geotechnical study being prepared for the Friends of Corte Madera Creek.	2 to 4
BC-2	Trail and road construction and prescribed burning will be done only after a review by a qualified archaeologist.	A
BC-3	All cultural resources uncovered during construction shall be reviewed by a qualified archaeologist.	A
BA-1	Place a sign in the area west of the Cascade Drive entrance requesting owners to collect dog feces.	1
Fire Management Program		
FM-1	Construct fuel reduction zones along Toyon FR, Middle Road FR, and Toyon Tanks FR.	1
FM-2	Construct fuel reduction zone along Cul-de-sac extending to property line and Cascade FR.	2
FM-3	Conduct cutting and pile burning of chaparral stands	3
FM-4	Monitor fuel reduction zones and maintain.	A-O
FM-5		
FM-5	Cooperate with neighbors regarding fuel reduction.	1-O
FM-7		
FM-6	Update fire management policies and practices.	1
Access Program		
A-1	Monitor new access on Sir Francis Drake Boulevard.	A-O
Trails Program		
T-1	Construct a new connector trail from Sir Francisco Drake Boulevard to Sherwood Forest FR.	2

Table 2

Priority for Implementing Recommended Actions

Recommended Action		Priority
T-2.	Construct a trail connector in the northwest corner of the White Hill Preserve	2
T-3	Finalize an agreement with the Boy Scouts regarding public access over that portion of White Hill FR that crosses their property.	1
T-4	Designate the Split Rock Trail as a recognized trail. Close to bicycle use and mend erosion problems.	2
T-5	Designate the Martha McCormack Trail as a recognized trail.	3
T-6	Seek to acquire a public easement over two properties on White Hill FR.	2
T-7	Construct a new section of Burnt Tree Trail and close the existing southern section.	3
Use Program		
U-1	Place signs to inform bicyclists that access via the Cascade Canyon bottomland requires four stream crossings and that trail use is illegal and citations are issued.	1
Signs and Information Program		
S-1	Install signs listed on Table 3.	1 to 4
S-2	New connector trails should be signed regarding use.	A
S-3	New signs regarding dog use should be installed at entrances.	1
S-4	New bicycle information signs should be installed at entrances.	1
S-5	Close and sign non-recognized trails through chaparral.	1
S-6	Sign recognized trails and fire roads through chaparral for dog use.	1
S-7	Sign Cascade Canyon Preserve entrances that it is a Sensitive Wildlife Area.	1
S-8	Sign entrances during Red Flag days.	1-O
S-9	Sign the Middle Road Cut Trail that it dead-ends and enters private property.	1
S-10	Update District guide to the preserves.	A

Table 2

Priority for Implementing Recommended Actions

Recommended Action		Priority
S-11	Contact user groups regarding trail closures.	1-O
Enforcement Program		
E-1	Patrol 6 trails and conduct patrolling of other trails.	1
E-2	Continue to maintain records of complaints, and monitor trails.	1-O
E-3	Patrol and cite illegal bicycle use. Close trails if warranted.	1-O
Monitoring Program		
All monitoring is recommended and will start once the actions are implemented. Monitoring will continue as long as required for each recommended action.		A
Implementation Program		
Expand the Environmental Stewardship Program.		1

Notes:

1 Level of priority in which action should be taken with 1 being of greatest priority and 4 being the lowest priority.

2 "O" following the priority number indicates an ongoing action.

3 "A" means that the recommendation will be done when the underlying action is implemented.

1.6 INTENDED USES OF THIS EIR

After certifying the EIR, the MCOSD Board of Directors will consider the merits of the project and approve, conditionally approve, approve a plan alternative, or deny the project. The County will follow its normal notification and hearing procedures for Board action.

The following other responsible or trustee agencies may have discretionary jurisdiction and approval authority for activities involved in implementing the project. They would use this EIR to make their decisions about the project and the permits they have the authority to grant for future project actions.

- Army Corps of Engineers - regulates activities that have the potential to affect navigable waters under Section 10 of the Rivers and Harbors Act of 1899 (Section 10 permits) and waters of the United States under Section 404 of the Clean Water Act (Section 404 permit).

  The Federal Clean Water Act has as its goal to restore and maintain the physical, chemical, and biological integrity of the nation's waters. Section 404 of the Federal Clean Water Act regulates the discharge of fill material into "waters of the United States," which includes wetlands. Based on the Corps' determination that any wetlands on the site are under its jurisdiction, filling of wetlands would require a permit to alter these resources. The Corps would evaluate the need to hold a public hearing on the permit. Any person may request that a public hearing be held.

  Projects involving filling wetlands or affecting navigable waters will need to obtain a permit from the Army Corps. Some projects may be covered under one of a series of Nationwide Permits while other projects may require an individual permit.

- Environmental Protection Agency (EPA) - oversees the analysis of the Army Corps of Engineers regarding the issuance of permits for filling wetlands under Section 404 permits and issues permits for point source discharges to waterways. The EPA shares oversight jurisdiction regarding wastewater treatment issues and funding programs with the State Water Resources Control Board.

- Fish and Wildlife Service (USFWS) - administers the Federal Endangered Species Act and the Marine Mammal Protection Act. The USFWS operates under a number of statutory and administrative authorities. Its basic responsibilities concern migratory birds, anadromous fish, and endangered species. The USFWS is an advisory agency to the Army Corps on Section 404 and Section 10 projects. The USFWS will review mitigation plans for these projects. Briefly, the USFWS policy identifies four different resource categories with criteria and mitigation goals for each. The Fish and Wildlife Service will review the resources on the site and assign a category to each. Each category has a specific set of mitigation requirements. Some projects may require an Incidental Take Permit from USFWS under the Endangered Species Act.

- National Atmospheric and Oceanic Administration – Fisheries (known as the National Marine Fisheries Service, or NMFS, at the time this EIR was written and so referred to herein) - administers the Federal Endangered Species Act and the Marine Mammal Protection Act as they pertain to marine and anadromous species. The

service also advises the Corps of Engineers on Section 7 and Section 404 permits for projects that could affect fish habitat. Some projects may require an Incidental Take Permit from NMFS under the Endangered Species Act.

- Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) - regulates discharges to waterways through the adoption of Waste Discharge Requirements (WDR) and National Pollution Discharge Elimination System (NPDES) permits.

- Office of Planning and Research - circulates EIRs for review by State agencies.

- Department of Fish and Game (CDFG) - has authority to oversee work done in streams pursuant to Fish and Game Code 1601 and 1603. An applicant who proposes to substantially divert the natural flow of a stream, substantially alter its bed or bank, or use any material from the streambed must first enter into a "Streambed Alteration Agreement" with CDFG. Such an agreement would include a requirement that there be no net loss of wildlife habitat values or that lost acreage would be replaced. The Department is also responsible for the protection of plant and wildlife populations and for overseeing the California Endangered Species Act. The Federal Fish and Wildlife Coordination Act gives the CDFG authority to comment on U.S. Army Corps of Engineers permits. Any waterway subject to CDFG jurisdiction is also subject to Corps regulations.

- The Native American Heritage Commission - mandated to Preserve and protect places of special religious or cultural significance pursuant to Section 5097 et seq of the Public Resources Code.

- Marin County Community Development Agency - issues building permits and reviews the consistency of development proposals with the County General Plan.

- Marin County Department of Transportation and Public Works - issues grading permits and is responsible for reviewing projects for impacts to County roads and the County's drainage system.

- Bay Area Air Quality Management District - must approve permits for any pile burning that occurs on the Preserves.

- Town of Fairfax - must determine consistency of the project with the Fairfax General Plan. Any improvements that are done within the Elliott Nature Preserve (a 38-acre parcel that is a portion of the Cascade Canyon Open Space Preserve) must be approved in writing by the Town. When the Town deeded this Nature Preserve to the County in 1987, it was stipulated that the Town must agree to any construction of improvements made to the Preserve. The transfer agreement also stipulates that the property will revert to the Town if MCOSD attempts to sell, trade, or exchange the property or if MCOSD attempts to construct a parking facility on the property.

1.7 RELATIONSHIP TO OTHER PROJECTS

To assess cumulative impacts, staff of the Marin County Community Development Agency and the Fairfax Planning Department were queried to determine what other projects were approved but not constructed or proposed in the project area. The Town of Fairfax did not identify any projects other than the proposed Draft Management Plan that should be assessed for cumulative impacts (letter from Ken Kirkey, dated 3/20/02). The Marin County Community Development Agency's report *PROPDEV 34 - Semi-Annual Proposed Development Survey - An Inventory of Proposed Development Projects in Marin County as of January, 2002* (Marin County Community Development Agency, February, 2002) was reviewed to determine proposed projects in the County's jurisdiction near the Preserves. One project was identified within the general region of the Preserves and is summarized below.

- French Ranch is a residential project includes 31 single-family residences of which 16 have already been constructed. The French Ranch project is located about five miles west of the nearest portion of White Hill Preserve. The project is not within the same watershed as the Preserves. Future development of the second phase of French ranch would not combine with the proposed project impacts to affect the physical environment. The only impact from development of French Ranch that might combine with impacts from the proposed project would be increased traffic on Sir Francis Drake Boulevard.

In addition to this project, there are three other projects that are known for the area. They include:

- The County of Marin recently completed construction of a bridge across the landslide area on Sir Francis Drake Boulevard (SFD) near the top of White Hill. This construction included using the meadow at Sherwood Forest as a construction staging area. During construction, temporary power poles were installed on White Hill Preserve above SFD. Installing these poles and then removing them upon completion of the bridge project required the use of a bulldozer to open up an old road that led from SFD to the crest of the ridge. This required bulldozing of about 700 feet of road between 8 and 10 feet wide. The County has covered the graded area with straw to reduce erosion from the area. A portion of this graded area would be used for constructing the new connector trail from SFD to the top of the hill on White Hill Preserve. If and when the connector trail is constructed, those portions of the graded area not used for the trail will be permanently restored to prevent erosion. The meadow that was used for the staging area has been graded and has straw placed on it. Five seedling live oaks and five baccharis shrubs have been planted around the perimeter of the meadow area. These actions are all part of the recently completed bridge project and are assessed in this EIR only as regards cumulative impacts.

- The Marin Municipal Water District (MMWD) is preparing a Watershed Road and Trail Management Plan. This Plan will identify erosion sources within the MMWD watershed and develop a process for reducing that erosion. Because this project is intended solely to reduce adverse impacts resulting from erosion, it will not combine with the proposed project to generate any new significant adverse cumulative impacts. It will not be assessed for cumulative adverse impacts in this EIR.

- The Boy Scouts of America is requesting a Grading Permit from the County of Marin for an already completed 6.5 mile trail system that has been constructed on Camp Tamarancho which is adjacent to Cascade Canyon and White Hill Open Space Preserves. This trail system was originally constructed under the applicant's jurisdiction consistent with the existing Use Permit for the property. However, based on challenges to that trail system, the County determined that while the project was consistent with the Use Permit, a Grading Permit to construct the trail system should have been obtained from the County. Prior to considering approval of the Grading Permit, the project will need to undergo CEQA review. An Initial Study is currently being prepared for the project.

  Because the trail system on Camp Tamarancho is already constructed, no additional trail construction is proposed, and use continues while the application for the Grading Permit is applied for and considered, this project will not result in any new cumulative impacts. The current request for a Grading Permit is intended to bring the project into compliance with County regulations. The result of that Grading Permit might include some additional environmental remediation for adverse impacts that resulted from past trail construction, but such actions would only have a beneficial effect on the existing baseline situation.

  This EIR does discuss possible impacts of the proposed project in conjunction with existing use of Camp Tamarancho. The trail system and other uses of Camp Tamarancho are considered part of the baseline conditions (i.e., the existing setting) for this EIR.

2.0 SUMMARY CHAPTER

2.1 Summary of Project Description

MCOSD proposes to adopt a Draft Management Plan to guide future use of the Cascade Canyon and White Hill Open Space Preserves. To guide development of the Draft Management Plan, MCOSD developed a list of four management goals. The goals are listed in order of their priority, with Goal 1 being the most important and Goal 4 the least important.

Goal 1 Preserve and enhance the native plant and animal communities, geologic, hydrologic, and historic resources, and the scenic values of the Cascade Canyon and White Hill Preserves.

Goal 2 Consistent with Goal 1, maintain and enhance opportunities for public recreation, education, and aesthetic enjoyment of the Cascade Canyon and White Hill Preserves.

Goal 3 Consistent with Goal 1, reduce the threat of wildfire to the surrounding community.

Goal 4 Consistent with Goals 1 and 2, minimize and reduce the impacts of Preserve use on the surrounding communities.

These goals are considered the "objectives" of the project. In addition to these four objectives, MCOSD staff has specifically requested that the Management Plan include a proposal to construct two trail segments at the north end of the White Hill Preserve that would connect Sir Francis Drake Boulevard to White Hill Fire Road on the west side of the Preserve. These trail segments are recommended in the Trails Element of the *Marin Countywide Plan*. The Draft Management Plan contains nine programs which provide specific management recommendations to address the four goals. The nine programs include:

- The Trails Program describes the existing and proposed trail system on the Preserves.
- The Biodiversity Management Program describes existing natural resources on the Preserves and how those resources will be protected and enhanced.
- The Fire Management Program describes the methods to be used to decrease the risk from fire ignition and the damage that could be caused by a fire starting on the Preserves.
- The Access Program describes public access to the Preserves.
- The Use Program describes allowed and prohibited Preserve uses.
- The Sign and Information Program describes the type and location of signs recommended for the Preserves.

- The Enforcement Program describes proposed methods of enforcing Preserve rules and regulations.

- The Monitoring Program describes monitoring actions required for the other programs.

- The Implementation Program describes administration of the Preserves and the schedule for recommended improvements.

The Draft Management Plan contains a lengthy list of recommended management actions. The principal recommendations that would physically affect the environment are outlined below

Biotic Resources

1. Remove broom populations on the Preserves.

2. Remove yellow starthistle and other invasive non-native plant species.

3. Monitor Douglas fir invasion of oak woodlands and remove firs if warranted.

4. Restore two meadows.

5. Officially close 3 recognized, maintained trails and 10 non-recognized, non-maintained trails to address erosion problems and provide additional wildlife habitat.

6. Designate the Cascade Canyon Preserve as a Sensitive Wildlife Area and require that dogs be kept on leash at all times in the Preserve. On White Hill Preserve, dogs must be kept on leash except on White Hill Fire Road where they must stay on the road and be under voice command.

7. Sign all roads and trails through chaparral to inform users to keep dogs on leash in these sensitive wildlife areas.

8. Avoid spotted owl nests and woodrat nests during new trail construction.

9. Rock the stream crossings on Cascade Fire Road and perform other erosion control improvements for roads and trails contributing sediment to San Anselmo Creek. The Draft Plan contains a lengthy inventory of all existing major erosion problems in the Preserves and recommends specific actions required for each eroding area. The recommended actions include reconstruction of short sections of two trails, realignment of a longer section of one trail, and realignment of a short section of one fire road that are overly steep and eroding.

Fire Hazard

1. Construct a series of fuel reduction zones averaging 200 feet in width mainly along existing fire roads that parallel the southern and eastern edge of

Cascade Canyon Preserve. The total length of the fuel reduction zones is about 12,000 feet. Fuel reduction zones will remove understory vegetation and ladder fuels and will be constructed with hand labor and/or a mowing machine.

2. Once the fuel reduction zones are created, MCOSD may consider cutting and pile burning of as much as 85 acres of chaparral.

Access and Trails

All proposed new trails, redesignated trails, and trail closures are shown on Figure 3.

1. Construct two new connector trails. One trail connects a public road with a Preserve fire road and the second connects two sections of the fire road where it travels onto private property. MCOSD may consider multi-use on these two trails.

2. Realign two short sections of existing trails that are overly steep as well as a short section of an existing fire road that is overly steep.

3. Close the southern 1,600 feet of one trail (Burnt Tree Trail) and construct a new eastern leg of that trail to connect it to an existing fire road.

4. Redesignate two existing non-recognized trails as recognized trails and perform required maintenance on those trails.

Signs

An extensive list of new signs are recommended. These signs include signs to educate users of allowed and prohibited uses, trail directions, trail closures, and other information regarding usage and preserve resources.

Enforcement

1. MCOSD rangers will conduct additional patrolling to monitor illegal bicycle use of single-track trails.

2. MCOSD will keep detailed records of illegal use, complaints, citations, and incident reports.

3. MCOSD may close single-track trails or roads open to bicyclists if monitoring shows that illegal bike use is increasing.

Monitoring

The Draft Plan contains a full complement of monitoring requirements to ensure that all recommended actions are properly functioning as well as to monitor for other problems, illegal bike use, and resource damage.

Implementation

The Draft Plan prioritizes recommended actions. Actions with the highest priority include designation of the Cascade Canyon Preserve as a Sensitive Wildlife Area, trail closures, remediating erosion problems near San Anselmo Creek, removal of yellow starthistle and smaller broom populations, and construction of the fuel reduction zones

Required Project Approvals

The Marin County Board of Supervisors is responsible for adopting the Final Management Plan for the Preserves. No other approvals are required for adoption of the plan.

2.2 Summary of Major Conclusions

This Draft EIR identifies a number of impacts that would result from implementation of the Cascade Canyon and White Hill Draft Management Plan. This section summarizes the EIR conclusions regarding impacts and their significance. A full listing of impacts, mitigation measures for those impacts, and significance of the impact before and after mitigation is presented on Table 4 at the end of this Summary Chapter.

Geology and Soils

Construction of new trail segments and the one road segment will result in bared soil and soil erosion. The Draft Management Plan and this EIR recommend erosion control actions on existing eroding sites to compensate for this increased erosion so that there would be less erosion occurring after new trail and road construction than currently occurs on the Preserves.

Future increased use of these new trails and road as well as existing roads and trails could increase the amount of erosion. The increase is expected to be small, once the new road and trails are actually constructed. The erosion control actions recommended in the Draft Management Plan and this EIR will more than compensate for any increased erosion caused by increased use. With the inclusion of EIR-recommended mitigation measures, there will be a reduction in the amount of erosion occurring on the Preserves. There will be a consequent decrease in the amount of sediment delivered to streams, and water quality will improve. When all erosion control measures recommended in the Draft Management Plan and this EIR are implemented, it is estimated that erosion from trails and roads would be reduced by about 95%.

Roads and trails could be subject to failure from landslides or earthquakes. However, proper construction of new trails and the road per the recommendations of a geotechnical expert and standard trail/road construction guidelines will reduce the chance of failure, and the impact can be reduced to a less than significant level.

Cutting and pile burning of chaparral could result in increased soil erosion and landsliding. The EIR recommends that cutting and pile burning not occur on sites potentially subject to landsliding, and it includes a number of mitigation measures to control erosion from treated areas that would reduce this impact to a less than significant

level. The cutting and pile burns substantially reduce the chance of a major wildfire on the Preserves, thereby reducing the potentially significant erosion and sedimentation that would result from that future wildfire.

Given EIR-recommended mitigation measures, all geologic and soil related impacts will be either beneficial or less than significant.

Hydrology

Hydrologic impacts of the project are limited to a small increase in the amount of runoff and sedimentation impacts on water quality. The small increase in runoff from the new trails and road section is expected to be less than significant. Increased runoff from areas that are cut and pile burned to reduce fire hazard could increase runoff. This EIR recommends mitigation measures to reduce runoff increases to avoid additional downstream flooding. Sedimentation impacts on water quality were summarized above under Geology and Soils.

Vegetation

New trails and the road will avoid special status species of plants. Any trail or road widening that might occur through increased use of the Preserves, though such widening is not expected, would not impact special status species of plants. Construction of fuel reduction zones and cutting and pile burning chaparral will not significantly affect special status species of plants. The Draft Management Plan contains recommended actions, such as trail closures, meadow restoration, and removal of broom populations, that could benefit these plants. Trails and roads in the Cascade Canyon Bottomlands will be lined to reduce trail and road width, which is expected to benefit common species of vegetation; no special status species were found along these trails and roads. The EIR requires new field surveys of special status species of plants for new trails, roads, fuel reduction zones, and areas where chaparral would be cut and pile burned to ensure these species are not harmed by that construction.

Other sensitive plant communities, including riparian vegetation, wetlands, and redwood forests will generally be avoided. Mitigation measures included in this EIR reduce the effects of the project on these communities to a less than significant level. Actions recommended in the Draft Management Plan will benefit these plant communities by reducing sedimentation, reducing the chance of a catastrophic wildfire, and increasing vegetative cover by closing trails.

Wildlife

The erosion control actions recommended in the Draft Management Plan and this EIR will reduce sedimentation of streams to a level that is less than occurs under existing conditions. This will benefit steelhead and other aquatic species. Reducing motor vehicle travel through San Anselmo and Cascade Creeks and warning bicyclists of high water in the area will further reduce disturbance of the streambed and benefit steelhead. MCOSD will conduct additional habitat evaluation of steelhead habitat in the Cascade Canyon Preserve to identify problems with steelhead migration and reproduction and will work with other agencies to address any problems.

Cutting and pile burning of chaparral could result in additional sedimentation of streams and adversely affect steelhead. Mitigation measures recommended in the EIR include extending the period of cutting and pile burning over several years and allowing NOAA - Fisheries to require additional mitigation measures if it is determined that sedimentation resulting from cutting and pile burning is adversely affecting steelhead habitat. Impacts to steelhead and other aquatic species will be reduced to a less than significant level, and, in fact, the Draft Plan plus EIR-recommended mitigation measures will have a beneficial impact on these species.

Construction of new trails, the road section, and the fuel construction zones. as well as increased use of all trails and roads could adversely affect northern spotted owls and several other special status species of wildlife that may inhabit or forage on the Preserves. Actions recommended in the Draft Management Plan and mitigation measures recommended in this EIR will reduce all trail, road, and fuel reduction zone impacts to special status species of wildlife to a less than significant level.

Increased use of the Preserves could adversely affect common species of wildlife. Actions included in the Draft Management Plan, including closure of trails, creation of Sensitive Wildlife Areas, and restrictions on dogs in the Cascade Canyon Preserve would reduce this impact to at least a less than significant level and perhaps be a beneficial impact, as there would be more undisturbed wildlife habitat on the Preserves than is currently the case.

Fire

Implementation of actions recommended in the Draft Management Plan will reduce fire hazards on the Preserves. Construction of fuel reduction zones, cutting and pile burning of as much as 85 acres of chaparral, and cooperation with neighboring landowners to reduce fuels at the urban-wildland interface will reduce the chance of a major wildfire burning large amounts of the Preserves as well as escaping the Preserves and burning nearby residential neighborhoods. This is a beneficial impact of the project.

Traffic

The new access point and connector trail starting near the top of White Hill on Sir Francis Drake Boulevard (SFD) could attract as many as 153-312 new users to the Preserves on a peak use weekend day. The new trail will provide access from Loma Alta Preserve (to the east of White Hill Preserve) via the trail undercrossing beneath the Brown Bridge on SFD. Many of these new users may drive to the access point and park at existing turnouts along SFD. People attempting to turn left into or out of these turnouts could cause traffic conflicts. A traffic report prepared for MCOSD concludes that with minimal tree trimming near two turnouts, future visitor use of the turnouts and Sir Francis Drake Boulevard shoulders to access the new trailhead from the turnouts would not result in any significant traffic safety impacts.

Increased use of trails and roads on the Preserves could increase the risk of accident as well as increase user conflicts. This EIR recommends trail construction techniques that will reduce the risk of accident on new trails to a less than significant level. Use of these trail construction techniques on existing fire roads recommended for closure as a road would reduce accident risks and user conflicts on existing roads and trails. This EIR also recommends monitoring and patrolling of roads and trails to ensure that bicyclists

abide by speed limits. The recommended mitigation measures will reduce the chance of accident to a less than significant level.

The increase in use expected from opening new multi-use trails could increase bicycle and other traffic on public streets used for local access. However, the increase is not expected to be substantial. Bicyclists and other users will be required to abide by existing laws for travel along public streets. The increase in use is not expected to result in a significant traffic safety impact on public streets.

All traffic-related impacts can be reduced to a level that is less than significant if EIR-recommended mitigation measures are adopted.

Aesthetics

The only potentially significant visual impact that would result from Management Plan actions would be the short-term impact resulting from cutting and pile burning. This treatment would result in areas mainly cleared of vegetation with some piles of ashes that would be visible from various locations on the Preserves and more distant public and private vantage points. Because only 85 acres would be treated, no more than 25% would be treated in any given year, and the visual impacts would be short-term until the vegetation re-grew, the impact is considered less than significant, given EIR-recommended mitigation measures.

If a large mowing machine is used to cut vegetation when constructing the fuel reduction zones, it can cause unsightly broken ends of shrubs and branches. This EIR recommends that areas treated with such a machine be re-visited with hand crews to remove unsightly cut branch and shrub ends. This would reduce this visual impact to a less than significant level.

The Draft Management Plan recommends a large number of signs. Too many signs can impact the viewshed and the feeling of the experience of being in a natural setting. To reduce this impact to a less than significant level, this EIR recommends eliminating the need for all signs designated as Priority 3 in the Draft Management Plan.

Public Services and Infrastructure

The only public service providers that could be adversely affected by the Draft Management Plan would be MCOSD rangers and perhaps the Fairfax Police Department and Marin County Sheriff's Department. Illegal actions on the Preserves caused by an increased number of users plus new restrictions on dog use could result in increased call for ranger response. These responses would be in addition to the increased patrolling and trail monitoring called for in the Draft Management Plan. However, this increased demand for ranger response is not expected to cause a physical change in the environment and is considered less than significant. Additional police response could be required for accidents caused by the new trailhead on SFD. However, the traffic report prepared for this Final EIR concluded there would not be a significant safety issue involving use of this new trailhead, so the impacts to the Sheriff's office would be less than significant.

Recreation

The Preserves receive light use. Even with the increase in usage that could result from implementation of the Draft Management Plan, the number of users is predicted to be 77-106 visitors per acre per year. This is at the low end of similar regional parks (71-593 visitors per acre per year). The specific environmental impacts of this increased use can all be reduced to a level that is less than significant. The project will not have adverse impacts on recreational facilities. The project is consistent with the Marin Countywide Trail Plan that identifies the need for a new multi-use trail along the route of the new connector trail at the north end of the White Hill Preserve.

Land Use and Planning

The Draft Management Plan is consistent with goals, objectives, and policies of *The Marin Countywide Plan*. Because the Preserves are owned by the County, they are not under the jurisdiction of the Town of Fairfax. Nevertheless, this EIR assessed the project for consistency with the Fairfax General Plan and found that generally the Draft Management Plan was consistent with the Town's General Plan, although the Town could find the project partly inconsistent with recommendations included under two policies in its General Plan.

The project would retain the Preserves as public open space and not have a significant impact on land use in the area. All impacts to land use would be less than significant.

2.3 Areas of Controversy

The proposed project raises issues and some areas of controversy that will be considered by County decisionmakers. Controversial issues are known through expressions of public opinion that are documented in the record or obtained through public meetings. Prior to circulating the DEIR, the County circulated a NOP to agencies and interested parties. In addition, two public meetings and a public field trip were conducted when preparing the Draft Management Plan. Comments received at the initial public hearing are summarized on page 5 of the EIR while comments on the NOP and responses to those comments are found in Appendix C of this EIR.

Some areas of controversy are not within the purview of CEQA, because that statute focuses on evaluation of significant effects to the *physical environment*. The non-environmental issues are included below, however, to help provide information to County decisionmakers. The main areas of controversy expressed to date are as follows:

- Many commenters were concerned about the risk of a wildfire starting on or crossing over the Preserves and burning adjacent residences.

- A number of commenters expressed concerns that bicycling is causing significant damage to vegetation, erosion (and thereby water quality), wildlife, and aesthetic resources. Several of these commenters would like the plan to limit or even eliminate bicycle riding in parts of the Preserves.

- A number of commenters expressed concern that increased bicycle use was increasing the risk of accidents and user conflict. There were concerns expressed that MCOSD does not adequately patrol the Preserves to control illegal bicycling.

- A number of commenters stated that MCOSD should work to prevent bicyclists using single-track trails.

- A number of commenters expressed their belief that the Cascade Canyon Bottomlands is being "overused" and that use should be restricted so that the area is managed more as a nature preserve.

- Several commenters stated that the Split Rock Trail should be closed and restored to a natural state.

- Much of the erosion generated on fire roads is caused by bicycle use. MCOSD should consider closing roads to bicycle use rather than spending time and money fixing the erosion problems.

- MCOSD should consider closing the Preserves at night.

- Other commenters expressed their feeling that bicycling was not causing significant impacts to environmental resources nor substantial user conflicts.

- Several commenters expressed concern about the impacts to wildlife of dogs off leash.

- Several commenters expressed their belief that the Preserves should be managed more for wildlife and vegetation than as a recreational area. The Preserve should include more areas protected for wildlife use.

- Several commenters recommended that broom be eradicated from the Preserves.

- One commenter stated that MCOSD should work with the Town of Fairfax to eliminate the use of woodburning heaters in the area.

- One commenter stated that MCOSD should work with the Town of Fairfax to fix drainage problems within the Town.

- Several commenters stated that the use of some trails and roads was causing erosion that was adversely affecting steelhead populations.

- Several commenters are opposed to a parking lot near the proposed new trailhead near the top of White Hill on Sir Francis Drake Boulevard because it would attract new users to the Cascade Canyon Bottomlands area.

2.4 Issues To Be Resolved

1 The EIR finds that Alternative 4 (No New Trail Development) is the environmentally superior alternative. This alternative eliminates the site-specific impacts of constructing new trails, and it would not attract new users to the level that the proposed project would. A reduction in new users would also somewhat reduce erosion and wildlife impacts plus reduce the chance of accidents and user conflicts. However, this alternative would reduce the recreational opportunities of the Preserves and thus be only partly consistent with MCOSD objectives, and it would be inconsistent with the Marin Countywide Trail Plan. Because the environmentally superior alternative is inconsistent with MCOSD objectives, MCOSD, the Marin County Planning Commission, and the Marin County Board of Supervisors need to review and consider the EIR evaluations and the mitigation measures for the proposed project and Alternatives 4 (No New Trail Development), 5 (Construct New Trails for Hikers and Equestrians Only), and 6 (Cascade Canyon Bottomlands Use Restrictions). Alternatives 4, 5, and 6 would all reduce environmental impacts, but all would be inconsistent with some MCOSD objectives,

2. The mitigation measures recommended in the EIR will require revision of the Draft Management Plan. MCOSD has reviewed the EIR-recommended mitigation measures and found that the proposed changes are feasible

2.5 Summary of Significant Unavoidable Adverse Impacts That Cannot Be Avoided

This EIR identifies a number of potentially significant adverse impacts that would result from Draft Plan implementation. The EIR presents mitigation measures that would

eliminate those impacts or reduce them to a level that is considered less than significant. All impacts identified in this report can be mitigated to a level that is less than significant.

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If the Board does not include the other required mitigations recommended in this EIR, then the potentially significant impacts those measures are intended to mitigate would be judged as remaining significant adverse impacts.

2.6 Summary of Growth-Inducing Impacts

As discussed in Section 4.1 of the EIR, the proposed project is a management plan to guide future development of the two Preserves. The plan does not extend any public infrastructure nor roads serving undeveloped properties. It will not induce new development in the area and will have no significant growth-inducing impact.

2.7 Summary of Significant Irreversible Environmental Changes

As discussed in Section 4.3 of this EIR, the project would not result in any significant irreversible environmental changes. The use of nonrenewable resources including diesel fuel, gasoline and other energy sources and wood and other materials to construct various improvements recommended in the Draft Management Plan would be irreversible since a large commitment of such resources makes removal or non-use thereafter unlikely. However, the use of energy and materials is relatively minor and would not be considered significant.

Construction of the two new trails at the north end of the White Hill Preserve commits MCOSD to increased usage of other trails and roads on the Preserves as well as other Preserves and public lands in the area. However, as described in Chapter 3.0 of this EIR, the construction and use of those trails would not have significant impacts so long as mitigation measures recommended in this EIR are implemented.

2.8 Summary of Plan and Policy Consistency

An evaluation of the project's consistency with the *Marin Countywide Plan* and the Town of Fairfax General Plan is presented under Impact 3.10-A of this EIR. It was concluded that the Draft Plan is consistent with the goals, objectives, policies, and programs of the County General Plan. While the Fairfax General Plan does not apply to the project, this EIR contains an assessment of Draft Plan consistency with that General Plan to ensure full disclosure, since the 38-acre Elliott Nature Preserve (which is part of the Cascade canyon Preserve) is within the Town of Fairfax,.

The project might be considered inconsistent with two policies of the Fairfax General Plan. One policy (Policy 2.1) recommends that the intensity of recreational use on public lands should be determined in light of the requirements of wildlife for natural habitats. The Elliott Nature Preserve is currently relatively heavily used and is not considered prime wildlife habitat. The Draft Management Plan will not substantially increase use of the Preserves and will provide more protected wildlife habitat than currently exists. The Draft Management Plan appears consistent with the recommendation, but existing uses of the Preserve could be seen as partly inconsistent with this recommendation.

Recommendations under Policy 3.5 (*Preserve public open space.*) state that development on public open space lands should "be considerate of the natural characteristics and open space value of the site." Because this recommendation is vague, it is not possible to state whether recommended actions in the Draft Management Plan are "considerate" or not. The preparers of the EIR believe the Draft Management Plan is consistent with this recommendation, but the Town could find the project partly inconsistent with this recommendation.

The determination of policy consistency represents the EIR authors best judgment (in consultation with County staff). However, policy consistency must ultimately be determined by the Marin County Board of Supervisors and is not set by this EIR. The Board of Supervisors may reach a different policy conclusion than the EIR, as a result of its review of the entire record.

The EIR authors do not believe that the potential inconsistencies within the Fairfax General Plan are, in fact, inconsistencies of such a type that would require a General Plan Amendment. In any case, any inconsistencies with the Town's General Plan are noted only to provide full disclosure. Since the Town's General Plan does not have jurisdiction over the Preserves, consistency with that plan is not required.

2.9 Effects Found Not To Be Significant

This section contains a discussion of the environmental effects that were found not to be significant pursuant to the State CEQA Guidelines Section 15128, which provides that "[a]n EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." The County prepared an Initial Study that was circulated with the Notice of Preparation (NOP). This Initial Study (included in Appendix A of this EIR) determined that a number of potential effects would not be significant and focused the EIR on the issues included in this Draft EIR. The Initial Study conclusions, as amended by additional analysis, are summarized below.

Air Quality

The Draft Management Plan contains provisions for potential future prescribed cutting and pile burning of chaparral on the Preserves. This burning will generate smoke which could affect air quality. However, any pile burning will be done only when permitted by the Bay Area Air Quality Management District (BAAQMD). The actual burning will be done consistent with all BAAQMD-required smoke controls. While smoke will be generated for one or two days when a burn occurs, burning per BAAQMD requirements will ensure that the smoke does not cause significant air pollution problems. Other than emissions from the pile burns, the project would not generate any substantial emissions of air pollutants. No additional analysis of air quality is presented in this EIR, and no mitigations other than those imposed by BAAQMD are required,

Biological Resources

The Draft Plan calls for the construction of new trails and roads, but these trails and roads do not interfere with wildlife movement. In addition, the Draft Plan calls for closing more trails than it would create. These closures will expand the areas on the Preserves that do not include trails or roads. The Draft Plan is expected to enhance wildlife movement.

Cultural Resources

A cultural resources sensitivity study was prepared for the Draft Management Plan. The Draft Management Plan requires that an archaeologist review all project actions in mapped areas of high archaeological sensitivity. If cultural resources are found in areas of proposed action, all work will be halted until the archaeologist makes recommendations regarding their treatment. Any cultural resources that could be affected by project actions will be protected, preserved, and/or curated in accordance with State law.

Hazards and Hazardous Materials

The project does not include any transport, use, or disposal of hazardous materials. No hazardous materials will be stored on the site, and there would be no potential for exposure of the public to hazardous materials. During construction of the new road and fuel reduction zones, equipment will use gasoline and diesel. These activities would be typical of any construction project and would not create any unusual hazardous conditions.

The project is not near a public airport. The project would not expose people or improvements to fire. The project would reduce the chance of a fire spreading from the Preserves to adjacent residential neighborhoods. The project would not interfere with any evacuation plans. Again, by addressing the fire hazard in the area, the Draft Plan improves the emergency response for the area.

Hydrology and Water Quality

The project will not include installation of impermeable surfaces and, as such, will have no effect on groundwater recharge. The project does not include any withdrawals of groundwater so would not affect groundwater resources. The project would not block or alter the course of any stream, so impacts to drainage patterns are not addressed further. The project does not include housing, so impacts of flooding on homes is not addressed. The Preserves include existing trails that cross streams. There is an existing risk of people being harmed by crossing the major stream channels during high water events. This risk is typical of many to most wilderness parks/preserves. New trails will not be constructed in areas that are exposed to any significant flooding (that is, more than a swollen shallow ephemeral channel). Thus, exposing people to flooding is not addressed further in the EIR.

Noise

Construction of trails and the road section as well as conducting some of the recommended erosion control work will require the use of heavy equipment. The trails and roads recommended for construction or improvement are generally at a considerable distance from any residence and will not adversely affect residents. The only possible noise impact would be from trucks carrying rock or equipment on local public streets, which access the Preserves. However, movement of equipment will only take one or two trips. Trucks carrying aggregate for road surfacing would be periodic as road improvements are expected to be spread over many years as MCOSD has sufficient resources to address a particular area. The number of trips for any one job is anticipated to be 1-10, which would not substantially affect noise levels along Cascade Drive or other streets providing Preserve access. Trips in small trucks and cars by workers and rangers accessing the Preserves are not expected to be of sufficient numbers to create any substantial new noise along access streets.

Construction of the fuel reduction zones will cause noise from use of small power tools and possibly a large mower. However, construction of these zones will only take a few days in any one locale. In addition, these zones are generally far removed from residences. No long-term significant noise impact is predicted for these construction activities.

The project is not expected to expose people to temporary or permanent significant noise levels or groundborne noise or vibration, and these impacts are not assessed further in the EIR.

Public Services

The project would reduce fire hazard on the Preserves, thereby reducing the future demand for fire protection. The project does not include construction of homes or businesses, so it would not generate students nor have an impact on schools. The project would not create a demand for improvements to other public facilities. The only public service providers possibly affected by the project would be the providers of police protection, and this impact is addressed in this EIR.

Transportation and Traffic

The project is expected to generate small amounts of periodic construction traffic and possibly some small increase in user traffic. The traffic generated by Preserve visitors is constrained by the lack of parking spaces near all Preserve entrances except near the one existing and one proposed access near the top of White Hill on Sir Francis Drake Boulevard. In no case is the amount of new traffic generated expected to cause a substantial increase in roadway volumes that would affect the volume to capacity ratio on roads, congestion at intersections, or Levels of Service. The only possibly significant traffic impacts relate to possible traffic safety impacts at parking areas along Sir Francis Drake Boulevard and traffic conflicts between users on trails and fire roads. The EIR addresses these impacts.

Utilities and Service Systems

The project does not include wastewater facilities and will not have any impact as regards wastewater treatment requirements. The project does not include any new potable water requirements and will have no impact on water supplies or the water delivery system. No new stormwater facilities will be constructed. Minor alterations of existing ditches and waterbars on roads and trails will be conducted to reduce erosion; this is a beneficial impact. New trails and road sections will require drainage facilities, and these will be constructed per the current best management practices. Otherwise, the project will not require construction of new drainage facilities. The project does not require the collection of solid waste, and no waste generated by on-site construction is expected to be removed from the site, so the project will have no effect on landfills.

Other Resources

- The project does not include construction nor demolition of any homes or businesses, so the project would not increase or decrease housing or population in the area

- The Preserves do not include agriculture, agricultural soils, or Williamson Act contracts, so there would be no impacts to agriculture.

- The project would not include any new lighting, so there would be no impacts to nighttime views.

- The Preserves do not include any known mineral resources or a mineral resource recovery site, so there would be no impacts to those resources.

- The project would not include the construction of any structures. Thus, it would not physically divide a community.

2.10 Summary of Alternatives Analysis

State CEQA Guidelines requires that an EIR include an evaluation of a range of reasonable alternatives to the project that would feasibly attain most of the project objectives while avoiding or substantially reducing any of the significant impacts of the project. Section 4.4 of this EIR contains a full description and analysis of the following eight project alternatives:

1. No project - no new development.
2. No project - future development under existing plans
3. Cascade Canyon Bottomlands bridges
4. No new trail development
5. Construct new trails for hikers and equestrians only
6. Cascade Canyon Bottomlands use restrictions
7. Eliminate prescribed burning
8. The Draft Management Plan plus EIR-recommended mitigation measures

Alternative 1 (No Project - No New Development.)

Alternative 1 (No project - no new development) assumes that existing conditions on the Preserves are continued. MCOSD would continue to manage the Preserves, and the public would continue to use the Preserves. However, no new projects would be implemented on the Preserves.

Conclusions

This alternative is not the environmentally superior alternative because existing problems of soil erosion, with consequent impacts on water quality and steelhead, would remain unaddressed. Wildlife would continue to be impacted by uncontrolled dogs and a too extensive trail system. The critical fire hazard on the Preserves would remain unaddressed. While none of the potentially significant impacts of the proposed Draft Plan would occur, none of the existing problems on the Preserves would be addressed. The alternative would be inconsistent with the objectives of the project to preserve and enhance natural resources, reduce the threat of wildfire, and enhance recreation opportunities (consistent with resource protection). The alternative is also inconsistent with the objective of developing a trail system connecting SFD to White Hill Fire Road.

Alternative 2 (No Project, Future Development Under Existing Plans)

This alternative assumes continued management of the Preserves consistent with general MCOSD policies and the requirements of a legal Settlement Agreement reached between the County, MCOSD, and two citizens. This alternative would include the following management actions:

- Correction of erosion problems as time and materials become available.
- Continuing patrolling of trails and roads to address hazards.
- Continuing patrolling to educate and/or cite illegal dog and bicycle uses.
- Possible construction of fuel reduction zones.
- Possible actions, including volunteer labor, to restore damaged areas and/or remove broom.

It would not include new trail or road construction, new restrictions on dogs, cutting and pile burning of chaparral, or other specific actions included in the Draft Management Plan except, as noted above, some actions which would be implemented only as time and materials are available.

Conclusions

This alternative is not environmentally superior to the Draft Management Plan because it does not ensure that existing erosion impacts and fire hazard are addressed in a timely manner. In addition, the alternative is inconsistent with the objectives of the project to preserve and enhance natural resources and enhance recreation opportunities (consistent with resource protection), and partially inconsistent with the objective of reducing the fire hazard. The alternative is also inconsistent with the objective of developing a trail system connecting SFD to White Hill Fire Road.

This alternative would eliminate the direct environmental impacts associated with new trail and road construction. The alternative will not substantially increase use so there will be less chance of accident and user conflicts and less new traffic. Many of the beneficial actions of the Draft Management Plan either will not occur or occur more slowly. The recreational opportunities of the Preserves as well as adjacent public lands will be restricted. As objectives of MCOSD include reduction of fire hazard and to provide a public access connection across White Hill Preserve, this alternative does not meet all the objectives of the Plan.

Alternative 3 (Cascade Bottomland Bridges)

That alternative includes the following elements:

- Construct pedestrian/bicycle bridges on Cascade Fire Road across the first and fourth crossings of San Anselmo Creek. The two bridges would be at least 36 feet in length; the bridge at the first crossing may need to be 80 feet long (i.e., two 40-foot sections to avoid one end being within the floodplain).

- Reroute Cascade Fire Road between the first and fourth crossing as shown on Figure 12. The road would be routed to the south and cross Carey Camp Creek at the location of the existing footbridge. This road relocation would eliminate two of the stream crossings. The existing bridge over Carey Camp Creek would be enlarged to carry motor vehicles.

- High Water Trail would not be needed and could be closed and revegetated.

- All other actions recommended in the Draft Management Plan would be included in this alternative.

This alternative would provide access for all users through the Cascade Canyon Bottomlands without the need to travel through the creek. This should eliminate or significantly reduce illegal trail use by bicyclists in the area.

Conclusions

This alternative is not environmentally superior to the Draft Management Plan nor to Alternative 2. The principal benefits of this alternative are improving access in the area and some reduction in sedimentation of the stream. The main disadvantages are the short-term sedimentation impacts from bridge and road construction, loss of vegetation, and loss of wildland views. The possibility of the alternative attracting additional users to this already-heavily used area is an adverse impact. Additional user conflicts are possible. In addition, though it is not an environmental concern, there would be considerable expense to construct the bridges and the new road. The alternative would have more significant impacts than the Draft Management Plan. The alternative was not favored by members of the public to whom it was presented at scoping meetings. Finally, the alternative may not be feasible as the Town of Fairfax has indicated it would not approve new bridge construction.

Alternative 4 (No New Trail Development)

This alternative would include all the recommendations in the Draft Management Plan except there would not be construction of the two new trails at the north end of the White Hill Preserve.

Conclusions

This alternative is environmentally superior to the Draft Management Plan. It is also environmentally superior to the other alternatives. In addition to eliminating the site-specific impacts that would result from construction of the two trails, this alternative would reduce the potential increased use of other trails and roads on the Preserves, especially the Cascade Canyon Bottomlands and Wagon Wheel Trail. The one disadvantage of this alternative is that it would eliminate bicycle access from the east to the west side of the White Hill Preserve. MCOSD staff specifically requested that the Draft Management Plan contain this trail connection as a multi-use trail. As such, this alternative does not meet one of MCOSD's objectives for the project.

All impacts of this alternative would be reduced to a less than significant level.

Alternative 5 (Construct New Trails for Hikers and Equestrians Only)

This alternative would restrict the two new trails at the north end of the White Hill Preserve for use only by hikers and equestrians; bicycles would be prohibited. Otherwise, all other elements of the Draft Management Plan would be included in this alternative.

Conclusions

This alternative is environmentally superior to the Draft Management Plan. This alternative would reduce erosion, sedimentation, vegetation, and wildlife impacts, though

these impacts can be mitigated to a less than significant level by EIR-recommended mitigation measures. There would be less demand for ranger response and less traffic and parking on SFD. The number of users of the Preserves would not significantly increase. This alternative is environmentally superior to Alternatives 1, 2, and 3. This alternative does not reduce impacts as much as Alternative 4 (No New Trail Development). The one disadvantage of this alternative is that it would eliminate bicycle access from the west to the east side of the White Hill Preserve. MCOSD staff specifically requested that the Draft Management Plan contain this multi-use trail connection. As such, this alternative does not meet one of MCOSD's objectives for the project. However, it meets the objective better than Alternative 4, which would not provide the new trail for any user group. All impacts of this alternative would be reduced to a less than significant level.

Alternative 6 (Cascade Canyon Bottomlands Use Restrictions)

This alternative would restrict uses of the Cascade Canyon Bottomlands. In addition to requiring all dogs to be on leash in this area, the alternative would prohibit bicycle and equestrian use of Cascade Fire Road. Signs would be placed at appropriate locations to warn bicyclists and equestrians that the Cascade Canyon Bottomlands was closed to equestrians and bicyclists. Otherwise, this alternative would contain the recommendations of the Draft Management Plan and this EIR.

Conclusions

This alternative would be environmentally superior to the Draft Management Plan. Though the reduction in impacts to environmental resources from this alternative would not be substantial, there would be some reduction in erosion potential. However, this impact is not expected to be significant for the Draft Management Plan given EIR-recommended mitigation measures. The main advantage of this alternative is that it would reduce overall use of the area and eliminate potential conflicts between user groups.

The main disadvantage is that it would remove existing recreational opportunities for bicyclists and equestrians. This would be inconsistent with the objective of maintaining recreational opportunities. The objective of maintaining recreational opportunities is incumbent on those recreational opportunities not damaging natural resources of the Preserves. This EIR has concluded that the natural resources of the Cascade Canton Bottomlands can be preserved and enhanced by the Draft Management Plan actions and EIR recommended mitigation measures. Thus, reducing recreational opportunity in the canyon bottom would be inconsistent with MCOSD objectives.

The alternative would be environmentally superior to the Draft Management Plan and to Alternatives 1, 2, and 3. but it would not be environmentally superior to Alternative 4 (No New Trail Development) because Alternative 4 would eliminate the site-specific impacts of new trail construction plus not increase use of the Preserves. This alternative would also not be superior to Alternative 5 (Construct New Trails for Hikers and Equestrians Only), because Alternative 5 would not substantially increase use of the Preserves.

Alternative 7 (Eliminate Prescribed Burning)

This alternative includes removing prescribed burning from the Draft Management Plan. This alternative is no longer applicable since the Draft Plan is revised to eliminate prescribed burning in response to the recommendation of the Marin County Fire Department.

Alternative 8 (The Draft Management Plan Plus EIR-recommended Mitigation Measures)

This alternative is the Draft Management Plan plus the mitigation measures recommended in the Draft EIR.

Conclusions

This alternative would reduce all environmental impacts to a less than significant level and increase use of the Preserves. This alternative is the only alternative that would be consistent with all of MCOSD's objectives for the project.

This alternative would address existing management problems and environmental effects better than Alternatives 1, 2, 3, and 7. This alternative is environmentally superior to the Draft Management Plan and Alternatives 1, 2, 3, and 7.

Environmentally Superior Alternative

This EIR identifies Alternative 4 - No New Trail Development as the environmentally superior alternative. The following summarizes the rationale for this conclusion. Also, see the comparison displayed on Table 3.

Alternative 1 - No Project, No New Development is not environmentally superior to the Draft Management Plan because it does not address existing environmental effects of the public using the Preserves, including erosion impacts, impacts to wildlife, and the existing fire hazard. While MCOSD would continue to manage the Preserves, it is unlikely that the major erosion control and fire hazard reduction projects recommended in the Draft Management Plan, as well as the many other recommended actions of the Draft Plan, would be implemented.

Alternative 2 - No Project, Future Development Under Existing Plans would reduce or eliminate several impacts. However, this alternative would also eliminate many of the beneficial actions of the Draft Management Plan, significantly retard the implementation of other beneficial actions, and not reduce fire hazard impacts as well as the Draft Management Plan. In addition to these direct environmental effects, the alternative significantly reduces recreational opportunities, especially the public access connection from public lands east and west of the Preserves. This alternative is not as consistent as the Draft Management Plan with MCOSD objectives regarding natural resource protection and enhancement, provision of recreational opportunities, fire hazard reduction, and provision of the connector trail at the north end of the White Hill Preserve.

Alternative 3 - Cascade Canyon Bottomlands Bridges does not substantially reduce environmental impacts and would increase visitor use in the most heavily used portion of the Preserves. This alternative is not environmentally superior to the Draft Management Plan or Alternatives 1 and 2. In addition, this alternative may not be feasible, as it

requires authorization by the Town of Fairfax, which has indicated its opposition to new bridges.

Alternative 4 - No New Trail Development eliminates the site-specific impacts that would result from construction of the two new trails at the north end of the White Hill Preserve. It would also reduce the attraction of new users to the Preserves thereby somewhat reducing erosion and wildlife impacts as well as reducing the chance for accidents, user conflicts, and increased use of the Cascade Canyon Bottomlands. The alternative reduces the potential traffic safety problems from people parking at turnouts near the new trailhead on SFD. This is the environmentally superior alternative. However, this alternative is inconsistent with MCOSD's objective of constructing a new connector trail at the north end of the White Hill Preserve. This alternative is environmentally superior to the Draft Management Plan and the other project alternatives.

Alternative 5 - Construct New Trails for Hikers and Equestrians Only will reduce the amount of new usage of the Preserves, and thus reduce the chance for accidents and user conflicts and slightly reduce erosion impacts. It would reduce traffic and parking demand on SFD. This alternative would not reduce impacts as much as Alternative 4 since it would include the site-specific impacts of constructing the two new connector trails. However, this alternative would better meet MCOSD's objective of constructing the new trail connection. This alternative would be environmentally superior to the Draft Management Plan and all other alternatives except Alternative 4.

Alternative 6 - Cascade Canyon Bottomlands Use Restrictions would somewhat reduce sedimentation impacts in the Bottomlands as well as reduce the amount of use this area receives. This alternative does not substantially reduce impacts to natural resources. It would reduce existing recreational opportunities. It also appears to be inconsistent with MCOSD's objective of maintaining recreational opportunities. The alternative would be environmentally superior to the Draft Management Plan and to Alternatives 1, 2, and 3, but it would not be environmentally superior to Alternatives 4 and 5.

Alternative 8 - Draft Management Plan Plus EIR-recommended Mitigation Measures would reduce all environmental impacts to a less than significant level. This alternative would increase use of the Preserves and the chance for accidents and user conflicts. However, these potential impacts can be reduced to a less than significant level by implementing the recommendations included in the Draft Management Plan and this EIR. This alternative would be consistent with MCOSD goals and objectives as regards protection of natural resources, providing recreation, reducing wildfire hazard, and providing the new connector trail at the north end of the White Hill Preserve. This alternative is superior to Alternatives 1, 2, 3, and 7. Alternatives 4, 5, and 6 are environmentally superior to this alternative, but Alternatives 4 and 5 do not meet the objective of developing a multi-use trail at the north end of White Hill as well as this alternative, while Alternative 6 reduces recreational opportunities in the Cascade Canyon Bottomlands and is thus inconsistent with the objective of maintaining recreational opportunities.

To summarize, without considering project objectives, the following ranks the alternatives starting with the environmentally superior alternative:

1. Alternative 4 - No new trail development
2. Alternative 5 - Construct new trails for hikers and equestrians only

3. Alternative 6 - Cascade Canyon Bottomlands use restrictions
4. Alternative 8 - The Draft Management Plan plus EIR-recommended mitigation measures
5. The Draft Management Plan as proposed
6. Alternative 1 - No project - future development under existing plans
7. Alternative 2 - No project - no new development
8. Alternative 3 - Cascade Canyon Bottomlands bridges

Comparing alternatives consistency with the five project objectives, none of the alternatives except the Draft Plan and the Draft Plan plus the EIR-recommended mitigation measures meets all the objectives. Alternatives 4 and 5 meet all objectives except the new connector trail (and, thus, some reduction in the objective of increasing recreational opportunities). Alternative 6 meets all the objectives except for maintaining recreational opportunities. Of those three alternatives, Alternative 5 best meets the objectives, as it would provide a new connector trail for all users except bicyclists and not reduce recreational opportunities in the Cascade Canyon Bottomlands.

2.11 Impact and Mitigation Summary Table

Table 4 provides a summary of the impacts identified in this Draft EIR. The first column of the table describes the impact that would result from buildout of the project. Following that impact is a description of the level of significance that impact has. Levels of significance include "beneficial," "less than significant" (that is, less than significant as measured against significance criteria established for each area of impact), "potentially significant" (i.e., significant prior to implementation of mitigation measures), or "significant."

The next column lists the recommended mitigation measures for the impact. Finally, there is a column that describes the significance of the impact after mitigation measures have been implemented.

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3.0 ENVIRONMENTAL IMPACT ANALYSIS CHAPTER

This Chapter of the EIR addresses in detail the interaction of the proposed project with its natural environment. Each area or topic of environmental concern which is addressed in this EIR is discussed using the following format:

A. Setting

This section includes a description of the existing physical and environmental conditions as regards the particular environmental factor under consideration (per *CEQA Guidelines* Section 15125).

For this EIR, the setting, or existing conditions, includes all current existing uses on the Preserves and adjacent public and private properties. These uses include at least the following:

- Existing use of the Preserves' recognized and non-recognized trails by hikers, dogs on leash, and equestrians;
- Existing use of the Preserves' fire roads by equestrians, bikers, hikers, and dogs under owners' control.
- Existing use of off-road and off-trail areas by hikers and dogs on leash.
- Existing use of Camp Tamarancho trails by bikers and hikers.
- Other existing recreational uses on Camp Tamarancho.
- Existing recreational use of MMWD lands.
- Existing recreational use of Loma Alta Preserve and other MCOSD Preserves.

B. Potential Impacts and Mitigations

This section begins with a list of the criteria that are used to determine impact significance. The criteria are based on the list of impacts typically considered significant as listed in the *CEQA Guidelines*. This section describes which significance criteria were found to be less than significant for the project in the Initial Study that was prepared and circulated for public review. For those criteria which the Initial Study concluded there could be a possible significant impact, this section includes a description of the possible significant impacts (per *CEQA Guidelines* Section 15126a and b).

Each impact is identified, described, and assessed per the appropriate significance criteria. Following the discussion of the impact is a listing of possible mitigation measures for those impacts that are identified as being potentially significant.

C. Other Information Used For Preparing the Analyses

1. Mount Tamalpais Area Vegetation Management Plan and the State's Chaparral Management Program

In 1994, MCOSD and MMWD adopted the *Mount Tamalpais Area Vegetation Management Plan.* This Plan was adopted after the preparation of a large and detailed EIR. The Plan addresses a variety of vegetation management actions to reduce fire hazard on 20,000 acres adjacent to the Cascade Canyon Preserve. The actions recommended in the Draft Management Plan regarding the construction of fuel reduction zones and treatment of 85 acres of chaparral are consistent with the recommendations included in the Vegetation Management Plan and its EIR. These documents are incorporated by reference. In subsequent impact discussions where reference to these documents is applicable, the recommendations and conclusions of that Plan and/or EIR will be summarized.

2. Future Use of the Preserves

In order to assess impacts of future use that would result from adoption of the Draft Management Plan, it was necessary to make estimates of future use and to distribute the new users to the road and trail system of the Preserves. In developing these estimates, it was determined that the only improvements recommended in the Draft Management Plan that could attract a substantial number of new users would be the construction of the new trails at the north end of the White Hill Preserve. These estimated projections involve a number of assumptions and some speculation. The lengthy discussion of the assumptions and the predictions are included in Appendix C of this EIR.

To summarize that discussion, a variety of worst case assumptions were made. Table 5 shows the predicted number of new users on a peak weekend day and an average day given the assumptions discussed in Appendix C. These predictions are likely quite high, but will be used for the worst case analysis. The "average day" is the average of peak days, non-peak days during good weather, and low use days in the winter. See Appendix C for a distribution of these new trips. Finally, there is a conclusion of whether the mitigation(s) renders the impact less than significant after the mitigation is imposed.

Table 5
New Preserve Users Resulting from Adoption of the Draft Management Plan

	Bicyclists	Hikers	Equestrians
Peak weekend day	125-225	25-75	3-12
Average day	25-45	8-25	1-4

3.1 GEOLOGY AND SOILS

A. Setting

1. Regional Geologic Setting

The Preserves are located within the Coast Ranges Geomorphic Province. The geologic and topographic characteristics of the Coast Ranges Province are a product of the combination of the tectonic processes, geologic materials, and climate of the region. The regional bedrock geology consists of complexly folded, faulted, and sheared bedrock of the Franciscan Complex of Upper Jurassic to Cretaceous age (65 to 190 million years old). The Franciscan Complex is comprised of a variety of rock types including a melange of shale, siltstone and sandstone. This geologic province formed at the boundary between the North American and Pacific Crustal Plates and from the earlier subduction of the Farallon Tectonic Plate. The contact between these two plates is currently the San Andreas Fault Zone and subsidiary faults of the San Andreas Fault System. Subsequent compression, uplift, and faulting occurred during the Miocene and Pliocene epochs of the Tertiary Period (between 5 and 15 million years ago). The current tectonic setting is related to the movement along the northwest-southeast trending faults such as the San Andreas and Hayward faults, with movement of the Pacific Plate to the north and west relative to the North American Plate.

This complex zone of the San Andreas Fault system is comprised of a series of fault bounded blocks. San Francisco Bay rests upon a depressed block which is wedged between two uplifted blocks supporting the East Bay Hills on the east and the Coastal Range on the west. The San Andreas and Hayward Faults roughly form the west and east delineation of the depressed block, respectively.

2. Geology of the Preserves

a. Physiography and Slope Processes

The physiographic setting within which the Preserves is located reflects the regional trend of the Coast Ranges. It consists of northwest-trending main ridges that have been deeply incised by their drainage system. Physiography is typified by small watersheds draining steep, thinly mantled (soils) on forested and grassland slopes. Higher order creeks, which occupy the bottoms of major canyons, typically flow throughout the year, while lower order, upland streams flow only seasonally. There are some upland springs and seepage areas that are active well into or through the dry season. Watersheds of the region, including the Preserves, typically produce high sediment yields (Stetson Engineers, Inc., 2000).

In the southern part of the Preserves, the steep gradient, low order, upland drainages are tributary to part of the upper reaches of San Anselmo Creek and one of its main tributaries, Cascade Creek. In the northern part of the Preserves, the drainages consist of Fairfax Creek and an unnamed tributary to the northeast of the property. The drainage divide between San Anselmo Creek on the south and Fairfax Creek on the north is near White Hill in the north-central part of the Preserves.

While the major (higher order) creeks have significantly gentler gradients than their upslope, lower order tributaries, they still have relatively steep gradients. Their channels are laterally confined by the inner gorges of opposing, closely adjacent, steep canyon sidewalls. These narrow canyon bottoms are occasionally punctuated by small alluvial valley flats. These flats are stream terraces elevated several feet above the active channel. The terraces are often associated with tributary confluences (such as Cascade and Carey Camp Creeks) with the main streams (San Anselmo Creek), and probably by areas underlain by weaker, more erodible bedrock.

Uplands (i.e., canyon walls and hillsides) draining into the principal streams are rugged, steep and have a maximum relief within the Preserves of approximately 1,450 feet. The upland physiography or landscape is comprised of the incised, lower order stream channels and intervening, often pronounced secondary ridges and smaller spur ridges separating these streams. Topographic hollows or swales are often located upslope of the headwaters of many low order streams. Swales are often the sources of rapidly moving debris-flows during periods of prolonged rainfall, and they can be a major source of stream sediment.

Large to small topographic benches or steppes of flatter gradient are scattered throughout the uplands of the Preserves. The largest of these are up to 500 feet in width (slopes just above and north of Cascade Creek). Such benches or steppes located on the steeper mid-slopes of hillsides are typically of landslide origin.

Ongoing, erosive slope processes of variable rates (both temporally and spatially) are responsible for the development of the upland physiography, and these processes also transport derived sediment to the upland channels (low order streams). These processes are predominately landsliding, including slumps, earthflows, combined slumps-earthflows, and debris-flows. Other processes occurring on the Preserves include downslope creep, overland sheet-wash, rutting-rilling, and, within the stream channels, gully head advancement and bank slumping.

While numerous slides were observed during this study and many others previously mapped (Smith, et al., 1976), only a small number of observed landslides were found to be grossly active at this time. In their dormant or suspended state of inactivity, such landslide features, particularly large, old, flatter slumps, become storage areas for sediment eroded from above by both natural erosion and trail/road-induced erosion. Storage areas include not only the inactive landslides, but also 1) stream terraces that are locally present to either side of stream channels, and 2) very gently sloping, highly vegetated areas such as broad ridgetops. Sediment stored at these locations does not reach stream channels for hundreds to thousands of years due to entrapment by these intervening, flatter sloped landforms. Most of the sediment produced by road/trail erosion is captured and stored by these flatter areas.

In addition to the few active landslides noted above, the steep slopes of much of the Preserves have landslide potential (Smeltzer et al, 2000, Figure 20). These currently inactive landslides could become active if trails or roads were constructed across them.

b. Sediment Budget and Sediment Sources in the Corte Madera Creek Watershed

In 2000, the Friends of Corte Madera Creek commissioned Stetson Engineers to prepare a geomorphic assessment of the Corte Madera Creek Watershed. The assessment was intended to inform ongoing discussions between the Corps of Engineers, the Marin County Flood Control and Water Conservation District, local citizens and environmental groups regarding the completion of the Corte Madera Creek Flood Control Project. The principal focus of the assessment was to identify the major sediment sources and processes within the watershed and to quantify watershed sediment yield. To this end, a sediment budget was developed based on channel surveys, historical water and sediment discharge data collection and evaluation, and bedload transport modeling (upland sources).

The assessment estimates for sediment yield in the Stetson study excluded the fine sediment fraction (i.e. very fine sands, silts and clays) in the total sediment load transported by streams. Since the bulk of the sediments eroded from compacted upland trails and fire roads within the Preserve lands fall within this excluded finer fraction of the sediment load, the direct applicability of the study results to the current assessment is questionable. However, the Stetson assessment did identify the San Anselmo Creek Watershed as exhibiting the highest sediment yield within the Corte Madera Creek Watershed (representing roughly 27% of the total bedload inflow at the Ross gaging station). It is highly likely that the yields of fine-grained sediments from upland source areas are correspondingly high.

The geomorphic assessment also listed and mapped several sediment source areas which were identified by MCOSD and the Marin Municipal Water District (MMWD), and are considered management problems for the districts. Within the Preserve boundaries, five currently active sites were identified (Figure 23 and Appendix B of the Stetson study), including Carey Camp Creek and San Anselmo Creek in the vicinity of their confluence. Portions of the Toyon Fire Road and Cascade Fire Road were also identified as erosion problem areas. A portion of White Hill Fire Road was designated a high-maintenance, gullied roadway. However, this segment of the road is just outside and west of the western Preserve boundary.

c. Trail/Road Bedrock Lithology and Soil Development

The soils of nearly all existing/proposed trails and roadways within the Preserves are developed upon mélange bedrock of the Franciscan Complex (Smith, et al., 1976). Mélange is a chaotic, tectonic mixture consisting of small to large masses of resistant rock types, principally sandstone, greenstone, chert, and serpentinite, embedded in a matrix of pervasively sheared, weak, dark gray to black shaley-appearing material.

Mélange commonly yields irregularly, hummocky topography. Topographic irregularities often result from differential erosion from around the more resistant rock masses embedded within the matrix, and from abundant landsliding that is often associated with this highly tectonized (sheared and broken) unit (Smith, et al., 1976).

Mélange matrix tends to weather to brownish-gray to dark gray, clay-rich, cohesive, swelling soils containing variable amounts of silt, sand, and irregular-size rock fragments. When dry, these soils are firm, gravelly, and generally provide a good base for foot, bike, and equestrian uses; especially when well compacted from prior use. However, when seasonally damp or saturated, these soils swell, soften significantly, and in this condition are subject to varying degrees of disturbance and erosion from various

trails/road uses. The degree of disturbance (damage) is variable, depending upon the percentage and durability of rock fragments present (the higher the percentage and the greater their durability, the more resistant the soil), as well as other factors such as degree of slope, the amount of concentration of runoff flows, as well as the amount and type of trail/road uses.

Some trails and road segments are underlain by a non-mélange bedrock. These bedrock types include chert along the uppermost part of Burnt Tree Trail, silica carbonate rock along the central part (ridgeline) of Blue Ridge Fire Trail, greenstone along the top of White Hill, and serpentinite along a short segment of Middle Road Fire Road. Soil development over these bedrock types consists of clays with varying amounts of sand and gravel-size rock fragments.

The percentage of gravel-size rock fragments in road/trail soils is variable, generally ranging between 15 and 35%. The size range is mostly 1 inch, with some 2- to 3-inch size. Occasionally, larger fragments are present. Most of the fragments are sandstone that varies from well to slightly weathered. There are some areas where the fragments consist of greenstone, chert, or serpentinite. The durability (resistance to breakdown with repeated impact) of the fragments due to road/trail use is mostly fair to good, but it ranges from poor to excellent.

d. Site Soils

On a macro-scale, site soils have been mapped by the Soil Conservation Service (now the National Resource Conservation Service, NRCS), and are delineated and described in the *Soil Survey of Marin County California* (USDA 1985). Six soil types dominate the study area and encompass the bulk of the trail segments included in the erosion assessment. The soils are listed below and are identified by the soil unit numbering assigned in the Soil Survey.

129 Henneke stony clay loam, 15-50% slopes
145 Maymen-Maymen Variant gravelly loams, 30-75% slopes
163 Saurin-Bonnydoon complex, 30-50% slopes
164 Saurin-Bonnydoon complex, 50-75% slopes
180 Tocaloma-McMillan complex, 50-75% slopes
184 Tocaloma-Saurin association, very steep (30-50% slopes)

The Henneke stony clay loam forms on serpentinite, with significant inclusions of cobbles on the surface and within the soil profile. Soil depth is listed at 10-20 inches. The Maymen gravelly loam is derived from sandstone and typically exhibits depths of 10-20 inches, while the depth of the typical Maymen Variant gravelly loam is 20-40 inches. Within the Saurin-Bonnydoon complex, the Saurin soils occupy convex side slopes and are largely devoid of gravel, while the Bonnydoon soils are found on ridgetops and contain a significant gravel fraction. Accordingly, the Bonnydoon soils are shallow, at 10-20 inches, and the Saurin soils are somewhat deeper, at 20-40 inches over bedrock. Both soil units are underlain by sandstone or shale. Finally, within the Tocaloma- McMillan complex, the Tocaloma soil is formed in sandstone or shale and ranges in depth from 20-40 inches. The McMillan soil is formed in sandstone and is shallower at 10-20 inches in depth.

All of the listed soil types consist of either clay loams or gravelly loams, which contain significant percentages of silts, clays and fine sands. For roadbed and trail surfaces, the percentages of sediments passing the #40 sieve (0.43 mm, fine sand) range from 30 to 90%, depending on the specific site and the extent to which either surface soil, subsoil or some form of bedrock is exposed. Some bedrock units within the Preserves are severely fractured and sheared, and are also vulnerable to further decomposition due to bike, equestrian or foot traffic, especially during wet periods. All of the soil types are described as highly erodible, particularly on steep unbroken slopes. The Soil Survey also advises that trails and paths be aligned along the contour.

Site-specific soils evaluations were made in the field by engineering geologist Mike Dwyer. Where these observations coincided with the mapped soil types, these soil types were assumed for the sediment yield computations as described in the report in Appendix D of this EIR. However, where the field-determined and mapped (SCS) soil types did not coincide, the field-determined soil characteristics were used in the computations. Since the soil erodibility factor ("K") used in the Universal Soil Loss Equation (Wischmeier and Smith 1978) has been computed by the SCS for each soil type mapped in the Soil Survey, field-determined soil characteristics were matched to the closest SCS soil type in the project area and that soil type was assumed for computational purposes.

e. Field Data Collection and Interpretation

A field survey and erosion assessment of the Preserves was conducted by Mike Dwyer, consulting engineering geologist, when preparing the Draft Management Plan. His original report along with his detailed recommendations for erosion control are included in Appendix D of the Draft Management Plan. During preparation of the EIR, Mr. Dwyer re-surveyed the Preserves. The principal objective of this second survey was to identify erosion locations where the eroded sediment would be delivered to a stream, thereby adversely affecting water quality. The following is a summary of the more important conclusions of his initial assessment as reported in the Draft Management Plan.

- In general, past use of recognized trails and fire roads has not caused substantial erosion, and the overall amount of erosion is not unusual for a recreational area. Where soil erosion problems occur, they are generally caused by excessively steep slopes, wet areas, poor drainage construction, and/or inadequate maintenance.

- Some non-recognized trails show more severe erosion. Recommendations are made to close several non-recognized trails, all of which are included in the list of trails recommended for closure in the previous section on Vegetation.

- Bicycle use of Wagon Wheel Trail has not caused substantial erosion. Due to the topography of this trail and its rocky substrate, it is performing well, and continued bike use is not predicted to cause substantial erosion.

- Bicycle use of fire roads has caused some areas of rutting and erosion, but these localized erosion incidences are not substantial and can be remedied by implementing the recommended erosion control actions.

- Bike use of several non-recognized and recognized single-track trails is causing substantial erosion. This erosion is caused by too steep slopes, soft substrate soils,

the tendency for bicycles to follow the same track down a trail which over time causes a depression which collects and transports runoff, and the tendency for some bicyclists to lock their brakes on steep downhill pitches (this braking causes rutting, particularly on wet soils).

- The High Water Trail has two sections that are hazardous due to steep drop-offs. These sections require repair. Once these sections are repaired, continued use of this trail by hikers is acceptable.

- The stream crossings along Cascade Fire Road generate some erosion to San Anselmo Creek. This erosion can be substantially reduced by rocking the approaches to the crossings and diverting runoff from the roads so that it does not travel down the approaches.

- Horses can cause substantial erosion on trails when the soil is wet. Horse use of the two Preserves is relatively low, and there was no evidence of substantial erosion caused by horses.

f. Existing Erosion and Sedimentation

While many areas of potential erosion concern have been identified; the overall condition of the roads and trails on the Preserves is about the same as occurs on similar roads and trails on other MCOSD Preserves, the MMWD watershed, and State or Federal parks in the county. These erosive conditions are mainly the result of trail and road construction techniques and routes that do not meet current design standards. Trails and roads are often too steep, not properly surfaced, not properly outsloped, and not provided with proper drainage controls. These inadequacies largely occur because the roads were originally constructed as ranch or access roads or as firebreaks; the builders likely did not have the advantage of proper design documents or field oversight. As such, the roads often travel uphill by a shorter and steeper route than is desirable to control erosion. Similarly, most trails were originally constructed by hikers or equestrians using the same route until a trail was established; often, the objective was of getting from one point to another by the quickest route. Again, often little or no attention was paid to the route's slope nor appropriate drainage improvements.

Erosion from several roads and trails has been exacerbated in the past 10-15 years by increased use. Most of these trails are not suitably designed for hiker use, let alone bicycle and equestrian use. The gradient of many of these trails as well as the soft soils in many locations result in the creation of depressed sections of trail which then funnel runoff down the trail.

On fire roads, the main contributors to erosion are the improper construction and drainage of the roads and motor vehicle use. Most roads have a relatively firm substrate. While bicycle use can create erosion on fire roads, the areas where this occurs are generally limited in extent and would largely be remedied by implementing the erosion control measures that are required for continued motor vehicle use. Motor vehicles cause substantially more damage to road surfaces than bikers and hikers, despite the fact that there are many more bikers and hikers than motor vehicles. Because of their weight, motor vehicles break down the surface of the road, thus initiating rutting.

Sediment production within the Preserves from natural sources greatly exceeds that from all trails and roads. However, there are some point sources of sediment production from the erosion of existing trails and roads that are sufficiently high to warrant corrective measures. The sources are in close proximity to streams, and the sediment is transported a very short distance and deposited into the stream channels (e.g., specific locations adjacent to Cascade and San Anselmo Creeks), or while more distant, the eroded sediment is transported along the roadbed or trail to a point where it empties into or is captured by the stream or tributary gully (e.g., locations along Middle Road Fire Road and Burnt Tree Trail).

The stream sediment-producing locations along existing trails/roads are relatively few. While the majority of the roads produce some sediment, it does not reach the drainage system, because the sediment sources are too distant and the sediment is captured by previously described storage areas. Thus in most cases, erosion of roads and trails does not result in stream sedimentation.

B. Potential Impacts and Mitigations

Criteria Used For Determining Impact Significance

A project will typically have a significant impact if it meets any of the following criteria:

3.1a Exposes people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving any of the following:

- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
- Strong seismic shaking.
- Seismic-related ground failure, including liquefaction.
- Landslides. *(Addressed in Impact 3.1-A)*

3.1b Results in substantial soil erosion or the loss of topsoil. *(Addressed in Impacts 3.1-C and D)*

3.1c Is located in a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. *(Addressed in Impact 3.1-B)*

3.1d Is located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property. *(The Initial Study determined that there would be a less than significant impact per this criterion.)*

3.1e Has soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems, where sewers are not available for

the disposal of wastewater. *(The Initial Study determined that there would be no impact per this criterion.)*

3.1f Results in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. *(The Initial Study determined that there would be no impact per this criterion.)*

3.1g Results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. *(The Initial Study determined that there would be no impact per this criterion.)*

Project Impacts

Seismic Hazard

Impact 3.1-A Seismic events could result in road and trail landsliding.

Existing roads and trails often cross steep slopes. New trail sections and the one new road section proposed in the Draft Management Plan could also be subject to failure and landsliding in the case of a major earthquake. The results of such landsliding are that the road or trail would be closed to use until it was repaired. While there is always the risk that a user could be caught in such a landslide, that risk is less than significant as the chances are very slim that a hiker, bicyclist, or equestrian would be crossing an unstable area at the precise time an earthquake occurred and the road or trail slid away.

MCOSD staff would patrol all Preserves following an earthquake to identify landslides, fallen trees, and other hazards. If landslides did occur, the trail or road would be signed as closed until the landslide could be repaired.

The new trails and road section proposed in the Draft Management Plan would be constructed to follow the contour as much as possible. As such, even if an earthquake-induced landslide were to occur, it would likely only affect a small part of the new trails or road. Because an earthquake is not expected to cause substantial damage, and because repair of such earthquakes is a typical management action taken by MCOSD, the potential impact is considered less than significant. No mitigation is required other than proper trail and road construction (which is required as part of the Draft Management Plan) and post-earthquake monitoring and repair (ongoing MCOSD actions).

Landsliding

Impact 3.1-B New trails and the road section could be constructed on unstable slopes or soils.

The new trails or road section would be constructed on slopes that are relatively steep and potentially geologically unstable, or have unstable soils. Trail and the relatively minor road construction are not expected to cause substantial landsliding. The numerous trails that have been constructed in the past have not caused any noticeable

landslides. However, it is possible that localized landslide deposits could be activated by trail or road construction. The location of local slides that could be affected by new trail or road construction would be known only when the final design and layout plans for the trails and road are completed. Unless designed and constructed to withstand or avoid local landslides, the trails or road section could fail. As discussed in the previous impact, it is unlikely that such failure would be rapid or that users would actually be caught in a landslide or trail or road failure. However, such failure could result in soil erosion plus the need to repair the damaged section of trail or road. This is a potentially significant impact.

Mitigation Measure for Impact 3.1-B

3.1-B.1 New trails and the new road segment will be designed to avoid areas subject to landsliding or, if avoidance is not feasible, designed to minimize the chance of activating a landslide. Prior to the final design for the proposed trails and road realignment, alignments shall be surveyed by a geotechnical engineer or registered geologist to determine the presence of localized landslides and other soil and geologic constraints. The geotechnical engineer or geologist shall prepare final design guidelines to:

- Avoid landslides that could be activated by trail or road construction and use;
- Stabilize the landslide area; and/or
- Construct the trail or road in a manner that would not activate the landslide.

3.1-B.2 The trails and road shall be constructed per the recommendations set forth in the geotechnical report.

Impact Significance After Mitigation

It is not expected that trail construction would activate landsliding. Nevertheless, requiring that new trails and the road realignment avoid areas where landslides could be triggered or constructing trails to minimize the chance of landsliding where avoidance is not feasible would reduce the risk of future landsliding to a less than significant level. Requiring new trails and the road section to be constructed per the design recommendations established by a professional geotechnical engineer or geologist will reduce the chance of trail or road failure to a <u>less than significant impact</u>. No additional mitigation is required.

<u>Soil Erosion</u>

Impact 3.1-C **Construction and use of new trails and the road section and possible increased use of roads and trails will result in soil erosion and corresponding sedimentation of streams.**

Clearwater Hydrology prepared a report addressing soil erosion and stream sedimentation that would result from proposed actions on the Preserves. The complete report, including a full description of the methodology and calculations, is included in Appendix D of this EIR. The following is a summary of the major findings and conclusions of that report.

Sedimentation Impacts from New Trail and Road Segments

Construction of the five new trail sections and one fire road section would generate an estimated 2.64 tons of sediment a year, including 1.58 tons per year to Fairfax Creek and 1.06 tons per year to San Anselmo Creek. These estimates are based on the assumptions that the trails and road would be constructed consistent with the Best Management Practices for road and trail construction as recommended in the Draft Management Plan and this EIR.

Reduction in Sedimentation from Trail/Road Closures and Restoration

Closure and restoration of the southern portion of Burnt Tree Trail would reduce sedimentation to San Anselmo Creek by at least 6.65 tons per year, or over six times as much as the amount of estimated sediment from construction of the new road section and two trail sections in this watershed.

From the perspective of erosion control, it was determined that the southern end of Blue Ridge Fire Road need not be realigned as recommended in the Draft Management Plan. This southern end of the road could be repaired with standard erosion control measures. If these repairs were done instead of constructing a new road alignment, then there would be even less new sediment generated by Draft Management Plan projects. If this road from its southern terminus to Wagon Wheel Trail was reconstructed as a trail rather than a fire road (as is recommended subsequently in the mitigation measures for Impact 3.6-B), there would be a further reduction in erosion and sedimentation.

Closure of an old road/fire trail near the top of White Hill and one non-recognized trail on White Hill Fire Road would reduce erosion and sedimentation to Fairfax Creek by at least 11.77 tons per year, or about seven times the amount of new sediment that could be generated by the three trail projects in this watershed.

The report included in Appendix D was based on field observations of trail and road erosion sources conducted by Michael Dwyer, the EIR engineering geologist. These surveys were conducted in 2002 to supplement the earlier inventory of erosion sources he prepared for the Draft Management Plan. In addition to the trail and road closures and restorations described above, Mr. Dwyer re-assessed the earlier erosion control recommendations included in the Draft Management Plan to determine which erosion problems were contributing sediment to streams. The major erosion sources resulting in stream sedimentation are shown on Figure 7 and described in more detail in Appendix D of this EIR (the numbered sites are mapped in greater detail on a large format topographic map provided to MCOSD staff; this map is available for review at the MCOSD offices). Table 6 lists each major erosion site that contributes sediment to streams and describes the priority for addressing the site; see Appendix D for more detail on the appropriate actions for each site. The highest priority is the three sites listed previously (i.e., closure of the south end of Burnt Tree Trail and the two non-recognized trails on the White Hill Preserve), as restoration of these three sites needs to be done prior to constructing the new road and trail sections. Once those projects are completed, the other sites should be addressed as prioritized in Table 6. When addressing the problem locations included in Table 6, the District may also wish to address nearby problem areas that are described in Appendix D of the Draft Management Plan. These problem areas are areas where erosion is occurring, but the

erosion does not result in stream sedimentation. Nevertheless, the erosion is resulting in management problems along the roads and trails. These sites which do not result in stream sedimentation can be addressed at any time.

The most important erosion sites on Table 6 are the stream crossings on Cascade Fire Road, and this EIR recommends specific mitigation measures for those stream crossings in the subsequent Mitigation Measures section. Reducing the erosion from the sites listed on Table 6 will further reduce sedimentation to San Anselmo and Fairfax Creek. A quantitative analysis of the eventual reduction was not conducted, since closure and restoration of the three locations listed previously would more than compensate for increased erosion caused by new trail and road construction and any increased use of existing roads and trails. However, the EIR hydrologist estimates that treatment of these other sites would likely reduce future sedimentation by a factor of at least 20 (i.e., if 100 tons of sediment are currently entering the streams each year, less than 5 tons would enter the streams if all erosion control projects recommended in this EIR were implemented). Even more reduction could be realized if Creekside Fire Road and Blue Ridge Fire Road from its southern terminus to Wagon Wheel Trail were reconstructed as trails rather than fire roads (as recommended under Impact 3.6-B).

Please note that the erosion site location numbers shown on Table 6 and Figure 7 refer to the site numbering system developed during field surveys. The sites are thus not sequential and some site numbers do not occur on the table or map because it was determined that those sites did not contribute significant sediment to streams.

Table 6
Erosion Control Sites

Highest Priority Sites

Map Location# (Station)	*General Location*
2	Cascade Fire Road @ 1st crossing of San Anselmo Creek – northwest side
6	Cascade Fire Road @ 3rd crossing of San Anselmo Creek – northwest side
8	Cascade Fire Road @ 4th crossing of San Anselmo Creek – northwest side
11	Cut Trail between Cascade Fire Road and Middle Fire Road
12	Western Part of Middle Road Fire Road
14	Middle Road Fire Road – southwest of intersection of Blue Ridge Fire Road
21	Eastern part of Middle Road Fire Road
22	Southernmost part of Burnt Tree Trail
23	Southern part of Burnt Tree Trail
27A	Southernmost part of Creekside Fire Road
39	Toyon Fire Road near intersection w/ Middle Road Fire Road
50	Central part of Carey Camp Loop Trail
51	Carey Camp Loop Trail near 50
55	Cascade Fire Road @ southeast of bridge across San

	Anselmo Creek
56 (Segment 3)	Cascade Fire Road opposite San Anselmo Creek Trail
56A	Split Rock Trail @ intersection w/ Cascade Fire Road
57	Cascade Road between Middle Road Fire Road & Cut Trail
58	Cascade Road between Middle Road Fire Road & Cut Trail
59	Cascade Road between Middle Road Fire Road & Cut Trail

High Priority Sites

Map Location# (Station)	*General Location*
1	Cascade Fire Road @ 1st crossing of San Anselmo Creek – southeast side
1A	Cascade Fire Road [a]100' west of access from Cascade Drive
3	Cascade Fire Road @ 2nd crossing of San Anselmo Creek – southeast side
4	Cascade Fire Road @ 2nd crossing of San Anselmo Creek – northwest side
5	Cascade Fire Road @ 3rd crossing of San Anselmo Creek – southeast side
7	Cascade Fire Road @ 4th crossing of San Anselmo Creek – southeast side
9 & 10	Cascade Fire Road just west of 4th crossing of San Anselmo Creek
13	Western part of Middle Road Fire Road
15 (Assigned high rating due to extensive existing road damage)	Middle Road Fire Road just south of intersection w/ Blue Ridge Fire Road
16	Middle Road Fire Road @ intersection w/ Blue Ridge Fire Road
19	Steam crossing of Middle Road Fire Road – southwest of Burnt Tree Trail
24	Short trail segment along southern part of Burnt Tree Trail
25	Short trail segment along southern part of Burnt Tree Trail
26	Short trail segment along southern part of Burnt Tree Trail
37	Toyon Fire Road to either side of intersection w/ Middle Road Fire Road
38 (Assigned high rating due to an increase in roadbed degradation)	Toyon Fire Road – northwest of intersection w/ Middle Road Fire Road
40 (Assigned high rating due to ongoing roadbed erosion in general proximity to stream)	Toyon Fire Road - between Middle Road Fire Road and Cul-de-Sac Trail
43 (Assigned high rating due to very severe rutting of this trail segment; nearly impassable)	Southernmost part of Pam's Blue Ridge Trail
48	Southernmost part of Happersberger Ridge Trail
56 (Segment 4)	Cascade Road Fire Road just southwest of intersection w/ San Antonio Creek Trail

Moderate Priority Sites

Map Location# (Station)	*General Location*
27	Central part of Burnt Tree Trail
28	Southern portion of non-recognized trail west of Pam's Blue Ridge Trail
29 (Assigned as moderate due to potential for increased roadbed degradation)	Southern part of Toyon Fire Road
30 (Assigned as moderate duet to potential for increased roadbed degradation)	Southern part of Toyon Fire Road
31 (Assigned as moderate duet to potential for increased roadbed degradation)	Southern part of Toyon Fire Road
56 (Segment 5)	Cascade Fire Road commencing 600' west of intersection w/ San Anselmo Creek Trail

Lower Priority Sites

Map Location# (Station)	*General Location*
32	Southern part of Toyon Fire Road
33	Eastern segment of non-designated trail that crosses Toyon Fire Road
35	Southeast of intersection w/ Pam's Blue Ridge Trail
42	Central part of Pam's Blue Ridge Trail
44	Southernmost part of Pam's Blue Ridge Trail
46	Near eastern end of Carey Camp Loop Trail
47	Near eastern end of Carey Camp Loop Trail
52	Central part of Carey Camp Loop Trail
54	Two foot-bridges located @ intersection of Carey Camp Loop Trail & Concrete Pipe Cut Trail

Effects of Increased Use on Erosion and Sedimentation

The use of roads and trails by motor vehicles, bicyclists, equestrians, and hikers causes some erosion to occur. This erosion is part of the setting for this project (i.e., as it currently occurs, it is part of the baseline conditions). The Draft Management Plan contains an extensive erosion reduction program to address the erosion problems caused by existing use of the trail and road system on the Preserves. It is possible that the new trail sections included in the Draft Management Plan, particularly the two new trails at the north end of the White Hill Preserve, would increase use of the Preserves, particularly by bicycles.

A review of the literature was conducted to determine the relative impacts of biking and hiking and the general erosion impacts of both types of use. While there are some

differences in impact caused by biking and hiking, the primary conclusion in both the literature and from conversations with other resource managers is that erosion is primarily a design problem related to improperly designed roads and trails. If a road or trail is properly designed with appropriate drainage features, then erosion can be controlled to an acceptable level no matter what the type or frequency of use. Significant erosion problems generally occur on poorly designed and maintained trails and during the wet season. Equestrian use can cause significant erosion on wet soils not designed for such use. However, currently equestrian use of the Preserves is sufficiently low that significant horse-caused damage is not evident.

Marla Hastings, District Resource Ecologist for Annadel State Park in Santa Rosa, has supervised the reconstruction of numerous trails in that park. She noted that most trail reconstructions incorporate some regrading of existing trails, which are often plagued by excessively steep slopes and other siting problems. Though the reconstructed trails are less erosive, the remaining steep slopes and poor alignments often keep the new trails from achieving the desired levels of soil loss reduction. She recommended seasonal closures of trails that continue to exhibit significant erosive problems. For new and significantly modified (i.e. realigned) trails, proper drainage design is critical to successful trail function. Where drainage is poor, off-trail use by both hikers and bikers typically create new erosion problems (Clearwater Hydrology phone conversation with Marla Hastings, April 2002).

Mike Swezy, resource manager with the Marin Municipal Water District (MMWD), stated that stream crossings represent the worst problem areas with respect to sediment yield and water quality deterioration. The installation of bridges, constructed wet crossings and culvert upgrades are all potential solutions to this problem. He also recommended construction of rolling dips in conjunction with trail outsloping, partly as insurance against subsequent modifications and maintenance that can disrupt portions of the outsloped trail. Mr. Swezy suggested several sources for construction guidance regarding trail construction, reconstruction and decommissioning. In addition to the documents referenced elsewhere in this document, the U.S. Forest Service web site was cited for its comprehensive listing of available best management practices (BMPs) (Clearwater Hydrology phone conversation with Mike Swezy, April 2002).

Tom Ward, Manager in Charge of Recreation for California Department of Parks and Recreation, stated that trails, including multi-use trails, can be designed and constructed so as to not result in substantial erosion. The position of State Parks is that erosion is a design issue and not a user issue. He stated that for trails where erosion could occur, State Parks closes the trail for 24 hours after the end of the rainfall (Ward, personal communication).

While new trail and road segments can be designed to minimize erosion, increased use of trails and roads that are not reconstructed to such design standards could result in some increase in erosion. While it is not possible to provide a quantitative estimate of what this increase could be, it is expected to be relatively small since the number of new trips is not large and the area affected is extensive. In any case, as described previously, repair of existing erosion problems identified in the Draft Management Plan (as revised in this EIR) would reduce erosion from these main problem areas by at least 95%. Such reductions would substantially offset the relatively minimal increase in erosion that could occur from increased use of roads and trails.

While the overall increase in use is expected to have a less than significant erosion impact, increased use of certain trail or road segments, especially during the wet season, could cause substantial erosion on those road or trail segments. This is a potentially significant impact.

Conclusions

Constructing new trail and road sections will cause erosion and sedimentation of San Anselmo Creek and Fairfax Creek. This is a potentially significant impact. Future use of these new trail and road sections as well as existing trail and road sections would cause an increase in erosion and sedimentation. However, this is a less than significant impact given Draft Management Plan recommended repairs of erosion sources. Increased use of specific trail and road sections could result in significant erosion on those specific road or trail segments, and this is a potentially significant impact.

Mitigation Measures for Impact 3.1-C

3.1-C.1 Prior to constructing the three new trail sections on the White Hill Open Space Preserve, close and restore a) the White Hill Fire Road non-recognized trail (Trail Segment 63) and b) the old road between White Hill Fire Road and Blue Ridge Fire Road (Trail Segment 64).

3.1-C.2 Prior to constructing the new road segment and two trail segments on Cascade Canyon Preserve, close and restore the southern portion of the Burnt Tree Trail, including restoration of Trail Segments 22 to 27.

3.1-C.3 The trail and road closures listed in Mitigations 1 and 2 above, will include the following:

a. Outslope the road or trail. Avoid outsloping around curves in the trail/road alignment.

b. On fire roads, construct rolling dips or waterbars at a maximum interval of 40 to 80-feet on outsloped sections and 40 feet on non-outsloped, where feasible. Preferentially locate dips and bars so as to discharge intercepted runoff onto convex hillslopes for better dispersal and a reduced risk of downslope erosion. For trails, the distance between rolling dips or waterbars will be determined in the field with the spacing dependent on the degree that outsloping routes runoff to non-erodible hillslopes.

c. Rip old trail or roadbed on the contour to a depth of 4-6 inches to provide an optimal seedbed configuration and maximum infiltration of rainfall and runoff and to minimize erosion risk. Seed the ripped trail/road bed. A small rototiller or similar piece of equipment should enable its use even in the more remote areas of the Preserves.

d. Install punched straw or other locally available mulch to protect against raindrop impact and to minimize soil detachment and downslope movement.

3.1-C.4 MCOSD should reconsider whether it wishes to realign the south end of Blue Ridge Fire Road. If realignment is not required or desired for other reasons, erosion problems on this southern section of the road can be fixed by backfilling and recompacting rutted areas and installing rolling dips or water bars.

3.1-C.5 Reduce erosion at all stream crossings on Cascade Fire Road. Excavate the road to a depth of 4-5 inches, backfill with 1 inch of wet-compacted, coarse sand (free of organic matter), and overlay with 3-4 inches of crushed rock 1-2 inches in diameter. This treatment should extend from the edge of the cobble streambed upslope to the initiation of a more level roadway grade (e.g. $\leq$ 2%). Any ruts that have formed due to an insloped roadbed should be filled with gravelly native soil and compacted prior to implementing the rock surfacing.

For Sites 2, 6, and 8, additional actions include:

a. Crossing No. 1 - Northwest Approach (Site 2): construct a rolling dip at the confluence of the Canyon Trail and the fire road in order to divert runoff from these road and trail segments onto the flat before it can accumulate and flow toward the creek crossing.

b. Crossing No. 3 - Northwest Approach (Site 6): grade down the final 48 feet of the crossing approach to the west to obtain a gentler grade. This grading will necessitate further grading to lay back the side walls of the approach; a maximum 2:1 slope is recommended. Any graded slopes outside of the active road surface should be only lightly compacted and then seeded and revegetated.

c. Crossing No. 4 - Northwest Approach (Site 8): raise the road/trail bed to the west/northwest of the crossing with a well-compacted, gravelly soil or gravel preparation (i.e., general specification) and crown the raised bed to promote lateral drainage onto adjoining, vegetated flats. This will maintain a drier and less erosive walking and riding surface as well as prevent runoff from accumulating and flowing directly along the road alignment to the creek. The existing cut slopes in the bank at this approach have eroded and will continue to yield sediment directly to the creek unless remedial grading is undertaken. The slopes should be laid back to a 2:1 slope, seeded with a native erosion control grass mix, and overlaid with straw mulch to protect against raindrop impact and splash transport.

3.1-C.6 Other erosion sites listed in Table 6 should be addressed as described in Appendix D. The sites with the highest priority as shown on Table 6 should be addressed first.

3.1-C.7 All road improvements should be constructed as per the guidelines recommended in *Handbook for Forest and Ranch Roads* (Weaver and Hagans 1994). Trail improvements should be construction according to similar recommendations outlined in either the *Trail Manual for the Maintenance and Operation of Trails in the East Bay Regional Park District* (McDonald 1995), *A Handbook on Trail Building and Maintenance* (Griswold 1996), or the *Trails*

Handbook (California Department of Parks and Recreation 1998) or as recommended by California Department of Parks and Recreation staff. Regarding both new and restored trails and roads, the following measures are recommended for trail stability and erosion control:

a. The trails shall travel up and down grade ("undulating grades") to allow rolling dips to dewater the trail.

b. Trails shall generally follow a curvilinear alignment. Maximum grades should generally not exceed 10%, though steeper grades can be permitted for short sections; the average slope should be maintained at 7% or less.

c. Trails shall be constructed with a 5-10% outslope wherever feasible. Two approaches can be applied to gain the desired outslope, a) blade off the outer road/trail edge with a dozer or hand implements (trail), or b) import material to raise the inslope portion of the trail or roadbed. The first approach should be avoided where the trail is close to a drainageway, since the blading operation will deposit some sidecast material on the downslope side of the roadway and the material could be conveyed downslope to the active channel.

d. On both insloped and outsloped trail segments, install rolling dips where feasible. If rolling dips are not feasible, install water bars at spacings of 40 feet or less. On especially steep grades, closer spacing may be necessary. The optimal outlet locations for runoff collected and diverted by dips and bars would be on locally convex slopes.

e. Eliminate "entrenched" trail segments; these segments are bordered on the outside by low berms of material remaining from former grading operations. The confined trail cross-section in conjunction with an insloped or flat roadbed configuration promotes concentration of runoff, which typically results in rutting and small channel development. The material comprising the berms should be spread over the trail/road, filling in any ruts or depressions along the cross-section. This operation could also be a precursor to outsloping of the trail.

f. Construct stabilized at-grade crossings of streams using the design and construction procedures included in the *Handbook for Forest and Ranch Roads - A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads* (Pacific Watershed Associates 1994), *A Handbook on Trail Building and Maintenance* (Griswold 1996), or the *Trails Handbook* (California Department of Parks and Recreation 1998).

g. Where culverts are absolutely necessary, they should be oversized to at least 200% of the estimated 100-year peak flow after partial roughening with baffles and coarse gravels. Arched culverts should be used to better approximate the upstream flow cross-section. Proper culvert design and construction procedures are outlined in the *Handbook for Forest and Ranch Roads - A Guide for Planning, Designing, Constructing,*

Reconstructing, Maintaining and Closing Wildland Roads (Pacific Watershed Associates 1994). Wherever culverts are installed, construct a rocked apron at the outlet; the stabilized apron should be at a flat or mild grade (e.g. 1-2%); extend a minimum of five feet downslope from the outlet and one foot (vertical) up onto the adjoining banks (higher where outlet channel banks are steeper than 2:1); and comprise strongly embedded (e.g. 60%) larger rock and cobble infill to minimize the risk of erosion within the structural elements.

3.1-C.8 New trail grading, reconstruction, stabilization, or bridge/culvert crossing installation should be implemented during the dry season, which from a regulatory standpoint typically extends from April 15 to October 15. Appropriate erosion control measures (i.e. BMPs), including seeding should also be installed prior to the first rain of the winter season, or by October 15. For any closed trails, it will be critically important to install closure fencing, gates, boulder/log obstacles, and signage designating the trail as closed to all uses prior to initiating trail stabilization and restoration work.

3.1-C.9 The two new trails at the north end of the White Hill Preserve shall be monitored for erosion. If erosion problems appear, MCOSD shall rectify those problems. If such problems persist, MCOSD shall consider closures of these trails. Closures can either be for 24 hours after the last rainfall or for the entire rainy season, and closures can apply to one or more user groups.

3.1-C.10 MCOSD should consider similar rainy season closures for other trails and roads that exhibit ongoing erosion that cannot be controlled by typical erosion control practices.

3.1-C.11 Consider closing Creekside Fire Road and the southern portion of Blue Ridge Fire Road to motor vehicles and reconstruct these road segments as trails.

Impact Significance After Mitigation

The mitigation measures recommended above will substantially reduce the amount of sediment eroded from new and existing roads and trails. Implementing Mitigation Measures 1, 2, 3, 5, and 7 would reduce stream sedimentation from construction of new trail and road segments and additional use of Preserve roads and trails to a level significantly below the existing level and to a less than significant level. Site-specific erosion problems would be mitigated by Mitigation Measures 8, 9, and 10. These measures alone would reduce the impact of the Draft Management Plan actions to a less than significant level. To further reduce sedimentation of Preserve streams, treatment of erosion sources listed in Table 6 (Mitigation Measure 6) should be undertaken and closure of Creekside Fire Road and the southern portion of Blue Ridge Fire Road should be considered.

Impact 3.1-D Construction of fire hazard reduction projects will increase soil erosion.

Construction of the fuel reduction zones will require removal of lower tree branches and understory shrubs and vines. However, herbs and leaf litter will not be removed. In

addition, some of the removed vegetation will be left on the ground as cut or mulched material. Construction will not result in bared dirt that would be susceptible to erosion. The construction of these fuel reduction zones is not expected to result in new soil erosion.

The possible future cutting and pile burning of 85 acres of chaparral will result in disturbed earth. However, some shrubs (special status species) will be retained, and much of the leaf litter, grasses, and herbs will be left on the ground. Rainfall hitting the bared earth beneath burn piles or other areas where all vegetative materials have been removed will cause erosion, particularly in the first year after treatment until new growth has become established. The degree of slope strongly affects the amount of erosion as sediment yield from a prescribed burn on 50% slopes were 250% higher than those observed on 20% slopes. The erosion from the proposed project would be significantly less than predicted for prescribed burns as all vegetation and plant material would not be removed as would be the case for a prescribed burn. The erosion and sedimentation of streams that would result from the proposed treatment is a potentially significant impact.

The *Geomorphic Assessment of the Corte Madera Creek Watershed* report states that erosion from chaparral areas can produce 640 tons of sediment/square mile/year while sediment yields following a fire can produce rates of 17,871 tons/square mile/year (Stetson Engineers, Inc. 2000, p. 33).

The Program EIR prepared for the State's Chaparral Management Program describes how prescribed burning will produce accelerated erosion from burned areas, but notes that soil loss from prescribed burns is less than one-third the soil loss that would occur from a wildfire. Wildfires can produce as much as 125,000 cubic yards of erosion per square mile (CDF, 1981, p. 67). The proposed project would generate far less erosion than a prescribed burn and would be a small fraction of the amount generated by a wildfire.

Fires can also create an impermeable layer of soil beneath the surface. This impermeable layer is much more likely to form under an intense wildfire, but can also form in some soils when pile burned. This impermeable layer can also cause increased erosion.

Removal of shrubs and pile burns that occur on sites that have active or older landslides can activate those landslides. Such landslides could cause significant erosion and deposition of sediment in streams. The sites for the cutting and pile burning on the Preserves have not been field surveyed for the presence of potential landslides, though it is noted that many of these target treatment areas burned in the 1973 fire and did not result in substantial landsliding. However, the potential for landsliding is a potentially significant impact.

The Draft Management Plan addresses this impact by incorporating the mitigation measures and requirements for the *Mount Tamalpais Area Vegetation Management Plan*. These include retaining a buffer of 50 feet of untreated vegetation along all stream courses. All proposed treatment areas are located at a considerable distance from the main streamcourses that carry water during the dry season. Thus, a 50-foot buffer would be left along all ephemeral streamcourses. Based on more recent research and recommendations included in the Draft EIR prepared for the proposed State's

Vegetation Management Plan (Jones & Stokes Associates, Inc. 1998), the unburned buffers should be increased to 75 feet where slopes exceed 50%.

The potential for increased erosion and landsliding from prescribed burns is a potentially significant impact.

Mitigation Measures for Impact 3.1-D

3.1-D.1 Untreated buffers should be increased to 75 feet where slopes exceed 50%.

3.1-D.2 Chaparral cutting and pile burning will be spread over at least four years so that no more than 25% of the target areas are treated in any one year. To the degree feasible, cutting and pile burning should include discontinuous patches extending along the topographic contour, and slope lengths affected by the component cutting and burns should not exceed a total distance of approximately 40 feet.

3.1-D.3 MCOSD or MCFD should monitor the first treatment area to determine the amount of additional sediment generated by the treatment as compared to background sedimentation rates. The results of that monitoring will be presented to NOAA - Fisheries. NOAA - Fisheries will determine whether additional treatments can proceed given the sedimentation rates. NOAA - Fisheries will have the ability to require additional buffer width, removal of certain treatment areas from future treatment, and/or other measures they find are necessary to protect steelhead trout.

3.1-D.4 Prior to treatment, a geotechnical engineer or geologist shall survey the treatment area for landslides. If the geotechnical engineer or geologist find that cutting and pile burning could cause substantial landsliding, the area that could trigger landsliding shall not be treated.

Impact Significance After Mitigation

Some increased erosion will occur from cutting and pile burning. The mitigation measures recommended above provide additional protection against significant sedimentation of streams and allow NOAA - Fisheries to review the initial cutting and pile burning treatment to determine whether the amount of erosion and sedimentation is acceptable as regards impacts to steelhead. Because the amount of sediment produced by cutting and pile burns is so much less than would occur under a wildfire, and because the aim of the treatment is to reduce the chance of fire ignitions and reduce the size of the eventual wildfire, this impact is found to be less than significant. Given the protections included in the recommended mitigation measures and the ability of NOAA - Fisheries to modify the treatment program if they believe that the treatment is or may be generating sufficient sediment that adversely affects steelhead, the impact is considered to be <u>less than significant</u>.

3.2 HYDROLOGY

A. Setting

The Cascade Canyon Preserve and the southern portion of the White Hill Preserve contain portions of the headwaters of Cascade Creek, Carey Camp Creek, and San Anselmo Creek. These three perennial creeks support flows through most of the year and in many years carry water through some portions of their channels year round. The Preserves contain numerous ephemeral feeder streams to these three named creeks. The northern portion of the White Hill Preserve contains ephemeral feeder streams that eventually flow mainly to Fairfax Creek. A very small portion of the northwest side of the White Hill Preserve has overland flows that eventually flow to Lagunitas Creek.

A principal concern regarding water is water quality for fish and other wildlife. Erosion from trails and roads can result in sedimentation and increased turbidity which can adversely affect steelhead and other aquatic species. The impacts relative to erosion, sedimentation, and water quality were addressed in the previous section on Geology.

A second concern has to do with downstream flooding caused by the sediment load deposited in the creeks from natural sources as well as roads and trails. This sediment, plus sediment from other wildlands and developed areas in the watershed, may exacerbate flooding conditions in San Anselmo Creek and Corte Madera Creek (San Anselmo Creek flows into Corte Madera Creek which then flows into the Bay). Most sediment entering the creek is from natural landslides near stream channels, other natural erosion processes, and the continuing results of historic gravel mining, logging, and livestock grazing.

A recent report prepared for the Friends of Corte Madera Creek describes existing sedimentation within the Corte Madera Creek Watershed (Stetson Engineers Inc., 2000). To summarize those portions of the report relevant to the two Preserves:

- Coarse sediment deposition in Corte Madera Creek in the flood control channel downstream of Ross reduces its flood control performance (p. 34).

- Corte Madera Creek has a bedload sediment yield that is "unnaturally" high due to past logging and grazing in the watershed's uplands (p. xi).

- The San Anselmo Creek subwatershed contributes about 29% of the total bedload sediment inflow as measured in Ross (p. xii). This watershed contributes about 580 tons/square mile/year to the Corte Madera Creek. This compares to the average for the whole watershed of 410 tons/square mile/ year (p. 32).

- One of the main contributing factors to erosion and sedimentation in the San Anselmo Creek subwatershed is the presence of rolling-to-hummocky grassland and grass-oak woodland-covered Franciscan melange slopes bordering the stream (p. xii).

- The main source of sediment within the creek is from landsliding and earthflows (p. 18). The upper portions of San Anselmo Creek and its tributaries are extremely deformed and steep, and evidently receive significant sediment contributions from

landsliding and earthflows (p. 33). The presence of chaparral communities in the watershed also contribute to higher sediment yields. Fire road and pipeline access road construction also elevate sediment production in this watershed (p. 33).

In the past, MCOSD has constructed a number of erosion control projects along San Anselmo Creek. These projects include the placement of large rocks and concrete pieces on curves in the creek where high water was eroding the streambanks. An initial phase of this streambank armoring was conducted before 1990, and a second phase was constructed in 1991. The geotechnical review of the Preserves conducted while preparing this Plan did not include a survey of natural landsliding and other natural erosion sources. The EIR consulting engineering geologist did note that those sections of San Anselmo Creek that have been armored or had erosion control structures constructed appeared to be functioning adequately.

In 1992, MCOSD also constructed five rock check dams along the lower section of Carey Camp Creek (the lower 550 feet of the creek). These structures captured sediment to reduce downcutting of the stream. These structures appear to function as planned since the gradient of the creek has flattened out behind the several check dams. MCOSD also stabilized a streambank landslide located west of the mouth of Carey Camp Creek between San Anselmo Creek and Cascade Fire Road

As described in the previous section, erosion from trails and streams can enter San Anselmo Creek and exacerbate sedimentation problems. The Draft Plan contains recommendations to minimize the amount of sediment entering the streams from human use of the Preserves. However, the Draft Plan does not address erosion and sedimentation caused by natural processes.

Regarding drainage off the Preserves, it appears that runoff from the Preserves is flowing in natural channels or as sheet flow across undisturbed hillsides adjacent to the Preserve boundaries. Runoff does not appear to be causing significant problems for neighboring landowners, and no members of the public mentioned runoff problems at public meetings or in private conversations.

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

The project will have significant hydrologic impacts if any of the following criteria are met:

3.2a Violates any water quality standards or waste discharge requirements. *(Addressed in Impact 3.2-B)*

3.2b Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land used or planned uses for which permits have been granted). *(The Initial Study concluded there would be no impact vis-à-vis this criterion.)*

3.2c Substantially alters the drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner which would result in substantial erosion or siltation on- or off-site. *(The Initial Study concluded there would be a less than significant impact vis-à-vis this criterion.)*

3.2d Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. *(Addressed in Impact 3.2-A)*

3.2e Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff. *(Addressed in Impact 3.2-A as regards flooding and Impact 3.2-B as regards water pollution)*

3.2f Otherwise substantially degrade water quality. *(The Initial Study concluded there would be a less than significant impact vis-à-vis this criterion.)*

3.2g Places housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map. *(The Initial Study concluded there would be no impact vis-à-vis this criterion.)*

3.2h Places within a 100-year flood hazard area structures which would impede or redirect flood flows. *(The Initial Study concluded there would be no impact vis-à-vis this criterion.)*

3.2i Exposes people or structures to significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. *(The Initial Study concluded there would be a less than significant impact vis-à-vis this criterion.)*

3.2j Is subject to inundation by seiche, tsunami, or mudflow. *(The Initial Study concluded there would be no impact vis-à-vis this criterion.)*

3.2k. Results in or requires the construction of new storm drain water facilities or expansion of existing facilities, the construction or which could cause significant environmental effects. *(The Initial Study concluded there would be a less than significant impact vis-à-vis this criterion.)*

Project Impacts

The Draft Management Plan does not include construction of new paved areas. Thus, there would not be an increase in site runoff due to installation of impermeable surfaces. The new trail and road sections would slightly increase runoff, but this slight increase would be offset by closure of other trail and road sections. Thus, the only actions that might significantly increase runoff from the Preserves would be fire hazard reduction actions; these are addressed in Impact 3.2-A. Existing sedimentation from natural sources on the Preserves would continue. However, this sedimentation is part of the existing environment, and it would not be affected by the Draft Management Plan. Existing sedimentation from trails and roads would be reduced as described in the

previous Geology section. This sedimentation reduction would have a beneficial impact on downstream flooding.

Flooding

Impact 3.2-A **Implementation of fire hazard control projects could increase runoff to San Anselmo Creek thereby exacerbating downstream flooding.**

The construction of the recommended fuel reduction zones will result in the removal of some understory shrubs and lower branches of trees in the target zones. However, because neither grasses, herbs. larger trees nor some shrubs will be removed, the ground will not be bared. In addition, existing leaf mulch would be retained and some of the cuttings will be left on the ground. The soil absorption capabilities within the fuel reduction zones should not be reduced, so there should be no substantial increase in runoff from the areas where these fuel reduction activities are conducted.

The Draft Management Plan also contains long-term recommendations to cut and pile burn as much as 85 acres of chaparral within the San Anselmo Creek watershed. Cutting and pile burning the chaparral will result in some bared earth. Rain hitting this bared earth will tend to run off more than when the site was vegetated. In addition, it is possible that if the fire burns hot enough, a water repellent layer can form beneath the surface, further restricting the ability of the soil to absorb rainfall (Leonard Charles and Associates, 1994, p. 52).

The Corte Madera Creek watershed above Ross includes about 16 square miles of watershed, while San Anselmo Creek above the Wood Lane Creek confluence is about 3.8 square miles. Even if the entire 85 acres were cut and pile burned in one season, only 3.5% of the San Anselmo Creek watershed above the confluence of Wood Lane Creek or about 0.8% of the Corte Madera Creek watershed above Ross would be affected. Cutting and pile burning of the target chaparral would occur over several seasons. New growth would occur in areas treated first which would retard runoff from those sites.

While some increase in runoff can be expected from the cutting and pile burning, this increase needs to be measured against the increase that would occur if a wildfire were to start on the Preserves or burn across the Preserves. The chaparral treatment plan and the fuel reduction zone construction are aimed at preventing and/or reducing the size of the eventual wildfire that will occur on the Preserves. Such a wildfire is a given, as it is not a question of whether a fire will start on the Preserves, but when and how large it will be. The fire that started near the top of White Hill on June 9, 1973 burned 202 acres before it was suppressed. This fire burned approximately 2.4 times as many acres as the area targeted for prescribed burning, and consequently produced 2.4 times as much runoff. The fires modeled for the Draft Management Plan (see the subsequent Section 3.5, Fire, which discusses this modeling) would burn as many as 571 acres in three hours. The proposed fuel reduction zones and chaparral cutting and pile burning are expected to significantly reduce the size of the eventual wildfire(s) that will ignite on the Preserves.

The cutting and pile burning is not expected to cause a significant increase in peak runoff that would lead to additional flooding in the Corte Madera Creek watershed. However, given that areas in this watershed are prone to flooding, any increase in runoff is considered a potentially significant impact.

Mitigation Measures for Impact 3.2-A

3.2-A.1 Cutting and pile burns will be spread over at least four years so that no more than 25% of the target areas are treated in any one year.

3.2-A.2 Prior to developing chaparral cutting and pile burning, MCOSD and/or the Marin Fire Department shall confer with the Marin County Flood Control District to determine whether any additional restrictions on the treatment, such as reducing the size or changing the time of the treatment, are required to avoid flooding of downstream properties. All measures recommended by the Marin County Flood Control District shall be implemented.

Impact Significance After Mitigation

The expected increase in runoff is not predicted to be substantial, and is certainly less than would result from a major wildfire. Mitigation 1 above will further reduce increased runoff to a level that is less than significant. Mitigation 2 ensures that County Flood Control is able to add any additional controls or mitigations they feel are required to avoid increased downstream flooding. The impact is reduced to a level that is less than significant, and no additional mitigation is required.

Water Quality

Impact 3.2-B **Project improvements will generate soil erosion which will degrade water quality.**

New erosion from new trail and road construction and increased use of existing trails and roads will generate soil erosion. Some of this eroded soil will enter streamcourses. This eroded soil would degrade the water quality of the receiving streamcourses. Chaparral cutting and pile burning would also generate increased soil erosion and sedimentation. These impacts were both discussed previously under the Geology section. No additional water pollution, other than soil erosion, is predicted for the project.

3.3 VEGETATION

A. Setting[1]

1. Vegetation Types

As shown on Figure 8, the dominant plant cover on the Preserves is mixed oak and/or evergreen forest dominated by coast live oak, California black oak, California bay, madrone, and Douglas fir with scattered blue oak and buckeye in the more exposed areas and occasional tanbark oak, bigleaf maple, and coast redwood in more shaded areas. Where forest is present, the forest cover is relatively mature with large trees providing a nearly complete 100% canopy coverage. This complete canopy coverage results in heavy shading and a relatively sparse understory, though there is frequently a somewhat pervasive thin lower understory layering of old (shaded out and senescent) brush, small trees and shrubs, and a patchy, but often abundant, distribution of poison oak. There are a number of typical herbs and grasses scattered beneath the general forest canopy, but actual ground coverage by vegetation is frequently less than 50%. Tree death caused by Sudden Oak Death (SOD) over the past five years has resulted in less dense canopy coverage and more understory growth in areas throughout the Preserves

Between the forest stands are large areas of grasslands and chaparral. On the White Hill Preserve, large grass stands occur along the northwest edge of the northern section, much of the central section centered on White Hill, and on slopes south of Wagon Wheel Trail. There are fewer grassland areas on the Cascade Canyon Preserve; they include an area north of Middle Road Fire Road (east of Cascade Creek), south of Middle Road Fire Road near its west end, the north side of Happersberger Ridge, and the east slope of Pam's Blue Ridge.

These grasslands are typical of the larger region's grasslands in that many of the native species have been displaced by non-native species. The dominant cover is now comprised generally of weedy non-natives though native species such as needlegrass, blue wildrye, and other native grasses do occur. These grasslands also support a variety of typical wildflowers including lupines, clarkia, checkerbloom, fiddleneck, poppies, tarweed, soap plant, and clovers. North slopes in particular tend to support a higher percentage of native grasses while most south-facing slopes are vegetated mainly by non-natives.

A few areas on the rockier, dry south slopes support mixed chaparral and coastal scrub communities. Most of these communities are dominated by species of the "hard" chaparral type such as chamise, common manzanitas, toyon, and scrub oak with occasional chaparral pea, silktassel, and ceanothus. In slightly wetter habitats, coastal scrub species are also present, including bush monkeyflower, black sage, coastal sagebrush, coyote brush, deerweed, and poison oak. Coyote brush in particular often forms small pure stands and sometimes larger expanses, especially on north slopes and along the edges of grassy clearings.

[1] A detailed description of the types of plants and plant habitats occurring on the Preserves is included in Appendix E; the following is a summary of those reports.

Of special interest are several areas of serpentine chaparral which support an assemblage of endemic and several rare shrubs, including Mt. Tamalpais manzanita, leather oak, Jepson's ceanothus, black sage, toyon, and smaller amounts of chamise. These rocky serpentine areas also support distinctive herb communities found on the more barren parts of these outcrops. Typical herbs here include star lily, coyote mint, and several other common species. Endemic and/or rare species include serpentine reedgrass, Tiburon buckwheat, Marin County navarettia, and one of the rare jewelflower species. These serpentine habitats also provide suitable habitat for other rare species that were not identified during the field surveys; these species, known to the area, include Brewer's milk-vetch, Oakland star tulip, Marin dwarf flax, and Marin checkerbloom.

The Preserves contain a relatively small amount of riparian woodland, and this woodland is relatively poor in terms of development and species composition. Most drainages on the Preserves are ephemeral and support mainly oaks, bay, and other essentially non-riparian trees and shrubs. Because of the dense canopy cover, there is relatively little understory. Most creekbed zones are moderately to heavily scoured and thus largely devoid of vegetation. The main stem of San Anselmo Creek in the Cascade Canyon Bottomlands has widened and supports little riparian vegetation, likely due, in some part, to past quarrying activities in this area. The most shaded creekbed areas support only scattered ferns and a few other herbs. The lowermost section of Cascade Creek, Carey Camp Creek, and the upper section of San Anselmo Creek that contain water much or most of the year support the typical oak-bay canopy plus scattered Oregon ash, white alder, and a very few willows. Herbaceous growth on these creekbanks is still relatively meager, consisting largely of common non-riparian grasses and herbs along with poison oak, cream bush, hazelnut, and young oak and bay seedlings. The creekbanks themselves are almost completely bare due to heavy scour, heavy shading, and lack of soil, but they do support scattered umbrella sedge, rushes, cocklebur, infrequent silver sedge, and several common weeds.

2. "Wetlands" and Other "Waters of the U.S."

Wetlands subject to the jurisdiction of and/or regulation by the U.S. Army Corps of Engineers are relatively minimal in the Preserves. Because of the moderate and steeper slopes, most areas drain quickly after storms, leaving little more than the scattered creeks and ravines carrying water. There are seeps and springs in the Preserves, such as the three springs along Middle Road Fire Road. Another such area, a small hillside seep, occurs at the base of the middle serpentine area. This location was not observed to support any unusual plants, but given the combination of wetness and serpentine, there is good potential for rare species to occur here.

No other parts of the Preserves were found to contain any vernal pools, marshes, or other significant aquatic habitats. No significant ponding was evident anywhere, although pools occur along the creeks during the winter and spring. The extent of Corps jurisdiction in the Preserves is largely limited to the immediate creekbeds and other drainage features that exhibit bed-and-bank scouring. The total area of such habitat is not extensive and is restricted quite literally to the beds of perennial streams and the numerous small ephemeral tributaries.

3. Sensitive Plant Species

Table 1 in Appendix E lists the sensitive plants known or expected to occur in this general region, including several found on serpentine or other rocky substrates, some found in wetlands, and a few others typically found in somewhat specialized grassland habitats such as heavy clay, meadows, serpentine soil, and floodplains. None of these or any other sensitive plant taxa have been reported directly from these Preserves by either CNPS or the CNDDB, and no species of 'highest concern' (i.e., state or federally listed, or CNPS List 1) were encountered here during the surveys for this report. Appendix E also contains plant lists prepared for the Preserves by the California Native Plant Society.

Plant taxa regarded as "sensitive" (i.e., rare, endangered, threatened, historically depleted, and/or otherwise of concern) that were observed at these sites include serpentine reedgrass (at all three serpentine sites), Mt. Tamalpais manzanita (at the two northern serpentine sites), Tiburon buckwheat (at the northern two serpentine sites), a rare jewelflower (at the middle serpentine site), Jepson's ceanothus (at the northern serpentine site), and Marin county navarettia (at the northern serpentine site). Any or all of these sites could also support the Oakland star tulip, Marin dwarf flax, Brewer's milk-vetch, and/or Marin checkerbloom, although none of these species were, in fact, found at any of these sites.

No other habitats or locations were observed to support any other "sensitive" species, but such occurrences could certainly exist. All of the Preserves were not examined in great detail, and there are several sensitive taxa known from habitats such as mixed evergreen forest, seeps, chaparral, and general grassland. Also, there may well be isolated pockets of unusual or specialized habitats (e.g., seeps) suitable for such species that were not found during field investigations. A few other rare species that might be expected here include Hoover's semaphore grass (*Pleuropogon hooverianus*), California bottle-brush grass (*Elymus* [*Hystrix*] *californicus*), western leatherwood (*Dirca occidentalis*), Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*), and Victor's gooseberry (*Ribes victoris*) (see Table 1 in Appendix E for habitat preferences).

There are only two sites (relative to the proposed project) where there is any significant suitable habitat for any of the sensitive species on Table 1 in Appendix E. These are along Pam's Blue Ridge Trail and the Wagon Wheel Trail, both sites contain serpentine habitat with scattered serpentine reedgrass and Oakland star tulip. A portion of Pam's Blue Ridge Trail also contains a few individuals of Jepson's ceanothus (*Ceanothus jepsonii*), a species of somewhat lesser concern. In general, the Preserves do not provide suitable habitat conditions for most regionally known sensitive plants. There are no significant wetland habitats near any of the project features (i.e., trails, roads, and fuel reduction zones) that could provide suitable conditions for most wetland species (e.g., *Alopecurus, Rhynchospora, Pleuropogon, Perideridia*; see Table 1 in Appendix E for details), and the serpentine areas that could support endemic taxa (e.g., *Streptanthus, Hesperolinon*) have limited rare flora (based on surveys) and are generally not in close proximity to the proposed actions of this "project." Many of the regionally known rare plants can be dismissed for lack of suitable habitats (see Table 1 in Appendix E). The following summarizes the sensitive species most likely to occur here.

a. Plants of Serpentine Habitats

Mt. Tamalpais manzanita (*Arctostaphylos hookeri* ssp*. montana*). This low native shrub typically grows on rocky serpentine sites in communities of open chaparral, herb/rockland "barrens," and occasionally along serpentine-influenced woodland/forest edges. It generally does not occur in heavily shaded places, although if established under open conditions, it may persist for a while beneath or next to a developing canopy. It is known to occur in numerous locations around Mt. Tamalpais, and is often quite abundant where it does occur. The majority of the Preserves does not include suitable habitat for this species, and it is strictly limited to the three serpentine areas identified. It does occur on these serpentine habitats, but is generally not in close proximity to the actual trails or roads that run through these areas. There are also common manzanita plants (*Arctostaphylos manzanita*) found in rocky places in the Preserves, but the rare species is restricted to serpentine.

Mt. Vision ceanothus (*Ceanothus gloriosus* var. *porrectus*). This low growing shrub occurs usually on serpentine soil of closed cone pine forests (typically in the more open areas), in open coastal prairie, or in coastal scrub habitats. It generally occurs closer to the coast (e.g., Bolinas Ridge) where frequent fog and more temperate climate prevails (rather than the drier, more inland coastal hills). The Preserves have only minor suitable habitat for this species (serpentine), and it was not found during the surveys. This species would be identifiable from roughly March through June.

Mason's ceanothus (*Ceanothus masonii*). This shrub also generally grows on serpentine, usually on dry south slopes of chaparral. It, too, generally occurs closer to the coast rather than the drier, more inland hills. The Preserves have only minor potential habitat for this species (serpentine), and it was not found during the surveys. This species would be identifiable from roughly March through June.

Marin dwarf flax (*Hesperolinon congestum*). This tiny spring annual grows on nearly barren, rocky serpentine in scattered locations of the MMWD lands and could occur on any of the three serpentine habitats in the MCOSD properties. It favors the more exposed, often gravelly serpentine habitats, but it was not found during the surveys for this project. This species is generally identifiable in May and June

Mt. Tamalpais jewelflower (*Streptanthus glandulosus* var. *pulchellus*). This small wildflower grows on rocky serpentine barrens and chaparral habitats, generally in open gravelly or very rocky situations. The Preserves contain some limited suitable habitat for this species (serpentine), but only common jewelflowers (*S. secundus, S. glandulosus*) were found during the surveys, with none occurring near any project features. This species would be identifiable from roughly April through June.

Tamalpais jewelflower (*Streptanthus batrachopus*). This small wildflower also typically grows on rocky serpentine barrens and chaparral habitats, generally in open gravelly or very rocky situations. The Preserves contain limited serpentine habitat that could be potentially suitable for this species (serpentine), but only common jewelflowers (*S. secundus, S. glandulosus*) were found during the surveys, with none occurring near any project features. This species would be identifiable from April through June.

b. Plants of Grasslands

While Table 1 of Appendix E lists several sensitive species that generally occur in grasslands (sometimes associated with serpentine soil), most of the Preserves' grassland habitats are highly altered and exhibit extensive invasion by exotic species. Further, most of these grassland areas occur on non-serpentinitic soil and have ruderal cover of non-native annual grasses (*Bromus, Avena, Vulpia*), weeds (*Erodium Cirsium, Convolvulus, Plantago*, etc.), and small naturalized herbs (*Anagallis, Trifolium, Medicago, Geranium*). Virtually all of the sensitive species that might occur in grassland habitats tend to prefer (and only be found in) less disturbed habitats, and none of these species (e.g., *Holocarpha macradenia, Pentachaeta bellidiflora, Triphysaria floribunda, Trifolium amoenum*) has been historically reported here or found during the surveys for this project.

c. Plants of Wetlands

There are several sensitive species that grow in or around wet habitats (seeps, seasonal pools, marshes), but these habitats are very minimal within the Preserves. The creek corridors are mainly ephemeral and are largely densely shaded and without significant riparian vegetation. These areas do not provide significant suitable habitat for wetland species. Also, the Preserves are largely devoid of seasonal pools, wet meadow, and seeps, reducing the probability of occurrence of such species as Sonoma alopecurus (*Alopecurus aequalis* var*. sonomensis*), swamp harebell (*Campanula californica*), Mt. Tamalpais thistle (*Cirsium hydrophilum* var. *vaseyi*), Hoover's semaphore grass (*Pleuropogon hooverianus*), and California bottlebrush grass (*Elymus californicus*).

d. Other Species of Less Specialized Habitats

Western leatherwood (*Dirca occidentalis*). This distinctive deciduous shrub or small tree typically grows in a more mesic (i.e., mesic means moist; in this case it means foggy) setting, generally closer to the actual coast. It could occur here, but there are minimal moist rocky habitats (e.g., talus, scree, rock outcrops) present, and this species was not found during the field investigations.

Showy Indian clover (*Trifolium amoenum*). This large native clover grows in open mesic situations, including seasonally wet swales and fields (often on dense clay), in or near seasonally wet meadows, near seeps, possibly in soil derived from serpentine, and/or other damp soil conditions (e.g., coastal fog, semi-riparian). This clover was long believed to be extinct as it had not been seen in many decades. Recently, however, one small colony was rediscovered in 1993 near the Sonoma County coast. Virtually all historic locations (once scattered around the greater north bay region) have been completely altered by long term livestock grazing, depleting many of the palatable native clovers, perennial grasses, and wildflowers, and favoring invasive non-native annuals. The Preserves do not contain any especially good habitat for this species, as most of the area is too shady and wooded, and the grasslands are generally too dry and exposed. There are no seasonally wet meadows or swales that appear to offer good potential habitat. This species was not seen during the field examinations and would have been recognizable during the spring/summer months.

Fragrant fritillary (*Fritillaria liliacea*). This is a low growing perennial wildflower that generally occurs in heavy clay or serpentine derived soils in open meadow or grassland

situations. This species arises annually from a bulb and flowers relatively early in the spring (March - April). There are no especially good habitats present for this species in the Preserves, and only common fritillary (*Fritillaria lanceolata*), a species of semi-shaded woodlands, was seen during the surveys.

Tiburon tarweed (*Hemizonia multicaulis ssp. vernalis*). This annual wildflower grows in open grassland situations, sometimes on soil derived from serpentine, and generally within the fog zone near the coast. It is evident throughout the spring and summer, with flowering occurring in late spring and extending well into the hot summer months. The Preserves are generally too shady for this species and it would only be expected in open grassland. It was not seen in the grasslands of the Preserves. Also, this species has formally been dropped from the CNPS listing of rare plants as it has been taxonomically re-grouped as part of a more common entity.

Table 1 in Appendix E also lists numerous rare species that are known from certain places around the Mt. Tamalpais watershed, but are only known from very limited sites and are generally not known or expected on the Preserves.

4. Existing Problems

a. Broom

The most significant vegetation-related problem on the Preserves is the existence and spread of broom populations. This invasive, non-native shrub has spread through many of the public and private lands in Marin County and other parts of the Northwest. While broom occurs on the two Preserves, it generally does not form extensive stands as are found on many other MCOSD Preserves, the MMWD watershed, and other public lands in the County. While broom is not widespread when compared to many neighboring public and private properties, there are several large invasive stands along Toyon Tanks Fire Road, the area from the eastern boundary of the Cascade Canyon Preserve to Toyon Fire Road, and the area along the eastern boundary of the White Hill Preserve from Sir Francis Drake up to White Hill Fire Road. The identified stands are shown on Figure 6 in the Draft Management Plan and include:

- scattered plants along Creekside Fire Road from its north end to the creek crossing; this includes one plant 225 feet from the Camp Tamarancho property line, 10-15 plants at 300 feet, 10+ plants at 1,025 feet, a large patch at 1,160 feet, and 25+ plants at 1,400 feet;

- scattered plants with several larger populations along much of Toyon Fire Road, particularly in the central part of the road length; there are relatively few plants in the northernmost 1,000 feet and scattered plants in the southernmost (or western) 1,200 feet;

- thick stands along Toyon Tanks Fire Road; this stand extends down the hill onto private property;

- thick stands along most of Cul-de-sac Fire Road and portions of Cul-de-sac Trail; stands in the woodlands between Cul-de-sac Trail and the MCOSD property line; the three stands along Cul-de-sac Trail include (starting at the south end at the Cul-de-sac Fire Road junction): a large patch stretching from the junction for about 360 feet

to the north, a second relatively large patch that starts about 100 feet north of the first patch and stretches for about 100 feet, and a small patch located about 230 feet from the north end of the trail;

- one relatively small stand on the non-recognized connector trail between Ridge Trail and Cul-de-sac Trail, located about half way up the trail;

- scattered plants along Ridge Trail about 340 feet from its start at Ridge Road;

- scattered stands along White Hill Fire Road in the northwest sector of the White Hill Preserve; the stands along this road include a stand at the junction of the road and the non-recognized Martha McCormack Trail, a larger stand about 200 feet south of this first stand, a small stand in the woods on the north side of the road about 320 feet north of the intersection with Sherwood Forest Fire Road (this stand was pulled by the Plan authors, but should be monitored), a larger stand near the repeater station on the west side of the Preserve, and a small stand to the south near the Camp Tamarancho property line;

- thick stands on the east slope above Sir Francis Drake Boulevard in the Sherwood Forest area;

- a few scattered plants near the end of the Concrete Pipe Trail (thicker stands are off MCOSD property to the east);

- scattered plants on Middle Road Fire Road west of its junction with Toyon Fire Road and Middle Road Cut Trail;

- two stands along a non-recognized trail that joins Toyon Fire Road near its southeast corner (this trail accesses the eastern end of Toyon Drive); one stand is about 140 feet from Toyon Fire Road and the other is about 240 feet from the start. This trail also intersects larger stands near the property line which are part of the same stand that is east of Cul-de-sac Trail and extends along this entire border area:

- a relatively thick stand for about 100 feet on the north side of Pam's Blue Ridge Trail starting at Toyon Fire Road; also one large plant about 2,230 feet from the start;

- an expanding population spreading up into the Preserve from private lots west of Pine Drive.

- Two small plots at the Cascade Drive entrance and at the east end of Canyon Trail.

- Scattered plants along Carey Camp Loop Trail.

- A plot on Cascade Fire Road near the Spit Rock Trail.

- One large plant about 200 yards north of Cascade Falls.

- A plot on Blue Ridge Fire Road north of its intersection with Middle Road Fire Road.

- MCOSD and volunteers have previously removed several broom stands, including stands at the east end of the Canyon Trail and on Middle Road Fire Road though not all plants have been eliminated.

It is likely there are other stands of broom, particularly in the woodland understory where the Preserves border private residential properties. While the Preserves do not support many large stands of broom (i.e., dominating the habitat over several acres), it is essential that these existing stands be removed so that they do not spread further and displace native vegetation. A major goal of this Draft Plan as regards vegetation is removal of this plant.

b. Other Invasive Non-Native Species

There are a few areas that include small populations of the invasive yellow starthistle, including near the north end of Toyon Fire Road and at the Sherwood Forest trailhead. The meadow at the Sherwood Forest trailhead contains a number of invasive exotics including yellow starthistle, purple starthistle, fennel, broom, and hardinggrass, though much of this non-native vegetation has recently been removed due to use of the area as a staging area for building the new bridge on SFD. It is difficult to control yellow starthistle due to its dominance in many Marin grasslands. However, the stands on the Preserves are very small and can easily be eliminated by cutting at the right period. A few other non-native invasive plants (e.g., pyracantha) were seen on the Preserves and should be removed. Because yellow starthistle can quickly invade large areas of grassland, removal of the few plants that currently exist on the Preserves is considered the first priority for vegetation management.

c. Douglas Fir Invasion

A secondary concern is the invasion of Douglas fir into oak woodlands and chaparral areas. Douglas fir is one of the few tree or shrub species that does not resprout after a wildfire. As such, its range was historically restrained by natural or Native American-caused fire. The long period of fire suppression has resulted in this species invading oak-dominated hardwood forests as well as some chaparral communities. The problem with this invasion is that if a long enough fire-free period occurs, the fir mature and shade out the oaks and other hardwoods. This ecological succession can lead to oak woodlands being supplanted by a coniferous woodland dominated by Douglas fir. This succession is quite visible in many areas on the MMWD watershed. While some people may look upon this change of forest type as "natural," it should be remembered that this succession has occurred in the absence of a "natural" fire regime. It also should be noted that oak-dominated woodlands are a vanishing habitat type in the area and the State. As such, it should be the goal of MCOSD to maintain its oak woodlands.

The *Mount Tamalpais Vegetation Management Plan* recommended a series of woodland understory prescribed burns to remove invading firs as well as to reduce understory vegetation in the woodlands. The extent of the invasion is not as widespread or serious on the Cascade Canyon and White Hill Preserves. As such, woodland understory burning is not recommended. In addition, the recent attack on oaks by a fungus and beetles may substantially reduce oak populations in the coming years. If this were to occur, the presence of Douglas fir in oak habitat might be beneficial. The District should monitor its oak woodlands. If the current epidemic ends or does not appear to kill substantial numbers of oaks, it is recommended that invading firs in oak woodlands be

cut or pulled by staff and/or volunteers and that the status of the succession be monitored to ensure the long-term survival of these oak woodlands.

d. Trail and Road Use Effects

The Preserves total about 887 acres. There are approximately 10 miles of fire roads, 6 miles of recognized trails, and 5 miles of major non-recognized trails on the Preserves. Assuming an average width of 10 feet for fire roads and 2 feet for trails, the total amount of land that has had vegetation removed is 14.25 acres (12.1 acres of this total is the result of fire road construction) or 1.6% of the total Preserve acreage.

Some residents of the area report that increased Preserve usage over the past 10-15 years has resulted in the widening of the High Water Trail, the Canyon Trail and Cascade Fire Road in the Cascade Canyon Bottomlands as well as trails and roads in other areas. These commenters note that this trail and road widening has reduced or even eliminated populations of locally uncommon wildflowers along these trails and road, especially along the High Water Trail. Two particular areas of damage were noted, at the east and west ends of the High Water Trail. These commenters have stated that portions of the Cascade Fire Road between its eastern end and Cascade Creek have widened 1-2 feet due to increased usage and grading practices. They have also noted widening of both trails through the canyon bottom, with consequent loss of vegetation.

Other areas that neighbors and other commenters have identified as locations where trail widening and loss of vegetation have occurred include:

- Portions of Happersberger Trail were widened by illegal bicycle use a number of years ago. This widening resulted in the substantial depletion of a small population of white ground iris at one location along this trail. This iris is not a special status plant species, though the white variety is a rare color variation. This widening has been essentially eliminated by previous MCOSD efforts, though this trail may now be being used again by some bicyclists. The area is essentially restored, though one can see traces of the past widening where revegetation has not been completed.

- The construction of the illegal Split Rock Trail in the 1990s resulted in the loss of a number of trees and the overall loss of about 0.1 acre of vegetation on the Preserve (about 1,500 feet of trail x 3 feet of trail width plus clearing of bordering trees and shrubs).

- Loss of vegetation by use of the old fire trail that leads from near the top of White Hill north to White Hill Fire Road. This is about an 800-foot trail through grassland that has been widened by past use.

- The authors of this report have noted the loss of vegetation along other non-recognized trails on the Preserves.

While there is little question that road and trail widening have occurred in some areas, the overall impact on vegetation has not been substantial. Assuming that all fire roads were originally 8 feet wide and trails 1.5 feet wide and that all roads have been widened by 2 feet and trails by 0.5 feet due to heavier use patterns over the past 10-15 years, 2.7 acres of vegetation may have been lost due to this widening. This is not considered a significant loss of vegetation. In addition, this estimate is very conservative as individuals who have noted this trail and road widening state that such widening has occurred in restricted areas such as the canyon bottom, in the area where the illegal

Split Rock Trail was constructed, and a few other locations. Most trails and roads are not heavily used and likely have not widened to the degree assumed in the above estimate.

In the Cascade Canyon Bottomlands (between the Cascade Drive entrance and the junction of San Anselmo Creek and Cascade Creek), the amount of vegetation lost due to road and trail widening is about 0.16 acre. This estimate assumes that the amount of widening has been 2 feet for the entire 0.46 miles of Cascade Fire Road and the 0.37 miles of the Canyon Trail and the High Water Trail were widened by as much one foot.

The overall loss of vegetation due to existing roads and trails plus potential widening that has occurred through increased use over the past 10-15 years is not substantial. There is no evidence that any special status species of plants have been lost. There is reported evidence that locally uncommon plants have been lost.

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

A project will typically have a significant impact on plants if it meets any of the following criteria:

3.3a Has a substantial adverse effect, either directly or through habitat modification on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service. *(Addressed in Impact 3.3-A)*

3.3b Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service. *(Addressed in Impact 3.3-B)*

3.3c Has a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. *(Addressed in Impact 3.3-C)*

3.3d Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. *(The Initial Study concluded that the project would have a less than significant impact as regards this criterion.)*

3.3e Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. *(The Initial Study concluded that the project would have no impact as regards this criterion.)*

3.3f Results in a substantial loss of native vegetation *(Addressed in Impact 3.3-D; this criterion was added to the criteria list typically used due to the fact that MCOSD has as a goal to preserve native vegetation)*

Project Impacts

Impact 3.3-A Project actions could adversely affect special status species of vegetation.

Construction of the new trails and road section will displace vegetation. The areas where these roads and trails would be located were field surveyed for the presence of special status species, and none were found within the corridor areas where these trails and road would be constructed. There would be no impact on special status species from construction of new trail sections or the new road section. However, if in remediating erosion control problems, any trail relocation were to occur in serpentine chaparral habitat, there is the possibility of destroying sensitive plant species. This would be a potentially significant impact. In addition. MCOSD has added an Action to the Plan requiring that all areas where new trails, roads, or fuel reduction zones would be constructed will be field surveyed for special status species of plants to ensure new species have not colonized the construction zones since the EIR surveys were done.

The locations proposed for fuel reduction zone construction were field surveyed, and no special status species were found in those locations. There would be no impact on special status species from construction of these fuel reduction zones.

Existing trails and roads were field surveyed. It is not expected that the Draft Management Plan would cause significant increases of use on existing trails and roads (other than White Hill Fire Road and Wagon Wheel Trail). Use by bicyclists of fire roads leading south to Cascade Fire Road through the Cascade Canyon Bottomlands is expected to increase by 32-53 bicyclists on a peak day or 6-11 bicyclists on an average day. This increase in use would not be expected to result in any trail widening, particularly after rutting and drainage problems are addressed, and trails in the Cascade Canyon Bottomlands are bordered with tree trunks or other materials. Studies of trail widening have shown that trail widening does not occur on properly constructed trails (i.e., trails that properly drain runoff and are constructed to reduce speeds and avoid skidding at turns) except where trails are used for racing (summary of literature on mountain biking as described in Goeft and Alder, 2001 and Cessford, 1995; these articles summarize the literature on mountain bike impacts and were recommended for review by Tom Ward, Manager of Recreation for the California State Parks). However, even if there was an increase in use and if that increased use did cause minor widening of existing roads and trails, such minor widening, if it were to occur, would not affect any special status species of vegetation. In addition, recommended trail closures, broom removal, and meadow restoration recommended in the Draft Management Plan would provide additional habitat that may eventually be re-colonized by special status species of plants.

The one component of the Draft Management Plan that could adversely affect special status species of vegetation would be future cutting and pile burning of as much as 85 acres of chaparral. These chaparral stands do contain special status species of vegetation. However, the Plan (Action FM-3) specifically states that special status

species of plants will not be cut or burned, so there would be no impact to these species. The impact is less than significant, and no additional mitigation is required.***Mitigation Measure for Impact 3.3-A***

3.3-A.1 Prior to construction, any proposed trail relocation required to remediate soil erosion in areas containing serpentine chaparral, new trails, new roads, new fuel reduction zones, and areas where chaparral would be cut and pile burned shall be field surveyed by a qualified botanist. The improvements will be aligned or designed to avoid special status plant species.

Impact Significance After Mitigation

Though the Draft Management Plan does not explicitly call for new trails in serpentine areas, the recommended mitigation measure would reduce the impact of construction of any required relocation of trail to a level that is less than significant. The mitigation also ensures that any other new construction would not damage special status species of plants.

Impact 3.3-B Project actions could adversely affect sensitive natural communities.

Other than the chaparral community discussed above, other sensitive plant communities that could be affected by project actions include riparian habitat, wetlands, and native perennial grasslands. New trail and road construction, fuel reduction zone construction, and chaparral cutting and pile burning will all avoid riparian habitat with the exceptions of the new trail in the northwest corner of the White Hill Preserve, the relocation of the Burnt Tree Trail, and the new road section at the south end of the Blue Ridge Fire Road. These three improvements need to cross ephemeral stream channels. Such crossings would be by a narrow trail (18 inches for the Burnt Tree Trail relocation and about 4 feet in width for the northwest connector trail, given previous mitigation measures recommended in this EIR; the road, if it needs to cross ephemeral channels, would be about 8 feet in width). The routes for the new trails and road would be located in the field to avoid any sensitive riparian vegetation, if it occurs. MCOSD will need to get approval of a Streambed Alteration Agreement from the California Department of Fish and Game for stream crossings. This Agreement would require avoidance of significant riparian vegetation. The trail crossings may also need to get a permit from the Army Corps of Engineers. The crossings would be eligible for authorization under one or more Army Corps of Engineers' "nationwide" permits (NWP) program, and they may well be eligible without requiring any formal prior notification.

All springs and seeps on the Preserves will be avoided by new construction. The new trail from SFD to the Sherwood Fire Road would travel through some grassland, but this is a typical north-slope grassland comprised of a mix of native and non-native species. The loss of a small amount of this grassland is not considered significant. The more important native perennial grasslands on the Preserves would not be affected by recommended Plan actions.

Mitigation Measures for Impact 3.3-B

3.3-B.1 MCOSD shall obtain a Streambed Alteration Agreement, if required, from the California Department of Fish and Game for any work within a stream channel.

3.3-B.2 MCOSD shall contact the Army Corps of Engineers to determine what if any permits would be required for stream crossings. Abide by all conditions set forth in any permit received from the Army Corps.

3.3-B.3 New trail and road construction through riparian areas will minimize the loss of any riparian vegetation.

3.3-B.4 Implement the erosion control actions recommended under Impacts 3.1-C and 3.1-D.

Impact Significance After Mitigation

The addition of these mitigation measures ensures that Draft Management Plan actions will not significantly affect any sensitive natural communities. The impact is reduced to a less than significant level, and no additional mitigation is required. It is noted that these natural communities would benefit from a number of the actions recommended in the Draft Management Plan, including trail closures and reducing the risk and size of wildfires.

Impact 3.3-C Project actions could result in the loss of native vegetation.

Previous impact discussions have focused on special status species and sensitive plant communities. Implementation of Draft Management Plan actions could also result in the loss of common (i.e., not special status) species of plants. Construction of the two new multi-use trails at the north end of the White Hill Preserve could result in the loss of about two-thirds of an acre of mixed evergreen forest (based on the eastern trail being about 3,400 feet long and 6 feet wide and the western trail being about 1,800 feet long and 5 feet wide). Construction of the new southern alignment of the Blue Ridge Fire Road could result in the loss of 9,000 square feet of vegetation (based on a road about 1,200 feet long and 8 feet wide). Construction of the other trail realignments could result in the additional loss of about 7,300 square feet of habitat. The total habitat that would be disturbed would be about one acre. This is not considered a significant loss for Preserves totaling 887 acres. In addition, this loss is compensated for by Draft Management Plan recommendations including closure of 16 trails, closure of the portions of the existing trails where new alignments would be constructed, restoring meadows, removing broom (which will open broom-infested areas to native plant recolonization), restricting the width of future road grading, and lining trails and roads in the Cascade Canyon Bottomlands. These actions will result in more habitat available for native plant recolonization than would be lost by new trail and road construction.

Increased use of roads and trails is not expected to result in measurable expansion of the road and trail widths, as discussed under Impact 3.3-A. Even if minor widening did occur in heavy use areas, the impact to common vegetation would be less than significant.

` habitat. This loss of vegetation is not considered substantial, particularly since construction of the fuel reduction zones would limit the size of a future wildfire. This

future wildfire would result in the loss of considerably more vegetation than would occur from construction of the fuel reduction zones.

Cutting and pile burning will result in the short-term loss of vegetation. However, this fire-adapted plant community will re-establish itself in the years following treatment. Sprouting species will re-sprout from the root systems while species dependent on fire will resprout beneath the areas that are pile burned. While the treatment could favor one species of plant over another, the overall plant cover will recover. In addition, areas within the chaparral stands will be left untreated to provide reservoirs for the existing assemblage of species. The potential for certain non-sensitive species to be reduced in number is not considered a significant impact.

Increased erosion from new trail and road construction, fuel reduction zone construction, chaparral cutting and pile burning, and increased use of existing trails and roads can bury downslope vegetation. The Draft Management Plan contains erosion control measures, and this EIR provides additional erosion control requirements.

Redwood forest exists in a portion of the area where the new trail at the northwest corner of the White Hill Preserve would be constructed. Removal of large redwood trees would be a potentially significant impact.

Construction of new trails and roads will cause disturbed areas that can be invaded by broom, yellow star thistle, and other undesirable non-native species. These non-native plant species frequently out-compete native species inhabiting the site, and, over time, can displace these native species. This is a potentially significant impact.

Lining trails in the Cascade Canyon Bottomlands with dead tree trunks and branches (as is recommended in the Plan) could result in the spread of SOD to new areas of the Preserves. While it is expected that the entire Bottomlands is already subject to SOD, further spreading of the disease would be a potentially significant impact.

Mitigation Measures for Impact 3.3-C

3.3-C.1 No trees over 9 inches DBH (diameter at breast height) will be removed in constructing improvements, unless the tree needs to be removed for public safety requirements.

3.3-C.2 Previously recommended erosion control mitigation measures (mitigation measures for Impacts 3.1-C and 3.1-D) are required for this impact.

3.3-C.3 Minimize unnecessary ground disturbance in constructing improvements.

3.3-C.4 New cuts and fills shall be revegetated using a mix of regionally indigenous species suitable for each site.

3.3-C.5 Remove broom and other invasive non-native species along the new trail and road sections. Monitor the new sections to remove broom or other undesirable species that become established on the new cuts and fills.

3.3-C.6 New trails shall be constructed to minimize bicycle speeds and downhill skidding per the recommendations in Mitigation Measure 3.6-B.1.

3.3-C.7 When lining fire roads or trails in the Cascade Canyon Bottomlands area, use only tree trunks or branches located adjacent to the area to be lined or, alternatively, use redwood or Douglas fir branches or trunks.

Impact Significance After Mitigation

The implementation of these mitigation measures will reduce the potential impacts of proposed actions on common vegetation to a less than significant level.

3.4 WILDLIFE

A. Setting[2]

There is a diverse and healthy wildlife community, including several sensitive species, inhabiting the variety of habitats on the Preserves. In general, past and existing use of the Preserves does not appear to be substantially affecting most wildlife species, although human use and presence on the Preserves undoubtedly have displaced some wildlife from the areas nearest heavily used trails and roads. However, most mammals and reptiles are little affected by human use of trails and roads. Many species of wildlife tend to be nocturnal and are little affected by human use of the Preserves. The habituation of bobcats to human presence on the GGNRA and other public lands in the area indicates that even large carnivores make use of these types of recreational areas. In September, 2001, the EIR preparers observed a bobcat hunting immediately adjacent to the Sky Oaks Road on MMWD lands to the west of the Preserves. The bobcat was about 50 feet from the road and a group of observers stood 25 feet from the bobcat as it was stalking. After about 15 minutes, the bobcat pounced, captured a rodent, and walked off. The bobcat took no notice of about 15 people watching and photographing it. The recent spread of mountain lions into the area, a species typically considered sensitive to human presence, is another indication that the Preserves provide useful habitat for most wildlife found in the area.

Most bird species are similarly tolerant of human presence, particularly when it occurs along known routes, as most birds become habituated to routine human intrusion. However, some species will not construct their nests near roads or trails where the activity levels are too high and there are inadequate sight buffers (that is, where people on trails are visible from nest sites). Tolerance to human presence varies from species to species. Raptors are considered to be among the most sensitive birds as regards presence of humans near their nest. In general, a buffer of 100 feet between a trail and a nest, if there is sight buffering, is considered sufficient buffer for most raptors, except eagles, but eagles do not nest on the Preserves (Winter, personal communication).

1. Special Status Species

Six special status wildlife species were identified on the Preserves, including northern spotted owl, winter-run steelhead, Cooper's hawk, white-tailed kite, grasshopper sparrow, and horned lark. The locations where these species were found have been provided to MCOSD; the locations are not specifically shown in this report to reduce the chance that these sensitive species would be harassed or bothered. It is noted that no red-legged frogs were observed on the Preserves. This conclusion was subsequently corroborated by a field survey conducted by the MCOSD staff naturalist to examine potential red-legged frog habitat in the Cascade Canyon area.

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2 Wildlife surveys and analyses were conducted on the property as part of preparing the Draft Management Plan; the complete wildlife report prepared for the Draft Management Plan as well as Lists of Species located near the proposed trail and road construction sites prepared for this EIR are included in Appendix F. This complete report describes the wildlife habitats on the Preserves, observed, probable, and possible wildlife species, the official status and presence of special status species, and likely impacts to wildlife. The following section is based on that initial wildlife study, additional analysis and input from Mischon Martin, MCOSD Naturalist, and discussions with Jon Winter, consulting wildlife biologist.

The wildlife studies done for the Draft Management Plan and this EIR, as reviewed with the EIR prepared for the *Mount Tamalpais Vegetation Management Plan* (Leonard Charles and Associates, 1994) and *The Marin County Breeding Bird Atlas* (Shuford, 1993), indicate that other special status species could be found on the Preserves, though they were not discovered by earlier wildlife surveys. These species as well as the five species found include the following:

Species		Status
Rana boylii	Foothill yellow-legged frog	FSC, CSC
Falco peregrinus anatum	American peregrine falcon	CT, CFP
Circus cyaneus	Northern harrier	CSC
Accipiter cooperii	Cooper's hawk	CSC
Accipiter striatus	Sharp-shinned hawk	CSC
Aquila chrysaetos	Golden eagle	CSC, CFP
Elanus leucurus	White-tailed kite	FSC, CFP
Ammodramus savannarum	Grasshopper sparrow	FSC
Strix occidentalis caurin	Northern spotted owl	FT, CSC
Asio flammeus	Short-eared owl	CSC
Athene cunicularia	Burrowing owl	FSC, CSC
Asio otus	Long-eared owl	CSC
Chaetura vauxi	Vaux's swift	FSC, CSC
Toxostoma redivivum	California thrasher	
Progne subis	Purple martin	CSC
Lanius ludovicianus	Loggerhead shrike	CSC
Eremophilia alpestris	Horned lark	CSC
Dendroica petechia brewsteri	Yellow warbler	CSC
Amphispiza belli	Bell's sage sparrow	FSC, CSC
Antrozous pallidus	Pallid bat	CSC
Myotis thysanodes	Fringed myotis bat	F*SC*
Taxidea taxus	American badger	CSC
Bassariscus astutus	Ringtail	CFP
Oncorhynchus mykiss	Steelhead	FT
Oncorhynchus kisutch	Coho salmon	FT

Definition of species status is as follows:

CSC - Listed as a Species of Special Concern by the California Department of Fish and Game
FSC = Federal Species of Concern
CFP = California Fully Protected Species
FT - Listed as Threatened by the Federal Government
CT - Listed as Threatened by the State of California
FE - Listed as Endangered by the Federal Government
SE - Listed as Endangered by the State of California

a. Steelhead (*Oncorhynchus mykiss)*

Steelhead spawn and reside in San Anselmo Creek and Cascade Creek and may inhabit Carey Camp Creek. Steelhead are anadromous fish (i.e., fish that spawn and live for some time in freshwater streams and then migrate to the ocean). Historically, the streams also provided habitat for Coho salmon (*O. kisutch*) and possibly Chinook

salmon (*O. tshawytscha*). Both steelhead trout and coho salmon are listed as threatened species by the Federal government under the Endangered Species Act (ESA). Under the ESA, it is illegal to "take" these species. "Take" is defined in the ESA as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting. Harm can occur through destruction or modification of habitat that significantly impairs essential behaviors, including breeding, feeding, rearing, or migration.

Corte Madera Creek is one of many California coastal streams that has been designated by the Federal Government as Critical Habitat for steelhead trout and coho salmon This designation has no effect beyond the restrictions established by the ESA on projects that do not include Federal government involvement.

Adult steelhead migrate up San Anselmo Creek and spawn. Young of the year live in those portions of the creek that do not dry up, and in those years when the entire creek does not dry up, migrate back to the ocean. The summer rearing area is relatively limited. The main creek in the Cascade Canyon Bottomlands goes dry in the summer. Some years, water remains in the upper portions of Carey Camp Creek and San Anselmo Creek upstream of Cascade Creek, Cascade Creek, and in San Anselmo Creek for a few hundred feet below Cascade Creek. Other years, it is reported that most if not all of these sections of the creek where fish can live (e.g., they cannot move above the falls on Cascade Creek) go dry.

A study of the fisheries of the Corte Madera Creek watershed was prepared for the Friends of Corte Madera Creek (Rich & Associates, 2000). That report found that San Anselmo Creek and Cascade Creek supported trout and that Cascade Creek "offered the best trout habitat of the entire creek system. It was characterized by bedrock pool and cascades, abundant canopy, and clean water," (Rich & Associates, 2000, p. 55). Fairfax Creek contains little water by the end of the dry season. That creek is characterized by channel incising, trampled bank vegetation with bank erosion, some good spawning gravel, but extensive sand and fines, and no salmonids sighted (Rich & Associates, 2000, p. 55). The Rich & Associates study reported that San Anselmo Creek was dry during their survey almost to Cascade Creek. The upper end of San Anselmo Creek below Cascade Creek along with Cascade Creek provides the best trout habitat in the watershed.

In June 2005, the Friends of Corte Madera Creek received grant funding to assess barriers to fish passage and redesign two existing fish ladders. After the study is completed, they would then seek funding to remove the barriers. They are also seeking funding to complete a watershed plan for the watershed that would establish management policies and list near-term projects. After these studies and projects, they would likely seek funding to improve rearing habitat (Sandy Guldman, personal communication, 3/3/05).

b. Northern Spotted Owl (Strix occidentalis)

Northern spotted owl inhabits the Preserves, The location of breeding pairs and nests is not provided as MCOSD resource managers do not wish to call public attention to nest locations. Northern spotted owls are listed as a Threatened Species under the Federal Endangered Species Act of 1973 (50 CFR Section 17.11). They are also protected under the Migratory Bird Treaty Act (50 CFR Section 10.13). The State of California

considers them a Species of Special Concern and their eggs, young, and nests are protected by Section 3503.5 of Fish and Game Code of California. Impacts to their habitat must be mitigated under Federal law through a formal consultation with the USFWS.

The preferred northern spotted owl habitats in northern California include structurally and floristically diverse, dense, large tree conifer (>30-inch DBH) or conifer/hardwood habitats dominated by dense multilayered canopies (>60% closure), typically with some associated decadence to provide natural nest trees and liberal amounts of dead and downed woody material on the forest floor. These habitats are usually found in rather steep, well-watered canyons and are typically associated with mature forest habitats. In Sonoma, Marin, and Napa Counties, however, spotted owls often occur in habitats that have more open canopies (< 60%), have a less dominating conifer component, and do not have the decadence or the large tree size found in more mature habitats.

c. Grasshopper Sparrow (*Ammodramus savannarum)*

The grasshopper sparrow is a Federal Species of Management Concern (FSMC). It is a migratory species that (1) has suffered apparent population declines, (2) has small or restricted populations, (3) and/or is dependent on restricted or vulnerable habitats. It would be considered "rare" under CEQA Guidelines (14 CCR Section 15380).

It is a widespread species in North America with a distinct preference for breeding in grasslands, but often occurs in low densities and in disjunct fragmented populations. They are migratory throughout most of their range, wintering in Mexico, Central America, and the West Indies. Grasshopper sparrow populations in the U. S. have dropped nearly 70% since the 1960s and some subspecies are Federally listed. In California they are typically rare and local. They generally arrive on the breeding grounds in California in mid-March and will begin pairing upon arrival. They can produce two or more broods per year. Major impacts to their populations include agricultural conversion of breeding habitats, grazing, and mowing. Grasshopper sparrows are present on the Preserves.

d. Golden Eagle (*Aquila chrysaetos*)

Golden eagles are currently listed as a Species of Special Concern by the California Department of Fish and Game (CDFG) and are a Fully Protected species under California Fish and Game Code Section 3511. Protection is also extended to their nests, eggs, and young in California (California Fish and Game Code Section 3503.5) They are protected under Federal law through the Bald and Golden Eagle Protection Act, 1940 (16 USC Sections 668a-668d) and under the Migratory Bird Treaty Act (16 USC Sections 703-711). Golden eagles are not provided protection under any existing State or Federal endangered species regulations. Their protection is mainly limited to the destruction of the nests, eggs, young, or the birds themselves under the above stated statutes.

The golden eagle is an uncommon permanent resident of Marin County. Nesting locations are limited to the northern interior of the County. *The Marin County Breeding Bird Atlas* does not identify nest sites on or near the Preserves. It is possible that golden eagles use the Preserves as part of their foraging territory.

e. Cooper's Hawk (*Accipiter cooperii*) and Sharp-shinned Hawk (*Accipiter striatus*)

Cooper's and sharp-shinned hawks are currently listed as Species of Special Concern by the CDFG and are protected under the Migratory Bird Treaty Act (16 USC Sections 703-711). Protection is also extended to their nests, eggs, and young in California (California Fish and Game Code Section 3503.5). They have no legal status under current State or Federal endangered species regulations.

Both of these hawks are fairly common residents of the woodlands of Marin County and do breed and forage on the Preserves. The nesting season for both species encompasses late March through mid-July.

f. White-tailed Kite (*Elanus leucurus*)

White-tailed kites are a Fully Protected species in California (California Fish and Game Code Section 3511) and are also considered a Species of Special Concern by the CDFG. Federal protection (50 CFR Section 10.13) is provided (listed as the black-shouldered kite) by the Migratory Bird Treaty Act (16 USC Sections 703-711). They have no legal status under current State or Federal endangered species regulations, and their protection is largely limited to their nests, eggs, young and to the birds themselves.

They prefer grassland habitats that are not grazed or are lightly grazed and that can provide cover for meadow mice (*Microtines*), their primary prey. They typically change the location of their nests every year making it difficult to protect a given nest tree from year to year. They are remarkably tolerant of disturbance around their nests, and they do not seem to be particularly sensitive to the presence of people. Though this species has not been identified as nesting on the Preserves, it is possible that they do.

g. California Thrasher (*Toxostoma redivivum*)

California thrasher is a Federal Species of Concern. The bird is a year-round resident of inland and coastal scrub and riparian thickets. It is possible to likely that the species nests in the Preserves.

h. Horned Lark (*Eremophilia alpestris*)

The horned lark is a California Species of Special Concern. These birds inhabit short-cropped grasslands. They build their nests flush to the ground in shallow cavities near a rock or tuft of overhanging grass. Wildlife surveys indicate the species does not nest on the Preserves and is unlikely to do so.

i. Bell's Sage Sparrow (*Amphispiza belli)*

Bell's sage sparrow is a Federal and California Species of Concern. This bird inhabits chaparral, particularly chamise chaparral. It is known to nest in the Carson Ridge/Pine Mountain area. It is possible the bird inhabits and reproduces on the Preserves. It is reported that long-term fire suppression reduces or eliminates this species, and the bird will return shortly following natural or man-caused fires.

j. Purple Martin (*Progne subis*)

This bird is a California Species of Special Concern. They nest in natural openings or artificially cleared openings in wooded areas. They are tree cavity nesters. They generally forage above the higher ridges but can forage in lowlands. Wildlife surveys indicate the species does not nest on the Preserves and is unlikely to do so.

k. Foothill Yellow-legged Frog (*Rana boylii*)

This frog is currently considered a Federal Species of Concern by the USFWS and is treated as a Species of Special Concern by the CDFG because they have declined dramatically throughout their range in California in the past 50 years (Jennings and Hayes, 1994). It is also a California Protected Species under 14 CCR, Chap. 5, Section 41(r). They have no legal status under current State or Federal endangered species regulations and their protection is limited to a prohibition on taking the frogs themselves.

Much of their basic biology remains unknown. Foothill yellow-legged frogs prefer shallow, clear flowing water with a cobblestone or pebble substrate commonly found in small streams. While not identified on the Preserves, it is possible they inhabit streams on the Preserves.

l. Fringed Myotis Bat (*Myotis thysanodes)*

This species is a Federal Species of Management Concern. This bat is widespread in California. Its abundance appears to be irregular; it may be common locally. It occurs in a wide variety of habitats. It roosts in caves, mines, buildings, and crevices. It is active during the nighttime hours (Zeiner et al, 1990, p. 46). The species is considered a probable resident of the Preserves.

m. Pallid Bat (*Antrozous pallidus*)

This is currently listed as a Species of Special Concern by the CDFG. The bat is a locally common species of low elevations. A wide variety of habitats is occupied, including grasslands, shrublands, woodlands and forests. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open areas such as porches and open buildings. The bat is nocturnal (Zeiner et al, 1990, p. 70). The species is considered a probable resident of the Preserves.

n. American Badger (*Taxidea taxus*)

The badger is currently listed as a Species of Special Concern by the CDFG. The badger is an uncommon mammal that is most abundant in drier open stages of most shrub, forest, and grassland habitats with friable soils. They are active both diurnally and nocturnally. Females of the species have a home range varying between 338-750 acres, while males have larger home ranges. They are somewhat tolerant of human activities (Zeiner et al, 1990, p. 312). Badgers are considered a probable species on the Preserves.

o. Ringtail (*Bassariscus astutus*)

Ringtails are a Fully Protected species in California. The species is widely distributed in California, common to uncommon permanent residents. They occur in various riparian

habitats and in brush stands of most forest and shrub habitats. They are primarily carnivorous. They reproduce in rock recesses, cavities in talus and other rocky areas, abandoned burrows, and woodrat nests. They are active nocturnally. Home ranges range from 109-1,280 acres (Zeiner et al, 1990, p. 296). This species possibly inhabits the Preserves.

p. Other Species

The other possible special status bird species are not reported as having nest sites on or near the Preserves (Shuford, 1993). At most, these species may include the Preserves as part of their larger foraging territory. As noted previously, red-legged frogs have not been identified on the Preserves.

2. Sensitive Wildlife Areas

As was mentioned above, wildlife typical of the area continues to use the Preserve despite human use. Birds sensitive to human presence have habituated to that presence and likely make nests at an appropriate distance from roads and trails. To enhance wildlife habitat, particularly for birds and other animals sensitive to human presence, the Draft Management Plan recommends that several trails be closed and that Cascade Canyon Preserve be designated a "sensitive wildlife area" (SWA).

Currently, as shown on Figure 9, trails and roads divide the Preserves into a number of discrete blocks of habitat. The existing blocks of wildlife habitat are defined as un-trailed or un-roaded blocks at least 150 feet from a trail or road. While wildlife cross these trails and roads to access adjacent blocks, closure of some of these trails and roads would provide additional habitat where wildlife could nest and forage with minimal human interruption.

Figure 9 also shows the resulting wildlife habitat blocks that would result if the trail closures recommended in the Draft Management Plan were implemented. These closures would substantially increase the areas where there would not be a constant human presence.

3. Chaparral

The chaparral habitat may be the most sensitive wildlife habitat on the Preserves. Chaparral generally forms a dense, structurally intertwining, and almost impenetrable shrub habitat. Birds which breed in chaparral either nest on the ground or in low shrubs. During the period of incubation and while the fledglings are in the nest, the entire brood is vulnerable to disturbances from humans and domestic animals.

Sensitive ground nesters possible in the chaparral include the Bell's sage sparrow and the California thrasher, as well as local species of concern including wrentit and common poorwill. The wrentit was recorded in several of the chaparral habitats on the Preserves. The wrentit is a secretive bird which remains in a 1 to 2.5-acre area for its entire life span. Male wrentit show strong site tenacity to breeding territory, even if the habitat is markedly changed. This aversion to leaving an established breeding area could have significant implications if the area is disturbed by trail construction.

In general, the nature of this habitat limits human intrusion and disturbance. No new trails are proposed through chaparral habitat. However, there are several non-recognized trails that lead into or through significant chaparral stands. These trails allow access by hikers and dogs into the sensitive wildlife habitat. As such, the Draft Management Plan recommends closure of non-recognized trails intersecting the Wagon Wheel Trail and Blue Ridge Fire Road. Dogs will be required to be on leash in chaparral areas all year.

4. Redwood Forest

The only redwoods on the Preserves affected by proposed improvements is the small redwood grove on the White Hill Preserve called Sherwood Forest. This grove could support spotted owls and other special status species.

5. Past Restoration Efforts

In the past, MCOSD has conducted a number of restoration projects in the Cascade Canyon Preserve. Some of these efforts include:

- Annual installation and monitoring of waterbars and other trail/road improvements to address erosion problems.

- Armoring of the banks of San Anselmo Creek to prevent streambank erosion and failure. These control structures appear to be functioning as designed.

- Construction of sediment detention structures in the lower section of Carey Camp Creek. The mouth of this creek was armored to prevent further downcutting. These sediment control structures appear to be functioning as designed.

- Trees have been planted on several of the flats along San Anselmo Creek between the Cascade Drive entrance and the fourth stream crossing on Cascade Fire Road. These trees have been provided with deer protection. A review of these trees showed that some were dead and need to be removed.

- Waterbars and seeding of areas damaged by illegal bicycle use were established in the Happersberger Meadow on the Happersberger Ridge Trail. Field surveys showed that these improvements were successful as the trail has mostly been restored to a single-track width, and there is no sign of significant erosion in this area.

- MCOSD staff conducted erosion control work on the northern part of the non-recognized Split Rock Trail. MCOSD conducted most of this work despite the fact that this part of the trail is on MMWD property.

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

For purposes of this report, the proposed project is considered to have a significant impact on biological resources if any of the following criteria are met:

3.4a Has a substantial adverse effect, either directly or through habitat modification on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service. This includes reducing the number or restricting the range of an endangered, rare, or threatened species. *(Assessed under Impacts 3.4-A to 3.4-D)*

3.4b Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service. (*Assessed under Impacts 3.4-B, 3.4-C, and 3.4-D)*

3.4c Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites. *(Assessed under Impact 3.4-A)*

3.4d Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. *(The Initial Study concluded that the project would have a less than significant impact as regards this criterion.)*

3.4e Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. *(The Initial Study concluded that the project would have no impact as regards this criterion.)*

3.4f Results in a substantial loss of habitat supporting native wildlife. *(Addressed in Impact 3.4-E; this criterion was added to the criteria list typically used due to the fact that MCOSD has as a goal to preserve native vegetation.)*

Project Impacts

Impact 3.4-A Future use of the Preserves may increase sedimentation of San Anselmo Creek and Fairfax Creek and adversely affect steelhead.

At the time the Draft Management Plan was prepared, the Plan preparers contacted the California Department of Fish and Game (DFG) and the National Marine Fisheries Services (NMFS) (currently called the National Oceanic and Atmospheric Administration – Fisheries, or NOAA - Fisheries) to determine those agencies' concerns about the impacts on steelhead from existing and future use of the Preserves. The creeks of main concern include San Anselmo Creek, Cascade Creek, and Carey Camp Creek. The northern portion of the Preserves drains to Fairfax Creek. This creek is also of concern though the upper portions within the Preserves do not appear to support summer trout populations. However, this creek does flow into San Anselmo Creek which then flows into Corte Madera Creek where steelhead do spawn and live.

An initial discussion of the steelhead fishery was held with Bill Cox of the Department of Fish and Game. Mr. Cox reported that he did not have any concerns about human impacts to the trout population on the Preserves other than the need to better control sedimentation from roads and trails.

Contacts with NOAA - Fisheries include the following:

- On October 22, 1999, the Cascade Canyon Bottomlands was surveyed by the EIR preparers along with Commander Steve Thompson and Tom Daugherty, Fisheries

Biologist, of NOAA - Fisheries. The creek was surveyed to determine whether it would be desirable to construct one or more bridges across the creek to avoid the Cascade Fire Road crossings. The opinion of the two NOAA - Fisheries staff was that the existing erosion sources along the creek, including the five stream crossings, could be reduced through rocking the stream approaches on the road, diverting road runoff, and repairing erosion problems on the trails and the road. They felt that installation of the bridges (railroad cars) would cause more erosion and environmental damage than not installing the bridges and, instead, repairing existing erosion problems.

- A subsequent review of the Cascade Canyon Bottomlands was conducted by NOAA - Fisheries staff on February 8, 2000. NOAA - Fisheries reiterated its conclusions that stream approaches on the road should be rocked and motor vehicles should be restricted when water is present at the crossings. See the letter dated April 5, 2000 from Patrick J. Rutten in Appendix B.

- Prior to preparing this Draft EIR, MCOSD sought further guidance from NOAA - Fisheries regarding the scope of the EIR analysis as regards potential impacts to steelhead. In response to query letters from Steve Petterle of MCOSD (dated February 26, 2001; in Appendix B) and Leonard Charles (dated February 12, 2001; in Appendix B), NOAA - Fisheries submitted a letter from Patrick J. Rutten dated May 16, 2001 (in Appendix B). This letter confirmed the approach taken in this EIR for assessing erosion and sedimentation impacts on steelhead. NOAA - Fisheries reiterated the conclusions of their April 5, 2000 letter regarding sediment reduction on Cascade Fire Road, but further recommended that the EIR assess the feasibility of reducing the number of road crossings along Cascade Fire Road and installation of a vehicle bridge across Cascade Creek.

Sedimentation Impacts

As described in Impacts 3.1-C and 3.1-D, construction of new trail sections and one new road section, future use of these new trails and road, increased use of existing trails and roads, and construction of fire hazard reduction projects will increase erosion. Some of the eroded material could be deposited in streamcourses that eventually flow into San Anselmo Creek and Fairfax Creek. As described under these previous impacts, the proposed erosion control actions in the Draft Management Plan as well as the additional mitigation measures recommended in this EIR will reduce sedimentation to the creeks to a level below the existing conditions.

The possible future cutting and pile burning of 85 acres of chaparral would cause increased erosion. As described under Impact 3.1-D, the requirements that will guide future chaparral treatment require retention of untreated buffers along streamcourses. In addition, this EIR requires that the results of sedimentation studies from the initial treatment area be submitted to NOAA - Fisheries and that NOAA - Fisheries can require additional erosion control for future treatment or prohibit future treatment if the sedimentation impacts are seen as too severe. In addition, this increased sedimentation must be measured against the potentially massive sedimentation that would result when a large wildfire burns the Preserves. By reducing the size of this eventual wildfire, the Draft Management Plan would have a long-term beneficial effect on stream sedimentation.

The recommended erosion control actions are consistent with NOAA - Fisheries' recommendations. As regards the use of motor vehicles on Cascade Fire Road, MCOSD currently uses an ATV to patrol Cascade Fire Road during the winter. This vehicle, being smaller and lighter than a truck, does not cause as much disturbance to the stream substrate. However, there is still some disturbance caused by use of this vehicle plus some erosion caused by its traveling on the fire road. This is a potentially significant impact.

As regards NOAA - Fisheries' recommendation that a vehicle bridge be considered at the Cascade Creek crossing, there is an existing bridge at this crossing, though it is not large enough to handle motor vehicles. The crossing could be signed to warn bicyclists of a threatened species of fish in the stream and to use the bridge. Motor vehicle crossings of the creek happen very infrequently and could be further reduced. While a large bridge does not appear warranted at this crossing, given the recommended mitigations to rock the approaches, eliminate bicycle crossings, and limit motor vehicle crossings, MCOSD should consider installation of such a bridge.

The Draft Plan has been revised to include additional study and monitoring of steelhead and steelhead habitat. The monitoring will evaluate steelhead habitat and develop baseline data on the condition of San Anselmo and Cascade Creeks within the Preserve. The monitoring will also identify problems, if any, that may be interfering with steelhead migration and reproduction. Finally, the monitoring will include habitats adjacent to the streams to establish baseline conditions of these areas, and to characterize existing impacts to steelhead trout habitat. The monitoring of adjacent habitat will focus on the trails, roads, and biologically sensitive areas near the creeks within the Preserve. Since the issue of steelhead trout management is a watershed issue, the District will work with the Friends of Corte Madera Creek, MMWD, Department of Fish and Game, National Oceanic and Atmospheric Administration, and other relevant organizations to finalize the monitoring protocol, fund, and implement this program.

Mitigation Measures for Impact 3.4-A

3.4-A.1 All the mitigation measures recommended under Impacts 3.1-C and 3.1-D apply to this impact. In addition, the following measures are recommended:

3.4-A.2 Post a sign at the Cascade Fire Road crossing of Cascade Creek indicating that the creek contains a threatened species of steelhead trout which can be harmed by riding through the creek. The sign shall state that bicyclists must dismount and walk their bicycles across the existing bridge.

3.4-A.3 Except for emergency response situations, MCOSD shall not drive vehicles on Cascade Fire Road when water is present at the crossings on San Anselmo Creek. Except for emergency response situations, MCOSD shall not drive across Cascade Creek. If vehicles are used when San Anselmo Creek is dry but there is still water in Cascade Creek, the vehicles shall be parked near the fourth crossing, and rangers will walk the remainder of the way to Cascade Creek.

Impact Significance After Mitigation

The erosion control recommendations previously described will reduce sedimentation to the creeks to a level that is less than occurs under existing conditions. This is a beneficial impact. Restricting MCOSD motor vehicle use of Cascade Fire Road will eliminate potential disruption of the creek substrate. While it is recognized this will add some time to MCOSD patrols, the increase is not substantial. One can walk from the Cascade Canyon entrance to the Cascade Creek crossing in 15 minutes. This does not substantially increase patrol time by a ranger using an ATV, since the ATV must be unloaded and loaded from a truck and then is driven slowly to the final crossing. During the dry season when vehicles can drive across the San Anselmo Creek crossings, it is only about a 5-minute walk from the fourth crossing to the Cascade Creek crossing.

These additional mitigation measures will further reduce impacts to steelhead so they are less than currently occurring. The impact to steelhead, given actions recommended in the Draft Management Plan and this EIR will have a beneficial impact on steelhead. No additional mitigation is required. The proposed steelhead monitoring program would further enhance the use of the Preserves by steelhead. This program could lead to restoration efforts that address past impacts to steelhead and steelhead habitat. Also, see the discussion under Project Alternatives for an assessment of an alternative that would include bridge crossings of the creek on Cascade Fire Road.

Impact 3.4-B **New trail and road construction and future increased use of trails and roads could adversely affect northern spotted owl.**

There are spotted owls on the Preserves. Construction of new trails, the new road section, and fuel reduction zones and chaparral cutting and pile burning could result in spotted owls abandoning their nests.

Once the improvements are constructed, the spotted owls would not be affected. These owls are habituated to human presence. For example, there are spotted owl nests in Muir Woods adjacent to trails walked by thousands of people every year.

Because trail, road, and fuel reduction zone construction will not remove large trees, there would be no loss of spotted owl habitat. Shrub cutting and pile burning would occur only in chaparral, so there would be no loss of spotted owl habitat. Removal of some understory shrubs and vines in the fuel reduction zones will result in a more open habitat adjacent to woodlands with dense understory. The open habitat should not adversely affect spotted owls or their prey. In fact, by providing the open habitat and more edge habitat, the fuel reduction zones could benefit spotted owl foraging.

Thus, the only potentially significant impacts to this species would be possible nest abandonment during construction. This impact could occur for construction of improvements or chaparral cutting and pile burning that occurred within 0.25 miles of an active nest. The Draft Management Plan requires that trail construction occur only after the nesting season. While these recommended safeguards will reduce the potential impact to this species, the safeguards need to be strengthened to ensure there would not be an adverse impact on this species.

Mitigation Measures for Impact 3.4-B

3.4-B.1 Recommended Action BW-9 shall be amended to state the following

> If the MCOSD spotted owl annual breeding survey indicates an active spotted owl nest within 0.25 mile of a proposed trail, road, or fuel reduction zone construction area, the trail, road, or fuel reduction zone construction shall be conducted between September 1 and February 1 in any year or until after MCOSD monitoring shows that fledglings have left the nest. No trees over 9 inches in diameter at breast height (DBH) shall be removed, except for public safety requirements.

Impact Significance After Mitigation

The additional protections afforded by the revised Action BW-9 should ensure that there would not be adverse impacts to nesting spotted owls. The impact is reduced to a less than significant level, and no additional mitigation is required.

Impact 3.4-C **New trail and road construction and future increased use of trails and roads could adversely affect other special status species of wildlife.**

The construction of the two new trails, the one road realignment, and the three trail relocations will displace native habitat. The future use of these trails as well as the increased use of other trails and roads (as described in Appendix C) could displace other special status species. The following summarizes the potential impacts for each special status species found or possible on the Preserves (other than steelhead and northern spotted owl which are described in the previous two impacts).

Golden eagle. Construction of the new trails and road would mainly be in forested areas and would not be expected to disrupt eagle foraging patterns. Additional people on trails and roads in open areas could affect foraging, but since these roads and trails already are used by people, it is likely that the eagles already avoid hunting near these roads and trails or are sufficiently habituated to human presence that they hunt near these roads and trails and would not be affected by a few more people on these roads and trails. Even if increased use discouraged eagle foraging near trails and fire roads, there is ample unused foraging habitat on the Preserves and adjacent lands that this effect would not be significant. In addition, trail closures proposed in the Draft Plan would provide additional area lacking trails.

Yellow-legged frog. These frogs would be susceptible to the same impacts as previously discussed for steelhead. The main impacts would be from increased sedimentation of the streams. The same mitigations recommended for steelhead apply to these frogs and will reduce impacts to a less than significant or to a beneficial level.

Cooper's hawk and sharp-shinned hawk. The only significant impact to these species would result from visitor-use disturbance during the nesting season. Both Cooper's and sharp-shinned hawks have adapted to a reasonable level of disturbance in similar areas, and it is expected that the level of visitor use anticipated at the Preserves would not adversely affect their nesting success. Both species appear to be breeding regularly in Shiloh County Park and Annadel State Park in Sonoma County, both of which have

higher levels of visitor use than are anticipated for the Preserves. However, the possible displacement from nests during trail and road construction is considered a potentially significant impact.

White-tailed kite. Trail and road construction is not expected to impact this species unless the construction includes activity adjacent to actual nesting sites; this would be a significant impact.

Horned lark. New trail construction will not affect this grassland species since the trails will almost entirely be constructed in woodland settings. Increased use of existing trails and roads is not expected to significantly affect either nesting or foraging birds.

Grasshopper sparrow. New trail construction will not affect this grassland species since the trails will almost entirely be constructed in woodland settings. Increased use of existing trails and roads is not expected to significantly affect either nesting or foraging birds.

Purple martin. As nest cavities are likely to occur in large old trees or snags, and such trees would not be removed when constructing new trails or the road, the project should not result in any direct loss of nest sites. However, construction adjacent to or near active nest sites could result in abandonment of the nest. Additional use of the new and existing trails and roads is not expected to significantly affect this species which forages in the air.

Bell's sage sparrow. New trails are not proposed through chaparral used by this bird. Closure of some trails through chaparral will benefit the species. Cutting and pile burning of chaparral should be beneficial to this species, since it prefers chaparral that is periodically burned.

California thrasher. New trails are not proposed through chaparral used by this bird. Closure of some trails through chaparral will benefit the species.

Pallid bat and Fringed myotis bat. Removal of large trees that may contain cavities (e.g., a cavity in a dead limb) would remove roosting sites for these species. Loss of such trees would be a potentially significant impact to these species. Because the bats are nocturnal, increased use of the Preserves would not significantly affect the activities of these bats.

Badger. This species, if present, is expected to be habituated to some human presence within its home range (338-750 acres). The only adverse impact would be if a trail or road were constructed adjacent to a reproductive burrow which caused the mother to abandon the burrow. If such burrows were disturbed, this would be a potentially significant impact.

Ringtail. This species, if present, is nocturnal and would not be significantly affected by increased use of the Preserves. Again, the one potentially significant impact would result from actual destruction of a reproductive site or construction of improvements or cutting and pile burning near an active reproductive site.

Other Species. While no other special status species are expected to nest or reproduce on the Preserves, there are six species of local concern that are known to

inhabit the Preserves. These include wrentit, common poorwill, blue-gray gnatcatcher, red-shouldered hawk, pileated woodpecker, and mountain lion. The concerns with these species would be similar to those for the special status species, namely, the potential disturbance of nesting birds. The project is not expected to impact mountain lion reproduction nor use of the Preserves.

Beneficial Impacts of the Draft Management Plan

The Draft Management Plan calls for closing a number of trails and road sections. These closures will provide additional habitat where human intrusion would be limited. Those species requiring reproductive or foraging sites removed from human intrusion would benefit from these trail closures and designation of Sensitive Wildlife Areas. The increased restrictions on dogs included in the Draft Management Plan will significantly benefit may of the sensitive wildlife species, particularly birds and mammals that nest or reproduce on the ground. Other actions that would improve wildlife habitat include: meadow restoration, removal of broom and other non-native plant populations, and reduction in erosion.

Mitigation Measures for Impact 3.4-C

3.4-C.1 The mitigation measures recommended for Impacts 3.4-A and 3.4-B also apply to this impact. In addition:

3.4-C.2 Prior to trail and road construction, the area to be developed shall be field surveyed by a qualified biologist to determine the presence of nests or reproductive sites of any special status species or species of local concern. If nests or reproductive sites are encountered, construction within 500 feet of the nest(s) and reproductive sites will occur only following the completion of the nesting or reproductive season.

Impact Significance After Mitigation

By ensuring that nests and reproductive sites of special status species and species of local concern will not be affected during the nesting/reproduction season and by preserving all trees greater than 9 inches in diameter (to reduce the chance of destroying bat roosting and cavity-nesting habitat), the impact to these species will be reduced to a less than significant level. Increased use in the areas where the new trails and roads will be constructed as well as on existing trails and roads is not expected to significantly displace nesting or foraging. The creation of new Sensitive Wildlife Areas will create new, undisturbed areas which any species sensitive to human presence during nesting can use for future nesting. In addition, the Draft Management Plan contains the other actions previously summarized which would increase or improve wildlife habitat.

Impact 3.4-D Fire hazard reduction actions could adversely affect wildlife.

Construction of the fuel reduction zones will reduce the understory along certain roads. This reduction in understory density will adversely affect those species that prefer a dense understory and benefit those species preferring a more open understory and grasslands.

As the construction of these zones will not include removal of large trees, there would be no effect on northern spotted owl or other special status species that require large trees for nesting. Cooper's hawk, sharp-shinned hawk and white-tailed kite would be benefited, since opening up the understory would provide additional foraging habitat, and would not disturb nesting habitat. However, spotted owls, hawks, bats, purple martin, and kites nesting/reproducing within or adjacent to the fuel construction zones could be disturbed if construction occurred during the nesting/reproduction season. Badger and ringtail reproductive sites could also be disturbed. This would be a potentially significant impact.

Purple martin and horned lark prefer open clearings for foraging and would benefit from understory reduction. Wrentits (not a special status species per se, but a species of local concern) prefer mature chaparral. Some of the areas within the proposed fuel reduction zones contain mature chaparral. This chaparral would be thinned substantially which would reduce habitat available to this species. This is a potentially significant impact.

Future cutting and pile burning of 85 acres of chaparral would not affect any of the special status species, though it could adversely affect wrentits and blue-gray gnatcatchers. The treatment of the chaparral would not affect nesting habitat of the other special status species and would provide new open habitat for foraging. Wrentits and blue-gray gnatcatchers inhabit mature chaparral. As such, treatment of this chaparral would remove habitat required by these birds. However, as is described in *The Marin County Breeding Bird Atlas*, chaparral habitat is fire adapted, "and Wrentits normally reinvade the new vigorous growth within a few years," (Shuford, 1993, p. 324). Thus, while treating chaparral would displace these birds, the birds would reinvade the treated areas assuming that sufficient untreated chaparral is retained to provide a breeding reservoir for the species. The Draft Management Plan requires that when cutting and pile burning, patches of untreated chaparral be retained to provide a diverse mosaic of age types. These untreated patches will provide reservoirs for wrentits and other chaparral-dependent species.

While blue-gray gnatcatchers nest in tall chaparral (about 9 feet tall), they are absent in lower chaparral stands. In addition, they prefer extensive stands of oaks varying from live oak woodland, mixed live oak-deciduous oak woodland, dense oak scrub, and open stands of deciduous oaks. As such, even if they were displaced from chaparral that was cut and burned, it is not their preferred habitat, and this is not expected to be a significant impact.

MCOSD has previously adopted the *Mount Tamalpais Area Vegetation Management Plan* to manage vegetation on three other Preserves to reduce fire hazard. That Plan also addresses vegetation management on the adjacent MMWD lands. That Plan includes the construction of fuel reduction zones and prescribed burning which has more impacts than the currently proposed chaparral cutting and pile burning . Regarding impacts to common species of wildlife, the *Mount Tamalpais Area Vegetation Management Plan* Draft EIR found that the long-term impacts of prescribed burning and understory fuel reduction were neutral or beneficial. For prescribed burning, most birds and mammals will escape in front of the fire. Smaller mammals, reptiles, and amphibians can be killed if they are unable to burrow into the ground or otherwise escape the fire. Certain species reliant on mature chaparral may be displaced for a few

years after a burn. This includes species such as the California mouse (*Peromyscus californicus*), the bushy-tailed woodrat (*Neotoma fuscipes*), and the chaparral mouse (*P. truei*). Other species that favor grassland or more open habitat will be favored by prescribed burning. Over time, as the chaparral re-grows, the species favoring chaparral will reinvade the burned area while the species that inhabited the post-fire habitat will be displaced. These shifts in common wildlife species are not considered significant (Leonard Charles and Associates, 1994a, p. 126). The impacts to wildlife would be less for the proposed chaparral cutting and pile burning as wildlife will be able to escape during the cutting process.

The fuel hazard reduction actions included in the Draft Management Plan are intended to reduce the size of the eventual wildfire on the Preserves. A major wildfire that ignited without completion of the recommended actions would burn very intensely and burn a large area. Such a wildfire would have potentially significant impacts on wildlife, potentially killing many more animals than chaparral cutting and pile burning and completely destroying chaparral and other wildlife habitat types. For example, the June 9, 1973 fire that started near White Hill burned 202 acres including all the chaparral stands on the south face of White Hill and along Blue Ridge Fire Road, and most of the stands on the south face of Cascade Peak. The recommended actions will have a beneficial impact on wildlife over the long-term as they will reduce the size and intensity of future wildfires.

To conclude, construction of fuel reduction zones and cutting and pile burning of chaparral will create more open habitat thereby favoring some species over others. Over time, species favoring chaparral will reinvade treated areas so long as sufficient untreated chaparral is retained to provide a nearby breeding reservoir. Potentially significant impacts include loss of some wildlife, displacement of some wildlife, and construction of fuel reduction zones around active nests or reproductive sites of special status species.

Mitigation Measures for Impact 3.4-D

3.4-D.1 Prior to construction of fuel reduction zones, a biologist will survey the areas where the construction is proposed for the nests or reproductive sites of any special status species or species of local concern. If nests/reproductive sites are located, construction will not occur within 500 feet of the nest/reproductive until completion of the nesting season. MCOSD will construct the fuel reduction zones outside the bird nesting season.

3.4-D.2 As recommended in Mitigation Measure 3.2-A.1, chaparral will be treated over at least a four-year time span. Within any one target treatment area, at least 10% of the chaparral shall be left untreated to provide habitat for wrentits and other species requiring mature chaparral. This 10% reserve can include the already-required untreated buffers along streamcourses.

3.4-D.3 To avoid impacts to nesting birds, MCOSD will cut and burn chaparral outside the nesting season.

Impact Significance After Mitigation

The reduction in understory vegetation resulting from construction of the fuel reduction zones will not significantly affect wildlife. Pre-construction surveys and constructing the fuel reduction zones outside the nesting season will reduce the impact of this construction to a less than significant level. Cutting chaparral and then burning piled shrubs would have a less than significant impact on wildlife given the recommended mitigation measure.

Impact 3.4-E Increased use of the Preserves could adversely affect common species of wildlife.

As described in the discussion of increased use (in Appendix C of this EIR), the construction of the two new trails at the north end of the White Hill Preserve will increase use of this area as well as to a lesser degree other trails and roads on the Preserves. This increased human presence will not affect many common species of wildlife who are habituated to the presence of human beings. However, certain species are more sensitive to human presence and could relocate away from the more heavily used trails and roads. This is not expected to be a significant impact along existing roads and trails as there already exists a relatively frequent human presence along these roads and trails plus the amount of new use predicted is not substantial, except for the Wagon Wheel Trail, White Hill Fire Road, and the two new trail connections at the north end of the White Hill Preserve.

The Wagon Wheel Trail is already heavily used, and increased use of this trail is not expected to substantially alter the existing situation. The areas that would be potentially significantly affected include the White Hill Fire Road and the two new trail connections at the north end of the White Hill Preserve. The areas through which the two new trails will traverse is currently very lightly used by humans. Construction of the new trails and future use of these trails will potentially displace those species sensitive to human presence. White Hill Fire Road currently receives some human use, but the number of new users would increase substantially along this road. Most of this road is on top of the ridge in open grassland, so increased usage would not have a significant effect on nesting and reproduction.

The relocation of the south end of Blue Ridge Fire Road will increase human presence along this 1,200-feet road section. However, the existing south end of the road would be closed so that existing human presence in that area would be eliminated. Closure of the old road section would compensate for the increased human presence along the new road section.

The relocation of a portion of the Burnt Tree Trail will increase human presence in the canyon between that trail and Creekside Fire Road. However, the south end of the Burnt Tree Trail would be closed thereby providing additional Sensitive Wildlife Area as shown on Figure 9. This additional wildlife area would compensate for the loss of wildlife habitat to the east.

While there could be some impact to some species of wildlife, the impact is not predicted to be significant for the following reasons:

- Most common species are or can be habituated to human presence.

- Those species more sensitive to human presence may relocate at a distance from the new trails or, perhaps, other trails and roads that receive increased usage. However, there is no evidence that such relocation, if it were to occur, would threaten the integrity of the local populations of these animals.

- The Draft Management Plan contains recommendations to close several trails to provide additional wildlife habitat where human presence is minimal. As shown on Figure 9, new wildlife areas would be created on the north side of Cascade Creek, the south end of Burnt Tree Trail, Happersberger Ridge, and the north side of White Hill. Restricting access to these Sensitive Wildlife Areas (SWA) will compensate for the loss of the existing wildlife areas at the north end of White Hill, and where the Burnt Tree Trail, Blue Ridge Fire Road, and the two other small trail sections would be relocated.

More important than increased human presence in certain areas is the impact of dogs on wildlife. Dogs are currently allowed to be off leash but under the owner's control on fire roads. On trails and cross country, dogs must be on leash. As is described in the Draft Management Plan, dogs off leash frequently travel off the road through the adjacent wildlands and into the creeks. They will chase wildlife. These free-running dogs have much more impact on wildlife than humans on trails and roads. To address this existing problem, the Draft Management Plan calls for the following:

- Dogs will be kept on leash at all times on the Cascade Canyon Preserve.

- Additional signing will be installed to describe the new dog restrictions for the Cascade Canyon Preserve and to explain that on the White Hill Preserve dogs off leash must be kept on the fire roads and under owner's control.

- Specified trails shall be signed to warn users of the impacts of free-running dogs on ground-nesting birds and other wildlife and how dogs must be kept on leash.

The additional restrictions on dogs on the Preserves will reduce existing impacts to wildlife, including steelhead.

Given the actions recommended in the Draft Management Plan to close trails and create new SWAs, avoid impacts to special status species and woodrats, and require additional controls on dogs, the overall impacts on common wildlife species is predicted to be at least less than significant and may be beneficial. It is expected that common wildlife will have more undisturbed habitat available even given the loss of some habitat where the new trails and road section would be constructed and some increase in use on other existing trails and roads.

3.5 FIRE

A. Setting

The combination of flammable vegetation types, steep slopes, weather, and limited access on the Preserves mean that a large, catastrophic wildfire could ignite on the Preserves and burn natural vegetation as well as residences adjacent to the Preserves. Extensive fire modeling of fires starting in three different locations on the Preserves was done when preparing the Draft Management Plan. The modeling showed that fires burning under different weather conditions would escape the Preserves and burn neighboring homes in the Cascade Drive area and the hills south of Cascade Canyon Preserve.

The Draft Management Plan contains a full range of actions to reduce this fire hazard. The recommended actions include:

- Construction of fuel reduction zones along Middle Road Fire Road, Toyon Fire Road, Toyon Tanks Fire Road, and Cul de Sac Fire Road.

- Once all fuel reduction zones are constructed, potential cutting and pile burning of up to 85 acres of chaparral located south of White Hill and mainly north of San Anselmo Creek and west of Toyon Fire Road.

- Notifying neighbors of their ability to reduce fuels on the Preserves adjacent to their property.

B. Potential Impacts and Mitigation Measures

Criteria Used for Determining Impact Significance

A project will have a significant impact if it meets any of the following criteria:

3.5a The project results in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection services. *(The Initial Study concluded that the project would have a less than significant impact as regards this criterion.)*

3.5b Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. *(Addressed in Impact 3.5-A)*

3.5c Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. *(Addressed in Impact 3.5-A and 3.5-B)*

Project Impacts

Construction of the proposed fuel reduction zones will require the use of fire department and MCOSD staff and equipment. However, this expenditure of time and equipment will not require the construction of new fire protection facilities nor will it detract from the ability of fire departments to continue to provide existing levels of service to area residents or businesses. As such, the Initial Study determined there would be a less than significant impact per Significance Criterion 3.5a.

Impact 3.5-A Implementation of the Draft Management Plan will reduce fire hazard in the area.

The actions recommended in the Draft Management Plan will reduce the chance of a fire igniting and spreading off the Preserves. The fuel reduction zones will compartmentalize the Preserves providing safe locations to fight a fire. Under many weather conditions, fires can be stopped at these fuel reduction zones. Even if a fire cannot be stopped at these locations, they will slow the rate of spread of the fire, enhancing the ability of fire suppression agencies to control the fire before it enters residential neighborhoods.

Subsequent prescribed cutting and pile burning of chaparral stands would reduce the fuel loading in this most hazardous vegetation type. Reducing these fuel loads will reduce the chance of fires spreading.

Allowing neighboring landowners to conduct fire hazard reduction on District lands adjacent to their property will further reduce the chance of a fire starting on the Preserves from burning adjacent residences. MCOSD is working closely with Marin County Fire Department and other local fire agencies in order to identify and implement policies and practices for fire management measures on all of the Open Space Preserves in the County. These discussions include identifying the appropriate role for the District in managing open space land and adjoining private property along the Preserve perimeters. Once the District adopts these policies and practices, they will apply to all lands and become another tool that the District will use to identify management requirements for all of its land, including Cascade Canyon and White Hill Open Space Preserves.

The actions recommended in the Draft Management Plan will substantially reduce the fire hazard on the Preserves. This is a beneficial impact of the project. By reducing fire hazard, there would be less chance of a wildfire burning residences in the Cascade Drive area. There would be less need to evacuate. The project would not impair or interfere with an emergency response plan.

Impact 3.5-B Implementation of the Draft Management Plan could increase the chance of fire ignitions.

While the Draft Management Plan may result in additional use of the Preserves, this additional use is not expected to significantly increase the risk of fire ignition. MCOSD already prohibits smoking during the dry season and all open fires on the Preserves. Given these provisions for controlling fire ignitions, the increase in users is not expected to substantially increase the risk of fire ignition.

Cutting of chaparral and burning the cut material in piles would not be expected to ignite wildfires in the area. The pile burning would be done under weather conditions that would not promote fire escapes, and the pile burning would be monitored by MCOSD and fire department staff. Unlike prescribed burns of chaparral, there would be little likelihood of these pile burns escaping control and burning Preserve resources or private property adjacent to the Preserves. This impact would be less than significant. The impacts are expected to be less than significant, and no mitigation is required.

3.6 TRAFFIC

A. Setting

1. Sir Francis Drake Boulevard

Sir Francis Drake Boulevard (SFD) provides access to the Preserves. This street is a major arterial providing access from Highway 101 through Ross, San Anselmo, Fairfax and unincorporated communities to the west. It is a major east-west arterial between Highway 101 and the coast and is heavily used by both commuters and recreational travelers.

2. Traffic Volumes

Traffic count data provided by the Marin County Department of Public Works shows Average Daily Traffic on SFD just west of Fairfax as 10,504 vehicles per day (vpd) in September/October, 1998 (Brook, data sent on 3/21/02). Of these 10,504 trips, 5,312 were westbound and 5,192 were eastbound.

3. Roadway Characteristics

The section of SFD that traverses White Hill begins its climb over the hill at Baywood Canyon Road. From Baywood Canyon Road, it climbs steadily for about 0.8 miles until it reaches the crest of the hill. Through this section, there is one southbound lane. Northbound is one lane except for about a 750-foot long passing lane that starts about 1,200 feet north of Bothin Road and ends near the south end of the new bridge section.

4. Recent Improvements on Sir Francis Drake Boulevard

A bridge (called the Brown Bridge) with a trail undercrossing has recently been constructed on Sir Francis Drake Boulevard (SFD) near the northeast end of the White Hill Preserve. A future trail connection to the Loma Alta Fire Road will be constructed to connect to this undercrossing (see Figure 10). This trail connection is an already approved project and is not part of the Draft Land Management Plan being assessed in this EIR. This trail and undercrossing will allow hikers, bikers, and equestrians to travel beneath SFD. This already-approved trailhead is located at the same point where the new trail to Sherwood Forest Fire Road recommended in the Draft Management Plan would start.

The bridge undercrossing and trail project in combination with the two new trails recommended in the Draft Management Plan would provide a link that would allow all users to travel from as far to the north and east as Novato across the White Hill Preserve to Cascade Canyon Preserve, Camp Tamarancho (for users who are members of the Friends of Tamarancho), MMWD lands, the Gary Giacomini Open Space Preserve, the Point Reyes National Seashore, GGNRA lands, and Mount Tamalpais State Park. The new trails would provide the missing link allowing access from Novato to the Pacific Ocean. These trail connections are shown in the Marin Countywide Trail Plan, and the trails are part of the Bay Area Ridge Trail Plan which would allow users to circle the Bay Area.

5. Existing Parking

There are nine turnouts between Bothin Road and the top of the grade at White Hill. The turnouts are described below and shown on Figure 11.

- Turnout 1 is on the west side of the road about 225 feet north of Bothin Road. It is a turnout with room for about 7 cars.

- Turnout 2 is on the east side of the road about 30 feet north of Turnout 1. It is a small turnout with room for 3 cars.

- Turnout 3 is on the east side of the road about 405 feet north of Turnout 2. This turnout has room for about 19 cars.

- Turnout 4 is on the west side of the road just uphill from Turnout 3. It has room for about 5-6 cars.

- Turnout 5 is on the east side of the road about 225 feet north of Turnout 3. It has room for about 2-3 cars. A gate has recently been installed at this turnout, which would provide access to a private lot to the east of the street, if approval is granted to construct a residence on this lot. In that case, no parking would be allowed at this turnout.

- Turnout 6 is on the east side of the road about 270 feet north of Turnout 5. It has room for 8-10 cars. A dirt road has recently been opened to the east of this turnout. It appears that this road may also lead to the private lot access from the road from Turnout 5. It is possible that parking might not be allowed at this turnout in the future if residential development is allowed to the east.

- Turnout 7 is the large turnout at the Sherwood Forest entrance to the White Hill Preserve. It is on the west side of the road and starts approximately across the road from Turnout 6. This turnout is about 330 feet long and 60+ feet deep in the center of its length. If cars park perpendicular to the road, there is room for 18 cars.

- Turnout 8 is on the east side of the road at the south end of the new bridge. This is a large turnout with room for 28 cars.

- Turnout 9 is on the east side of the road at the north end of the new bridge. There is room for 8-10 cars.

The turnouts have capacity for 89-95 vehicles between Bothin Road and the top of White Hill. In addition to these ten turnouts, there are several small turnouts past the top (east) of White Hill. It is estimated there is room for about 15-20 cars within the first quarter mile past Turnout 9. There are also additional turnouts east of Baywood Canyon. However, these turnouts are over half a mile from the new trailhead.

6. Other Streets

Other roads providing access to the Preserves include Cascade Drive, Toyon Road, Bolinas-Fairfax Road, Canyon Road, and Bothin Road. These are all narrow minor roads. Cascade Drive, Canyon Road, and Toyon Road are dead-end streets providing access to neighborhoods. Bolinas-Fairfax Road provides access between Fairfax and Highway One to the west. Bothin Road is a private driveway which provides access to the Girl Scout Camp.

Parking near the Preserves is extremely limited on all of these roads.

B. Potential Impacts and Mitigation Measures

Criteria Used for Determining Impact Significance

As stated in Appendix G of the *CEQA Guidelines, a* project-related traffic impact or cumulative traffic impact is considered to be significant if it meets any of the following criteria:

3.6a Causes an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., results in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections). *(The Initial Study found that there would be a less than significant impact as regards this criterion.)*

3.6b Exceeds, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways. *(The Initial Study concluded that the project would have a less than significant impact as regards this criterion.)*

3.6c Results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. *(The Initial Study concluded that the project would have no impact as regards this criterion.)*

3.6d Substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). *(Addressed in Impact 3.6-A, 3.6-B, and 3.6-D)*

3.6e Results in inadequate emergency access. *(The Initial Study concluded that the project would have no impact as regards this criterion.)*

3.6f Results in inadequate parking capacity. *(Addressed in Impact 3.6-A and 3.6-C)*

3.6g Conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks). *(The Initial Study concluded that the project would have no impact as regards this criterion.)*

Project Impacts

The Initial Study concluded that there would be no impact per Significance Criteria 3.6c, 3.6e, and 3.6g and that the impact would be less than significant for Criteria 3.6a and 3.6b.

The following assessment of traffic impacts described under Impact 3.6-A is based on the 2005 traffic report prepared by W-Trans. The full report is contained in Appendix G of this EIR.

Impact 3.6-A **The new trailhead on Sir Francis Drake Boulevard will result in increased conflicts along Sir Francis Drake Boulevard.**

As was discussed in the Use section at the beginning of this chapter, the new trailhead on SFD may attract as many as 153-312 new users on a peak weekend day. Not all of these users would drive to the trailhead and park. It is estimated that 50% of the bicyclists entering the new access would exit at another access point. Equestrians are as likely to park at the stables at Baywood Canyon, and some of the new hikers would start on Loma Alta or points to the east. Thus, it is estimated that 100-200 of the new users could drive to the new trailhead on a peak day. On an average day, the number of new users is estimated to be 34-79 of which 20-50 are expected to drive to the new trailhead.

Users will park on existing turnouts near the trailhead, and, if those adjacent turnouts become full, on more distant turnouts to the south. The large turnout at the Sherwood Forest entrance (Turnout 7) would likely be the parking area of choice, with users going to Turnouts 8 and 9 as secondary choices.

It is unknown how many people will be in each vehicle driving to the new trailhead. Assuming an average 1.5 users per vehicle, the peak number of users would result in about 67-133 vehicles. Assuming an average of 2 users per vehicle, the peak use period would generate 50-100 vehicles.

Observations of the traffic flow on SFD in this area indicate that drivers travel through this road section at average speeds averaging 28 to 44 mph westbound and 30 to 42 mph eastbound. "Critical speeds" (i.e., the 85th percentile speed used for calculating safe sight lines) were 37 mph westbound and 40 mph eastbound. Given these critical speeds, there is adequate sight distance for drivers entering and leaving turnouts.

People walking or riding along SFD from many of the turnouts create another potential conflict. Much of the 0.6-mile section of SFD north of Bothin Road has narrow shoulders. There is ample shoulder (8+ feet) between the Sherwood Forest turnout and the trailhead. However, south of the Sherwood Forest turnout, the shoulder on the west side narrows to 1-2 feet in width for about 500 feet (between Turnouts 4 and 7). It then widens to at least 6 feet in width to Bothin Road. On the east side of SFD, the shoulder is 1-2 feet wide from Bothin Road to Turnout 2, 3-4 feet to Turnout 3, and mainly 3 feet or wider to the bridge (though a few small sections are 1-2 feet wide). The bridge itself has wide shoulders at least 8-10 feet wide. Though the sections with narrow shoulders

do not meet American Association of State Highway and Transportation Officials (AASHTO) design standards that indicate that 4 feet is the minimum desirable width for a shoulder being used by bicyclists, the traffic report determined that there were no reports of traffic accidents involving pedestrians or bicyclists over the past two years along this section of SFD and, thus, that the roadway is functioning safely. People parking at turnouts south of Sherwood Forest would need to walk or ride along these relatively narrow shoulders. The traffic report determined that there would not be a significant safety impact resulting from people walking and bicycling from turnouts to the trailhead. The only potentially significant traffic safety impact would be inadequate sight distance at Turnouts 7 and 8.

Mitigation Measures for Impact 3.6-A

3.6-A.1 Trim trees on the inside curve north of Turnout 7 and one tree south of Turnout 8 as described in the traffic report in Appendix G.

Impact Significance After Mitigation

By trimming the trees as recommended, the traffic report prepared for MCOSD concludes that all safety impacts resulting from increased traffic accessing the proposed trailhead on SFD would be less than significant. The traffic engineers recommended that the shoulders along SFD be widened as part of any subsequent road improvements done in the area, but the traffic engineers concluded that shoulder widening was not required as a mitigation for this project.

Impact 3.6-B Use of multi-use trails and fire roads by the three user groups could result in accidents.

Joint use of roads and improperly designed trails by hikers, bicyclists, and equestrians can lead to accidents. Accidents typically result from other users not stopping to allow horses to pass or from bicyclists traveling too fast for trail conditions. The chance for accident increases with the number of blind curves and bicycle speed. A review of the literature regarding user conflicts between bicyclists, hikers, and equestrians shows that while a certain percentage of hikers believe mountain bike use of trails is dangerous, there are actually very few accidents. For example, a survey of 40 resource managers noted only one case which resulted in an injury (Chavez *et al* reported in Cessford, 1995). While the actual incidence of accidents (at least those that are reported) may be low, some people have a definite perception that bicyclists are hazardous and could cause injury, and injury is possible on trails where bicyclists can travel at excessive speeds and/or be unable to see approaching users.

MCOSD has stated that the new multi-use trail starting at SFD would be 6 feet wide while the new connector trail to the west would be five feet wide. Trails of this width allow bicyclists to travel too fast. California State Parks has been reconstructing old fire roads on Annadel State Park near Santa Rosa to multi-use trails. In the past few years, they have reconstructed 21 miles of fire road. They have found that by varying the contour of the trail, restricting trail width to four feet, and eliminating blind turns, they have eliminated virtually all user complaints (Hastings, personal communication, 3/27/02). Keeping trails at a four-foot width means that bicyclists must stop or slow to near a stop to allow approaching bicyclists, hikers, or equestrians to pass. The four-foot width meets the Bay Area Ridge Trail criteria. Annadel State Park is heavily used by all three user groups and for many years was the source of significant complaints of trail misconduct and danger. Since they began constructing trails as described above, they report that all significant complaints have disappeared.

Discussions with Tom Ward, Manager of Recreation for the California Department of Parks and Recreation, indicate that his Department is constructing numerous multi-use trails. He noted that the Department has received numerous requests to open more trails within Marin County to bicycle use. He concurred with the trail design described by Marla Hastings presented above. He noted that the main conflict on trails was from excessive bicyclist speed. As such, the Department is constructing trails to slow bicyclists down. The main problem is on old roads where bicyclists can travel fast, and he reiterated the conclusion that reconstructing these old roads to meandering trails is a good solution (Ward, personal communication, 4/23/02). Mr. Ward volunteered that trail building staff from his Department would be willing to provide design advice to MCOSD when developing new trails.

The risk of accident will exist not only on the new multi-use trails but on existing fire roads that would get additional bicycle and equestrian traffic. However, as shown on Tables 2 and 3 in Appendix C, the number of predicted new bicyclists and equestrians on Preserve fire roads other than White Hill Fire Road is not substantial. There would be an increased risk on White Hill Fire Road. The one other area expected to see a substantial increase in use would be Wagon Wheel Trail. This is a single-track multi-use trail. Equestrians tend to avoid this trail due to its narrow width and bicycle use. A few hikers use the trail and both hikers and bikers appear aware of the need to slow when passing.

Existing user conflicts and accident risk on fire roads will remain. The risk is not only for one user group being injured by another but for bicyclists traveling too fast for road or trail conditions and having an accident that involves only themselves. Adoption of the Draft Management Plan is not expected to substantially change use patterns nor these existing problems, However, there would be some increase in use of most fire roads due to adoption of the Draft Management Plan. While the EIR authors have personally experienced and been told many stories about problems of hikers encountering speeding bicyclists, MCOSD has actually received few formal complaints. As shown in Table 7, MCOSD received 7 complaints regarding bicycles in 2001, 5 in 2000, 2 in 1999, 7 in 1998, and 1 in 1997. While many more people than those that filed a formal compliant may have experienced hazardous situations involving bicyclists, it is expected that serious incidents that may have involved potential injury would have been reported. Given the small number of complaints or reported accidents, it is not expected that the small increase in bicycle use of roads other than White Hill Fire Road would result in a substantial increase in the number of accidents.

This is not to say that there will not continue to be incidents where hikers and equestrians experience bicyclists traveling too fast or riding in a reckless manner or incidents where one user group finds the actions of another group to be rude or offensive. These incidents currently occur as part of the baseline setting for the Preserves. The additional use of the Preserves generated by the two new multi-use trails will possibly increase the number of such incidents. Members of the public and MCOSD may be concerned about such incidents, and the possible increase in such incidents may be considered by MCOSD when adopting the Management Plan. However, these incidents in and of themselves are not an environmental impact. Even if there is some increase in uncivil behavior among user groups, this is a potentially significant impact only if it would substantially increase the chance for actual accidents. The chance for increasing accidents among and within user groups is a potentially significant impact.

Mitigation Measures for Impact 3.6-B

3.6-B.1 The new multi-use trails shall be constructed per the basic specifications used for multi-use trails by the California Department of Parks and Recreation, including:

- Turns in the trail shall include adequate line of sight so bicyclists traveling at the designated speed can see approaching users at a sufficient distance to stop by the time they meet.
- The trails shall travel up and down grade ("undulating grades") to allow rolling dips to dewater the trail.
- Trails shall generally follow a curvilinear alignment.
- Trails shall not exceed four feet in width.
- Trails shall be constructed with a 5-10% outslope

MCOSD could request assistance from California Department of Parks and Recreation trail staff when laying out and constructing trails.

Table 7

3.6-B.2 Creekside Fire Road shall be re-constructed as a trail using the criteria established in No. 1 above. The trail shall meander along the roadbed so that it is not a straight trail following the center of the old roadbed. MCOSD should consider a similar reconstruction of Blue Ridge Fire Road between Middle Road Fire Road and the east end of Wagon Wheel Trail. MCOSD should review the need for all other fire roads on the Preserves and put to bed any roads not absolutely needed for fire or emergency access. Those roads should be reconstructed for trail use as stated above

3.6-B.3 MCOSD staff shall monitor White Hill Fire Road and Wagon Wheel Trail for user conflicts and cite bicyclists who exceed speed limits when passing other users.

3.6-B.4 MCOSD shall continue to patrol other fire roads and trails and cite users who do not obey speed limits and other use restrictions. If MCOSD determines that there is an increased number of accidents or illegal speeding involving bicyclists, MCOSD shall consider closing affected trails or roads to bicycle use. This mitigation shall be added to Action E-3 in the Draft Management Plan.

Impact Significance After Mitigation

Constructing the two new multi-use trails per the criteria used for Annadel State Park will reduce the chance for accident on these trails to a less than significant level. The trails will be designed to prevent excessive speed and allow sufficient line of sight for fast-moving bicyclists to slow or stop as passing other users. Continued patrolling and issuing citations for excessive speed will reduce the chance of accident on existing fire roads and Wagon Wheel Trail. The provision that MCOSD can close affected trails or roads to bicycle use if there is an increase in accidents or risk will reduce the impact to existing roads. New use of existing fire roads by bicyclists is expected to be relatively small except for White Hill Fire Road, which will be patrolled. The reconstruction of Creekside Fire Road and, possibly, other fire roads to a trail, while not required for this impact, is recommended by MCOSD staff. These closures as a road and reconstruction to a trail will reduce potential user conflicts in addition to reducing erosion potential. Together, these mitigations will reduce the impact resulting from new users to a <u>less than significant</u> level.

Impact 3.6-C Future park use will increase the need for parking.

Impact 3.6-A discusses the increased parking needs on SFD. As discussed in Appendix C, other than people attracted to this new trailhead on SFD, it is not expected that the Draft Management Plan would attract new users to the Preserve. Parking near other existing public entrances is very limited. On high use days, this parking is currently filled. People arriving when parking near entrances is full either must park at a considerable distance from the entrance or abandon their trip to the Preserves. This existing situation is not expected to substantially change as a result of adoption of the Draft Management Plan. As shown in Tables 2 and 3 in Appendix C, few new users are expected to enter or leave the existing access points. On a peak day, as many as 15-30 new trips may use the Toyon Road entrance and 33-53 trips via the Cascade Drive entrance. Most of these new trips will be outbound (i.e., leaving the Preserves at these

entrances). It is not expected that new users will create a substantial demand for parking at existing trailheads.

During scoping meetings and conversations with neighbors of the Preserves, some people complained that large groups of bicyclists park near their homes to access the Preserves or Camp Tamarancho. This was particularly true for neighbors near the Ridge Trail (this trail is adjacent to but not on the Preserves). This situation would not be aggravated by adoption of the Draft Management Plan. In fact, the provision of the new trailhead on SFD with nearby parking available (unless the County bans parking) should reduce this problem as many bicyclists will use this new trailhead for accessing Camp Tamarancho and roads and trails to the west. The impact is less than significant, and no mitigation is required.

Impact 3.6-D New trips at existing trailheads would increase traffic conflicts.

As discussed in Impact 3.6-C, there will be some increase in the use of existing trailheads. On a peak day, 30-54 bicycle trips are predicted for the Cascade Drive entrance and 15-30 bicycle trips at the Toyon Road entrance. Many if not most of the new bicycle trips will continue along City streets to return to their vehicle or proceed home. There would be a less than significant increase of bicycle traffic on Cascade Drive, Toyon Road, and streets connecting Toyon Road to Cascade Drive. There could also be some increase in trips on Iron Springs Road and possibly a few new trips on streets connecting Ridge Trail to the center of Fairfax. However, the number of new trips is expected to be quite low even on a peak day, and on a non-peak day, the number would be very low. For example, even on a peak day on what would likely be the most heavily traveled street (Cascade Drive), the number of new bicycle trips would average about 3-5 trips per hour.

Many of the streets that would be used are narrow and steep. All lack adequate shoulders so bicyclists must share the street with motor vehicles. While this is not an ideal situation, it is common throughout Fairfax and other nearby communities. There is no evidence of substantial numbers of accidents involving bicyclists currently using these streets. The small increase in use that could be generated by adoption of the Draft Management Plan would not result in a significant new traffic safety issue along these streets. The Fairfax Police Department will continue to respond to illegal speeding and other illegal driving incidents. The impact is considered to be less than significant, and no mitigation is required other than continuing application of traffic laws.

3.7 AESTHETICS

A. Setting

The Preserves provide a scenic resource for the surrounding areas. The undeveloped character of the Preserves as well as the mature vegetation and dramatic hills and ridges are part of the background view from adjacent neighborhoods as well as major public roads like SFD and Bolinas-Fairfax Road.

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

The project will have a significant impact if it would:

3.7a Have a substantial adverse effect on a scenic vista. *(Addressed in Impact 3.7-A)*

3.7b Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway. *(Addressed in Impact 3.7-A)*

3.7c Substantially degrade the existing visual character or quality of the site and its surroundings. *(Addressed in Impact 3.7-A)*

3.7d Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. *(The Initial Study concluded there would be no impact per this criterion.)*

Project Impacts

Impact 3.7-A Proposed improvements will alter the visual character of portions of the Preserves.

Most actions recommended in the Draft Management Plan will not adversely affect views. Trail closures, restrictions on use, and repairing erosion sources will not result in adverse visual changes. The construction of the new trails and trail sections will not be visible from off the Preserves. The eastern end of the new connector from SFD to Sherwood Forest Fire Road has already been constructed as part of the new bridge/undercrossing project. While construction of these trails and the new road alignment at the southern end of Blue Rock Fire Road will be noticeable to Preserve users, the changes will not substantially alter the visual character of the Preserves.

One action that could result in substantial visual changes would be construction of the fuel reduction zones. Construction of these fuel reduction zones will require pruning lower tree branches and removal of much of the understory shrubs and small trees. These actions would occur along Middle Road Fire Road, Toyon Tanks Fire Road,

Toyon Fire Road, and Cul de Sac Fire Road. The changes will be most noticeable to people walking or riding along these roads. Visitors will see a more open forest canopy for 50-200 feet along the road edges. Existing views of a more dense understory will be opened up to allow views through the understory to more distant vegetation. During the construction period, particularly if a large mowing machine is used, there could be short-term adverse impacts as visitors may see unsightly cut ends of shrubs or trampled vegetation. This is a potentially significant impact. Once construction of the fuel reduction zones is complete, and cut branches and shrubs disposed of, and new vegetation begins to grow, the new view should not be displeasing. In fact, the more open view of the understory should be pleasing to many visitors.

Removal of broom populations will change views. Again, areas containing broom will be "opened up." Over time, new native vegetation will replace the removed broom. This change is considered less than significant.

Recommended closure of specified trails, narrowing the width of trails and roads in the Cascade Canyon Bottomlands, limiting future road grading to the minimum width feasible, and meadow restoration will all have beneficial aesthetic impacts.

The Draft Management Plan allows for cutting and pile burning of chaparral stands. The areas treated will be visible from numerous locations on the Preserves as well as from certain adjacent neighborhoods and public roads (depending on the treatment location). Immediately after the treatment, people will see an area where many of the shrubs have been removed and some piles of ash which will be considered unattractive by many people. However, once the rains come and new grasses and wildflowers begin to grow, the treatment is much less evident. Soon thereafter, new shrubs will resprout or set new seedlings so that within a year, the treated area would be relatively indistinguishable from untreated areas when viewed from a distance (i.e., from adjacent neighborhoods and public roads). While the treated area will remain apparent to visitors walking or riding near the treatment area, the visual change is not expected to be substantially adverse.

The impact is reduced by the fact that a relatively small amount of the Preserves would ever be treated. There are about 85 acres of chaparral in the target treatment areas. Another factor that reduces the visual effect of these treatments is that the target treatment areas are scattered across the landscape so there will not be one large massive area that is treated. In addition, cutting and pile burning will be spread over several years so previously treated areas will be succeeding to new vegetation when the next treatment occurs.

While cutting and pile burning will alter views in certain portions of the Preserves, the change will mainly be short-term (less than one year). The main viewers that would be affected would be visitors to the Preserves, and these people have the option of not visiting areas that have been treated if the view is offensive. The impact is considered short-term and over the long term will not substantially change the visual character of the Preserves.

Given the small acreage that may be treated, the fact that treatment would not all occur at once, the short-term impact of the treatment, and the distance between treatment areas and residences and public streets, the visual impact of cutting and pile burning is considered less than significant.

The Draft Management Plan has a Signs and Information Program that includes recommendations for numerous new signs. A problem with extensive signing is that it detracts from the views of the natural landscape. While certain signs are needed to inform users of permitted and illegal uses, strictly informational signs (e.g., trail names) can "clutter" the viewshed. The Draft Management Plan states that most signs are Priority 3 (i.e., to be installed when MCOSD has the time and resources). However, because these sign recommendations are included in the Draft Management Plan, the Plan indicates that at some point they should be installed. The installation of all the signs recommended in the Draft Management Plan could have a potentially significant aesthetic impact.

Mitigation Measures for Impact 3.7-A

3.7-A.1 If a large mowing machine is used to construct the fuel reduction zones, MCOSD shall monitor the treated areas after cutting and hand cut mangled or broken shrub and branch ends to provide a clean cut, if warranted.

3.7-A.2 All signs listed as Priority 3 signs in the Draft Management Plan shall be eliminated as needed signs. Instead, the Management Plan will note where such signs could be installed and state that a determination to install these signs will be made by MCOSD on a case-by-case basis.

Impact Significance After Mitigation

The visual impacts resulting from fuel reduction zone cutting by a large machine can be substantially reduced by follow-up hand pruning. Eliminating the need for unnecessary signs would reduce the visual impact of signing. The inclusion of these mitigation measures will reduce all visual impacts to a <u>less than significant</u> level.

3.8 PUBLIC SERVICES AND INFRASTRUCTURE

A. Setting

Table 7 shows the recorded number of complaints received by MCOSD between 1996 and 2001. The table also shows the number of incident reports issued (incident reports are where rangers responded to an incident and wrote up a report - some incident reports are in response to complaints received and some are initiated by patrolling rangers). For the years 1999-2001 (when complaints were recorded separately from incident reports), a total of 31 complaints were received. In 1999, six people called in eight complaints. In 2000, six people called in ten complaints. In 2001, four people called in thirteen complaints (MCOSD records received on 3/15/02).

MCOSD rangers regularly patrol the Preserves, particularly Cascade Canyon Preserve as it is the most heavily used area and requires regular patrol and maintenance. Rangers respond to a variety of complaints, with bicycle use and dogs being the most common complaint or problem.

The Preserves are under County jurisdiction, and the Town of Fairfax does not respond to calls for service on the Preserves. The Town does respond to calls for service on streets and private property adjacent to the Preserves. The Fairfax Police Department states that they issue approximately one parking citation per month for illegally parked vehicles at the end of Cascade Drive. As regards complaints about bicycles traveling across private property to access the Preserves, the last major incident occurred in 1998. The Police Department indicated that bicycle issues near the Preserves are not a major problem; most problems and citations issued occur in the downtown commercial area (see letter from Police Chief Ken Hughes in Appendix B)

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

3.8a The project would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- Fire protection. *(The Initial Study concluded there would be no impact as regards this criterion.)*
- Police protection. *(Addressed in Impact 3.8-A)*
- Schools. *(The Initial Study concluded there would be no impact as regards this criterion.)*
- Other public facilities. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.8b Exceeds wastewater treatment requirements of the Regional Water Quality Control Board. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.8c Generates additional wastewater that exceeds the existing or planned capacity of the sewage treatment and disposal system. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.8d Could not be served by the local water district(s) due to insufficient potable water supply. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.8e Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.8f Not comply with federal, state, and local statutes and regulations related to solid waste. *(The Initial Study concluded there would be no impact as regards this criterion.)*

Project Impacts

Impact 3.8-A Possible increased use of the Preserves may require additional police response.

Several actions recommended in the Draft Management Plan may result in the need for increased ranger or police enforcement beyond the existing levels of patrolling and response. These actions include:

- The recommendation that dogs be kept on leash on the Cascade Canyon Preserve may result in an increase in illegal dog walking. People accustomed to walking their dogs off leash on Preserve fire roads may not obey this new restriction with resulting complaints and need for additional patrol and response to complaints.

- The two new trails recommended for the White Hill Preserve could be used by a potentially substantial number of new users. If the trails are opened to all user groups, there would be an increase in bicycle use. There is the potential for increased illegal activity on the two new trails, with bicyclists not obeying speed limits. Bicyclists accessing the Preserves via the new trailhead may use other Preserve fire roads and Wagon Wheel Trail causing potential conflicts with other user groups resulting in complaints and the need for additional patrolling and response to complaints. The new bicycle access to the Preserves could result in increased illegal use of single track trails, again resulting in the need for additional patrolling and response to complaints.

- Parking at turnouts along SFD could result in accidents requiring police response.

- An EIR mitigation measure calls for increased patrolling and trail monitoring to determine whether illegal bicycle use is increasing or not. This action also requires that the District maintain clear records so as to show whether the problem of illegal

bicycle use is increasing or not. These recommended actions will require District rangers to do more patrolling on the Preserves than has occurred in the past.

- Increased bicycle use of the two new trails as well as existing fire roads and the Wagon Wheel Trail could result in increased number of bicycle accidents, resulting in the need for increased emergency medical response.

The primary increase in demand for District ranger response may result from increased bicycle access and thus use of the Preserves. However, it is also possible that the two new trails that offer bicycle access to additional single-track trails plus access to many miles of roads and trails where bicycle use is an allowed use may result in bicyclists who currently illegally using single track trails to abandon such use. While it is likely that most bicyclists will abide by District rules, it is not possible to predict how many people will disregard those rules, thereby causing incidents requiring ranger response.

MCOSD was queried regarding their ability to provide additional patrolling to these two Preserves, that is, beyond that required in the Draft Management Plan. MCOSD responded that patrolling beyond that recommended in the Draft Plan would result in staff being unable to provide necessary resource protection to other MCOSD Preserves. District rangers are already enforcing more dog violations in a number of Preserves where they have received complaints, including Indian Valley, Rush Creek, Deer Island, Sleepy Hollow, and Santa Margarita Island Preserves. They are also responding to more bicycle complaints at Indian Valley, San Pedro Ridge, Northridge, and Indian Tree Preserves. A substantial increase in demand for police and/or emergency response could result in decreased response to other Preserves (Sanford, letter in response to queries dated 3/14/02). MCOSD further stated that an increased presence in the Cascade Canyon Preserve could be accomplished if the Fairfax Police Department responded to at least some of the complaints and/or patrolled that portion of the Preserve within Fairfax's jurisdiction. However, the Fairfax Police Department was queried about their ability or willingness to patrol at least part of the Preserves. As stated in their response letter (in Appendix B), the Fairfax Police Department considers the Preserves the County's jurisdiction. The Fairfax Police Chief noted that if the Elliott Nature Preserve were deeded back to the Town, patrolling that Preserve could potentially impact the Department's staffing and workload (Hughes, letter dated 4/10/02 in Appendix B).

While it is possible that actions recommended in the Draft Management Plan could require additional police or emergency medical response by MCOSD staff, it is not possible to predict if a substantial increase would result. The most likely increase demand for ranger response would be from illegal bicycle use of trails, user conflicts, and illegal dogs. The EIR mitigation measure allows MCOSD to close trails to bicycle use if accidents and/or illegal speeding increases. The new trails at the north end of White Hill Preserve would be designed and constructed to minimize the likelihood of user conflicts. However, there remains the chance of increased user conflicts due to bicyclists exceeding speed limits as well as dog off leash violations. MCOSD has stated that it has adequate resources to patrol and respond to calls for service for actions recommended in the Draft Management Plan. Additional mitigation measures recommended in this EIR will not substantially expand the need for ranger response. As such, the impact to enforcement agencies will not result in the need for new or physically altered governmental facilities nor would it result in physical deterioration of other

existing Preserves. Per Significance Criterion 3.8a, the impact is less than significant, and no additional mitigation is required.

Increased use of the Preserves will cause a minor increase in the use of Cascade Drive and other streets within the Town of Fairfax. However, this small increase in bicycle traffic would not be expected to cause a substantial number of accidents nor a parking problem (given the already limited parking near street ends). Therefore, this increased use would not be expected to significantly increase calls for service to the Fairfax Police Department.

3.9 RECREATION

A. Setting

A. History of Preserves Acquisition for Public Use

1. Cascade Canyon Open Space Preserve

The Cascade Canyon Preserve was historically a part of the Rancho Canada de Hererra Land Grant. This Mexican land grant encompassed about 6,600 acres. The land grant was originally granted to Domingo Sais in 1839. The land passed to other owners at the end of the nineteenth century. Around the turn of the century, the Cascade Canyon area was included in the Bottini Ranch. In 1924, the Cascade Land Development Company took control of the ranch and began subdividing much of it for residential use. The core of the Cascade Canyon Preserve that includes the bottomlands along San Anselmo Creek was acquired after World War II by Floyd W. and Roberta B. Elliott.

The Elliott Family agreed to sell the land to the County in December, 1973. The agreement to sell divided the 474-acre property into three parcels and set forth the immediate purchase of Parcel 1 (261 acres; AP #197-100-11 and 15) which was acquired by the County on January 2, 1974. In December, 1974, the County acquired Parcel 2 (175 acres; AP# 197-100-06 and 16). This parcel, also known as Pam's Blue Ridge, was purchased with a donation from the Ettinger family in memory of a daughter who died in an automobile accident. In January, 1976, the third parcel consisting of 38 acres (AP# 197-100-05) was purchased with the Town of Fairfax under a Joint Powers Agreement. The County, in recognition of the Town's contribution to the purchase of the smaller 38-acre parcel, conveyed that 38-parcel to the Town for use as a Park and Nature Preserve. This conveyance included MCOSD easements over the property and the requirement that the 38-acre parcel would be managed per MCOSD's "Open Space Management Policies." This parcel was designated the "Elliott Nature Preserve." The total price for these properties was about $950,000 of which the Town of Fairfax contributed about $80,000; the sellers also gifted approximately $30,000 worth of property value.

In 1978, five small parcels were purchased totaling 12 acres (AP# 001-011-01, 001-012-01, 001-041-02, 001-042-01, and 001-042-02) at a cost of $270,000. In 1987, one parcel (AP# 003-053-15) comprising 2.1 acres was purchased at a cost of $30,000.

In 1987, the Town of Fairfax transferred title of the Elliott Nature Preserve (AP# 197-100-05) to MCOSD in order to facilitate improved management of that property. The agreement states that the property will be managed according to the District's Open Space Management Policies. The agreement further states that title to the property shall revert to the Town if there are attempts to sell, trade, or exchange the property of if there are attempts to construct a parking facility on the property. Finally, the agreement requires the District not to "construct any improvements thereon without the express consent of Grantor" (i.e., the Town of Fairfax) ("Agreement Transferring Open Space from the Town of Fairfax to the Marin County Open Space District," Official records of Marin County, California, February 10, 1987).

In this same year, MCOSD purchased a small (2.1 acres) parcel for $30,000 (AP# 003-014-10).

From 1994 to 1995, the County purchased 16 small parcels totaling about 7 acres located on the south-facing slopes above Pine Drive and below the Toyon Tanks Fire Road at the end of Toyon Drive (AP# 003-053-15, 003-061-04,05,06,&07, 003-063-01, 003-071-14,16,17,18,19,24,&25 and 003-072-03&04). The total price paid for these parcels was about $230,000 of which about $56,000 was money from the local community.

2. White Hill Open Space Preserve

This Preserve was also part of the original Canada de Hererra Land Grant. White Hill was named after Lorenzo E. White, a rancher who raised livestock in the San Geronimo Valley area from 1850 to 1855. Portions of the Preserve were a part of a 1,250-acre ranch owned by Phoebe Apperson Hearst at the turn of the century. Eventually, the land was incorporated into the 880-acre Camp Tamarancho owned and operated by the Boy Scouts of America. Camp Tamarancho is used by the Boy Scouts and other groups about 32 weekends per year beginning in March. In 1994, the County purchased 120 acres from the Boy Scouts of America (AP# 197-110-02 [portion]); the cost was $500,000 and paid for by MCOSD funds. This property forms the north end of the White Hill Preserve. In 1997, the County purchased Boy Scout properties totaling 270 acres (AP# 197-110-01 [portion] and 197-110-04 [portion]) for $860,000. These properties form the southern portion of the White Hill Open Space Preserve.

In 1994, the County obtained a 600-foot easement from the San Francisco Girl Scouts Council on AP# 197-110-03 to allow access across Girl Scout property to the 120 acres of Camp Tamarancho previously purchased.

At the time the District purchased the 270-acre property from the Boy Scouts of America, a multi-use trail (called the Wagon Wheel Trail) had been constructed on that property. In taking title to the property, the District determined that multi-use of this trail would be allowed in the future.

3. MCOSD Use Policies

The use of the Preserves is guided by Marin County's *Open Space Land Use Regulations*. These regulations are presented in their entirety in Appendix A of the Draft Management Plan. Some of the more pertinent regulations are summarized below.

- Allowable uses are restricted to those uses having no impact or minimal impact on the natural environment.

- Pedestrian and equestrian access to Preserves should be provided wherever possible and reasonable.

- It is preferable to have several minor access points to a Preserve as opposed to a few larger concentrated or developed trailheads with the intent to serve the people in the adjacent communities rather than attracting a large number of visitors from other areas.

- Bicycle use is allowed on roads or trails designated as bicycle routes by the District. Bicycle users must yield right-of-way to pedestrian and equestrian traffic under all circumstances. Bicyclists shall not exceed 15 miles per hour. The District may at its discretion also designate single-track trails for bicycle use (Policy 3 d3 of the District's *Open Space Management Policies*) This discretion was included in District policies to cover those situations where short connectors may prove necessary between adjacent fire roads, and where certain situations would make this multi-use the best solution to recognized problems (this interpretation of the intent of the District's "intention" is taken from a letter dated September 29, 1992 from Frances Brigmann of MCOSD to the District's Board of Directors; this intention was re-confirmed by MCOSD staff while the Draft Management Plan was being prepared).

- Group use of the Preserves is allowed with the issuance of a permit that contains various restrictions.

- Overnight camping is allowed only by permit and groups of six or more people must camp in designated Enhanced Areas. No open fires are permitted.

- Dogs are permitted on leash on trails and within voice command on fire roads (this means dogs are to stay on the fire road and be within voice command).

- The Preserves will be patrolled and maintained by District personnel. Law enforcement is provided by the appropriate jurisdiction (in this case, the County).

- The District may engage in landscape restoration where the natural landscape has been altered or degraded through misuse.

- The District will attempt to reduce the threat of wildfire. Measures to implement this policy include:

    - Open fires are not allowed, and smoking is limited to the months of November to April.

    - Fire roads and trails will be maintained for access and as fuel breaks.

    - Monitor plant communities to determine if high hazard fuels are developing. If they are, the District will carry out specific studies to determine what corrective measures should be taken.

    - Preserves can be closed during high fire hazard periods.

    - Grazing can be used to reduce fire hazard conditions.

    - Property owners living adjacent to a Preserve can be granted permission to clear flammable fuels on MCOSD property adjacent to their property.

For the Cascade Canyon and White Hill Preserves, bicycles are currently allowed only on fire roads and the Wagon Wheel Trail.

4. Current Use Rates

In preparing the Drat Management Plan, user counts were conducted at the main access points and trailheads to provide some idea of use rates. The following information on user counts and user estimates is taken from the Draft Management Plan.

One count was done on August 19, 1998 with counters located at all entrance points to the Preserves. Based on this count, as adjusted per the assumptions presented in Appendix G of the Draft Management Plan, it is estimated that on a high-use weekend day, the Preserves are used by approximately 200 people. As Table 8 shows, more hikers use the Preserves than bikers. Table 8 also indicates that almost two-thirds of the hikers enter and use the Cascade Canyon Bottomlands while bikers tend to enter the Preserves in the area near Wagon Wheel Trail. The table clearly shows that the northern part of the White Hill Preserve receives little use.

Table 8

User Count for Saturday, 8/19/98

Access Point	Time of Count	Hikers	Bikers	Dogs
Sherwood Forest	8:30-5:00	0	1	0
Bothin	8:30-5:00	1	0	0
N. end of Toyon Fire Road	9:00-8:30	7	4	10
East End of Wagon Wheel Trail	9:00-8:30	7	22	0
West End of Wagon Wheel (at B17 entrance and coming from White Hill)	9:00-8:30	4	10	0
East end of Cascade Fire Road	7:00-8:30	18	9	12
East end of High Water Trail	7:00-8:30	18	2	3
East end of Canyon Trail	8:30-8:30	26	2	17
Lower Toyon Fire Road (2 entrances)	8:00-8:30	5	3	6
Split Rock Trail	8:30-8:30	2	1	0
West end of Cascade Fire Road	8:30-8:30	2	7	1
San Anselmo Creek Trail	8:30-8:30	2	0	6
Walnut (Middle Rd. Cut Trail)	8:30-5:00	0	0	0
Carey Camp Loop/Happersberger as measured at bottom of trails	8:30-8:30	3	0	0
Total		**95**	**61**	**55**

Subsequent to the August, 1998 count, it was decided to conduct more counts at the access points that receive the most use. Thirteen additional counts were conducted, and the results are shown in Table 9. The number of users traveling each way at seven different locations are described. The count locations are described below.

- The east end of Cascade Fire Road. The counter at this location was able to count people entering and leaving the Preserve via this fire road.

- The east end of the High Water Trail. The counter near the east end of Cascade Fire Road was able to count people entering and leaving the Preserve via this trail.

- The east end of Canyon Trail. The counter near the east end of Cascade Fire Road was able to count people entering and leaving the Preserve via this trail.

- The east end of Wagon Wheel Trail. The counter at this location counted people traveling east and west on Wagon Wheel Trail, north and south on Blue Ridge Fire Road, and east on the Serpentine Trail which is a trail on Camp Tamarancho that extends east from near the east end of the Wagon Wheel Trail.

- The north end of Toyon Fire Road (at the Camp Tamarancho boundary line). This counter could observe people traveling north and south on Toyon Fire Road at the Camp Tamarancho line.

- The north end of Ridge Trail where it enters Camp Tamarancho. This trail does not provide a direct (or, recognized) access to the Preserves. Counts were made at this location to determine the use of this private trail.

Based on the counts and the assumptions described in detail in Appendix G of the Draft Management Plan, it is estimated that for the average day an average of 90 hikers and 56 bikers enter the Preserves. This is a total of 146 users per day. This estimate, which is likely a high estimate for the average day was used in subsequent comparisons with use rates at other parks.

The initial count done in August, 1998 showed that about 90% of users were using the trail and road system in the Cascade Canyon Bottomland or the Wagon Wheel trail area. Most of the remainder of the Preserves receives very light use. This conclusion was confirmed by EIR fieldworkers who spent over 300 hours on the Preserves. When walking roads and trails not near the Wagon Wheel Trail or in the Cascade Canyon Bottomland area, it was rare to see a hiker or biker.

A review of the data in Tables 8 and 9 indicates that over half the hiking trips on the Preserves involve trips on trails and the fire road in the Cascade Canyon Bottomlands. The following rates hiker use of trails and roads. This estimate is partly based on the counts and partly on field observations of use patterns;

Most Heavily Used

- Cascade Fire Road
- High Water Trail
- Canyon Trail
- Cascade Falls Trail
- Wagon Wheel Trail

Moderate Use

- Toyon Fire Road
- Middle Road Fire Road
- Creekside Fire Road
- Concrete Pipe Fire Road

- Cut Trail
- Middle Road Cut Trail
- Carey Camp Loop Trail
- Pam's Blue Ridge Trail
- White Hill Fire Road to the point it leaves the Preserve at the north end

Table 9

Table 9

Lightly Used

- Cul de Sac Trail
- Blue Ridge Fire Road west of Wagon Wheel Trail
- San Anselmo Creek Trail
- Split Rock Trail
- The non-recognized northern extension of the Cascade Falls trail

Very Lightly Used

- Burnt Tree Trail
- Happersberger Ridge Trail
- Martha McCormack Trail
- White Hill Fire Road, eastern section
- Cut Trail connector between Concrete Pipe Road and Carey Camp Loop Trail

Bicycle use tends to be concentrated on and near the Wagon Wheel Trail, due in part to this trail's connection with bicycle trails on Camp Tamarancho. The second highest bicycle use area is the Cascade Canyon Bottomlands. Other fire roads receive moderate to minor use. The eastern end of the White Hill Fire Road receives little use. There are some illegal use trails with Canyon Trail, High Water Trail, and Split Rock Trail receiving the most illegal bicycle use.

5. Perceptions of Use

During scoping and public meetings held during preparation of the Draft Management Plan and during a field trip on the Cascade Canyon Preserve, several people expressed their belief that the Preserves are being "overused." A review of the comments received indicate the following:

- The "overuse" appears confined to the Cascade Canyon Bottomlands. No one complained about "overuse" in more isolated portions of the Preserves.

- The "overuse" is perceived to result from an increase in bicycle use of the Cascade Canyon Bottomlands.

- Most people attending the meetings and field trip did not mention "overuse" as a problem. The problem was mentioned by six people. However, the Town of Fairfax in its response to the Notice of Preparation states that the Cascade Canyon area has "been seriously damaged in the last ten years by mountain bikers and overuse from all users."

B. Potential Impacts and Mitigation Measures

Criteria Used for Determining Impact Significance

A project will have a significant impact if it meets any of the following criteria:

3.9a Increases the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. *(Addressed in Impact 3.9-A)*

3.9b Includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. *(Addressed in Impact 3.9-A)*

3.9c Increases the need for additional parks which would result in new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives. *(The Initial Study concluded there would be no impact as regards this criterion.)*

Project Impacts

Impact 3.9-A Proposed improvements may increase use of the Preserves that may result in accelerated deterioration of the Preserves.

The specific impacts that would result from future increased use of the Preserves have been assessed in previous sections of this EIR. While a number of specific impacts were identified, mitigation measures were recommended for each potentially significant impact, and it was determined that the mitigation measures would reduce the impacts to a less than significant level.

While there will be an increase in the number of people using the Preserves, the increase will occur mainly in the northern portions of the Preserves. Little new use of the area south of Wagon Wheel Trail is predicted. On a peak day, it is predicted that there would be 30-54 new bicycle trips and a few new hiking trips through the Cascade Canyon Bottomlands. On an average day, there would be 6-11 new bicycle trips through the area. While these new trips will increase use of this area that some people find to be currently "overused," the impacts to environmental resources would not be significant. In fact, implementation of the Draft Management Plan-recommended actions and EIR mitigation measures will reduce impacts to environmental resources in the Bottomlands below those occurring under existing conditions. There will be less erosion than currently occurs. Additional trees will be planted. An area where vegetation has been removed at the west end of the High Water Trail will be replanted. Trails will be reduced in width. Future grading of Cascade Fire Road will be limited to the minimum feasible width. The impact to environmental resources in this area would be less than significant.

This is not to say that there will not be people who continue to perceive the Cascade Canyon Bottomlands as overused. In part, this is because of the extensive road and trail system through the canyon. In part, it is because this area does receive the heaviest use of the Preserves, and any increase in that use, however small, will be perceived as a further erosion of the sense of isolation. Due to past road and trail building and existing use patterns, a portion of the Cascade Canyon Bottomlands near the creek have been denuded of vegetation. Cascade Canyon Fire Road travels through the most visible part of the canyon, crossing the creek five time. There are parallel trails for much of its length on both sides of the road. These trails and roads receive relatively heavy use. Thus, the perception of "overuse." There is no question that this area is far from

pristine. Past actions, and past and current use have resulted in loss of native vegetation and erosion. However, this is the existing situation. This EIR identifies the new impacts that could result if the Draft Management Plan were adopted. It concludes that the impacts of that new use will be reduced to a less than significant level, and in many cases, that even some of the impacts of current use will be reduced. However, as explained earlier in this EIR, it is not the role of this EIR to assess the impacts of past actions and use nor to mitigate the impacts of those actions and use. The EIR does assess impacts from new use, and if impacts from that new use combine with impacts from existing use, then this EIR recommends mitigation measures to address the increment of the impact caused by the new use.

The Preserves as a whole are lightly used. As discussed above, it is estimated that average day use for the Preserves is 90 hikers, 56 bikers, and 1 or 2 equestrians. The new trails that would be constructed would increase the average day use to about 98-115 hikers, 86-136 bikers, and 2-6 equestrians. This would be an annual total of about 67,890-93,805 visitors per year. Given that the Preserves total 887 acres, this is a use rate of 77-106 visitors per acre per year. The Draft Management Plan contains visitor use rates for similar parks in the area. These rates are reproduced below.

Sonoma County Regional Parks (SCRP) has developed use estimates for a number of its parks. SCRP is currently preparing an *Outdoor Recreation Plan* for the entire County. As part of this Plan, SCRP has provided Countywide estimates of use rates of their various types of parks. These are presented below along with the amount of increased usage from 1990 to 1999 (from Sonoma County Regional Parks, 1999, Appendix 4).

- Regional Recreation Areas - Active (that is, these facilities include active recreational facilities including picnic areas, swimming, tennis, or other active uses). These parks are about 300 acres in size or smaller. Use of these parks increased from 1,380 visitors per acre per year to 1,615 visitors per acre per year.

- Regional Open Space Parks - Passive (that is these parks include trails and allow picnicking, but do not include any active recreational facilities). These parks are 300 acres in size or larger. SCRP estimates that use of this type of park increased from 225 visitors per acre per year to 291 visitors per acre per year. From 1988/89 to 1996/97, increase in use on this type of parks was 29%.

In addition to the data SCRP provides in its *Draft Outdoor Recreation Plan*, SCRP provided use estimates for several regional parks in a report prepared in 1994 (SCRP, 1994). The estimates for the four regional parks are presented below.

- Foothill Regional Park. This is a 211-acre regional park adjacent to a residential neighborhood in Windsor. It contains trails and roads open to all user groups, but does not contain picnic facilities or recreational facilities. This park is similar to the Preserves in that it is adjacent to residential development; however, it does not contain rugged terrain and wildlands similar to the Preserves. SCRP estimated 1990/1991 use rates at 96,247 people per year. Adjusting this rate by 30% to reflect SCRP's estimated increase in use, current use would approximate 125,121 people per year or 343 people per day or 593 visitors per acre per year.

- Shiloh Ranch Regional Park. This 845-acre park is located in the foothills south and east of Windsor. The park is a regional open space park without recreational

equipment or play fields. There are trails available for all user groups and a small picnic area. The park is not near a neighborhood and most users must drive several miles to access the park. The park is similar to the Preserves in terms of size and wildland quality, but is not near residential development. SCRP estimated 1990/1991 use at 46,310 people per year. Adjusting this figure by 30% equals a current use rate of 60,203 people per year or 165 people per day or 71 visitors per acre per year.

- Helen Putnam Regional Park. This is a 216-acre park located southwest of the City of Petaluma. The park is in rolling hills. One must drive several miles to access the park as it is not near any neighborhoods. SCRP estimated the 1990/1991 use rate at 80,686; adjusted, the current use rate is estimated to be 104,892 people or 287 people per day or 486 visitors per acre per year.

Comparing the estimated use rates of Cascade Canyon and White Hill Preserves with these various Sonoma County Regional Parks shows that the use rates are substantially lower than the SCRP-estimated user rates for Passive Regional Open Space Parks, despite the fact that most of the larger parks that have facilities similar to the Preserves are considerably more distant from population centers. However, the higher use rates in Sonoma County parks are partially a reflection of a larger population and the scarcity of public lands in that county as compared to Marin County.

The future use rates of the Preserves (77-106 visitors per acre per year) is at the bottom of the range of the more distant passive regional parks described above (71 to 593 visitors per acre per year) and about 26-36% of the average use rate for such parks (291 visitors per acre per year).

Despite the fact that use rates of the Preserves are low when compared to similar parks in Sonoma County, there will likely remain those who believe the Preserves, at least the Cascade Canyon Bottomlands, to be "overused." Again, there is no evidence that new use will cause any significant environmental impacts. If MCOSD concurs with those who believe that there are too many people using the Cascade Canyon Bottomlands, regardless of whether new users would cause any significant environmental impacts, then MCOSD could address this problem by closing that area to one or more user groups. However, this would be a policy decision and is not required for this project. Also, see the subsequent analysis of Project Alternative 6 which includes closing this area to bicyclists.

The Town of Fairfax in the letter it submitted on the Notice of Preparation states that the Elliott Nature Preserve and Cascade Canyon have been overused resulting in serious damage to the Preserves due to mountain bikers and overuse from all users. That letter lists 6 "demands" and an additional 7 recommendations for future management. Each of these demands and recommendations is discussed below.

- The Town wants the Split Rock Trail permanently closed and restored. No use of that trail should be allowed.

  Response. The Draft Management Plan recommends that this trail be designated a recognized trail and that it be reconstructed to address erosion problems. It is recognized that this trail was illegally constructed in the past. However, from an environmental perspective, this trail has fewer environmental impacts than the alternate trail to the Inkwells (a popular hiking destination). The Draft Management

Plan recommends closure of the alternative trail which parallels Cascade Creek. Closure of the Cascade Creek Trail and fixing erosion problems on the Split Rock Trail are the most environmentally sound way of dealing with this situation. Both trails could be closed, but such official closure would likely be ineffective given the popularity of the Inkwells destination. However, the Draft Management Plan provides the option to close Split Rock Trail and restore it as requested, and, instead, address erosion problems on the Cascade Creek Trail. MCOSD staff has indicated that they prefer repairing the Cascade Creek Trail and closing the Split Rock Trail and will likely make this recommendation to the Marin County Parks, Open Space and Cultural Commission.

When preparing this EIR, the EIR authors requested that the EIR engineering geologist revisit the issue of which of these two trails was best from a geologic and erosion perspective. Mr. Dwyer corroborated the recommendations of the Draft Management Plan that the use of an improved Split Rock Trail would be environmentally superior to the use of trail paralleling Cascade Creek (see letter in Appendix D).

- Restore Canyon Trail to a maximum width of 18 inches and restore wildflowers along its length.

  Response. The widening of this trail is an existing situation that is not predicted to increase with adoption of the Draft Management Plan. The Draft Management Plan recommends reducing the width of trails in this area as requested by the Town (see page 23 of the Plan). The Draft Management Plan also recommends either natural restoration or replanting of abandoned trail sections. The Draft Management Plan is consistent with this Town request.

- Restore the meadow so that the High Water Trail is 18 inches or less and Cascade Fire Road is a maximum of 6 feet in width.

  Response. The Draft Management Plan calls for reducing the width of both this trail and fire road (see page 23 of the Plan). The Plan does not specify the road width as this must be determined by MCOSD staff. The road needs to be sufficiently wide to handle large emergency vehicles. As such, it may be that the road would need to be 8 feet wide rather than the requested 6 feet.

- Restore native plants at the first, second, and fourth Cascade Fire Road crossings of the creek.

  Response. The Draft Management Plan calls for planting additional trees between the first and fourth crossings, replanting of native plants at the fourth crossing, and replanting of native vegetation where the road and trails are reduced in width (pages 22-23 of the Draft Management Plan). These recommendations appear consistent with the Town's request, though it is unclear what area the Town is referring to at the second crossing.

- Restore Cascade Fire Road to a maximum width of six feet throughout its length.

  Response. See above. The road will be reduced, but 6 feet may be insufficient to allow emergency vehicle access.

- Prevent erosion and siltation with particular attention to three locations.

  Response. The Draft Management Plan contains a full range of erosion control actions in the Cascade Canyon Bottomlands area, including the three areas identified by the Town.

- Trees should not be cut.

  Response. Trees would be cut only to construct new trail and road alignments. The alignments of these trails and the one road realignment would be selected to minimize tree cutting, and all trees over 9 inches DBH will be retained. It is likely that trees over 6 inches DBH would be preserved. The previous analysis of impacts to biological resources concluded that the loss of a small number of smaller trees would not have a significant environmental impact. However, some trees would be cut, though none of these trees would be cut on the Elliott Nature Preserve or in the Cascade Canyon Bottomlands.

- Do not build any bridges.

  Response. The Draft Management Plan does not recommend building any bridges in the Cascade Canyon Bottomlands.

- No bicycle riding should be allowed except on fire roads.

  Response. No bicycle riding on trails is proposed on the Cascade Canyon Preserve, except for continuing to allow bicycles on Wagon Wheel Trail. This is an existing use.

- Illegal bicycle riding on trails should be seriously penalized.

  Response. The Draft Management Plan calls for additional enforcement of illegal bicycle riding (see pages 89-90).

- The Plan should not include any new public access paper easements to the Preserve from either Cascade Drive or Canyon Road, and no new trails should be connected to Ridge Trail.

  Response. The Draft Management Plan is consistent with these requests. No new accesses to the Preserves from Cascade Drive, Canyon Road, or the Ridge Trail are proposed.

- No parking lot should be constructed on SFD near the top of White Hill as use of this facility would bring large numbers of people to Cascade Canyon.

  Response. See the previous Traffic section for a lengthy discussion of this parking facility. Such a facility is not included in the Draft Management Plan. There is a substantial amount of existing parking in this area, and no improvements are needed.

It is also noted that the use predictions developed for this EIR indicate that while some additional use of the Cascade Canyon Bottomlands would occur if the new connector trail from SFD is constructed, the new use is not expected to be substantial.

- Broom should be eradicated within five years.

  Response. The Draft Management Plan calls for limiting the spread of broom and eradicating existing populations. However, it is unlikely that the many large populations will be eradicated within five years. Removal of this pest will be a long-term process, depending on the resources available to the District.

To summarize, the Draft Management Plan is basically consistent with the recommendations of the Town of Fairfax with the exceptions that the Town wants Split Rock Trail closed and restored (though the District does have the option of selecting this recommendation), Cascade Fire Road reduced to 6 feet in width (which may not be feasible to allow emergency vehicle access), no parking at the top of White Hill (this parking already exists), and eradication of broom within five years (an unrealistic goal given District resources). It appears that the Draft Management Plan would go a long way towards restoring the Cascade Canyon Bottomlands in the way indicated by the Town. It also appears that given that restoration, the potential increase in the number of users would not cause any additional destruction of habitat in this area. However, if the Town concludes that the actions recommended in the Plan are insufficient or harmful to the Elliott Nature Preserve, MCOSD has stated they would be willing to discuss returning that 38 acres to the Town's ownership and management.

To conclude, given the mitigation measures recommended for previous impacts, the project will not cause new substantial physical deterioration of the Preserves nor require the construction of new recreational facilities that would have an adverse physical impact on the environment. The impact of adopting the Draft Management Plan is <u>less than significant</u> with the implementation of mitigation measures recommended in this EIR for specific impacts.

3.10 LAND USE AND PLANNING

A. Setting

All but 38 acres of the Preserves are unincorporated lands within the jurisdiction of the County of Marin. The Elliott Nature Preserve (a part of the Cascade Canyon Preserve) is within the Town limits of the Town of Fairfax. While this 38 acres is within the Town's jurisdiction, because MCOSD owns the land and is responsible for managing the land, actual jurisdiction of land use is the responsibility of the County. Thus, the Fairfax General Plan does not apply to the property (see Lawler v. City of Redding [1992] Cal.App.4th 778).

However, the Town does have certain rights regarding the Elliott Nature Preserve since when it deeded this property to MCOSD, the transfer agreement included the following provisions:

- The property will revert back to the Town of Fairfax if MCOSD should seek to sell, trade, or exchange the property or if MCOSD seeks to construct a parking facility on the Preserve.

- No permanent improvements will be made to the property without the written consent of the Town.

B. Potential Impacts and Mitigation Measures

Criteria Used For Determining Impact Significance

A project will typically have a significant impact if it meets any of the following criteria:

3.10a Physically divides an established community. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10b Conflicts with any applicable land use plan policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. *(Assessed in Impact 3.10-A.)*

3.10c Conflicts with any applicable habitat conservation plan or natural community conservation plan. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10d Converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10e Conflicts with existing zoning for agricultural use or a Williamson Act contract. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10f Involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10g Displaces substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere. *(The Initial Study concluded there would be no impact as regards this criterion.)*

3.10h Displaces substantial numbers of people, necessitating the construction of replacement housing elsewhere. *(The Initial Study concluded there would be no impact as regards this criterion.)*

Project Impacts

The Initial Study concluded that there would be no impact per any of the Significance Criteria. However, to ensure full CEQA compliance, this EIR re-examines the potential impact of consistency with applicable land use plan policies (Significance Criterion 3.10b).

Impact 3.10-A The project could be inconsistent with policies of the Fairfax General Plan and/or the Marin Countywide Plan.

The following section discusses potential consistency issues with the General Plans of Marin County and the Town of Fairfax, even though the Town of Fairfax does not have jurisdiction over the Preserves.

It is noted at the outset of this discussion that inconsistencies with general plans are not an environmental impact. A general plan is not part of the physical environment. As such, an inconsistency with a plan is not, in and of itself, an environmental effect. However, inconsistencies can point to possible significant environmental impacts since it is assumed that the general plans aim to protect natural and social resources. If a project is inconsistent with certain policies or programs, then it may point the EIR preparers to more closely assess whether the project does, in fact, have a significant impact on the resources that the policy or program is intended to preserve or protect.

The Marin Countywide Plan

Environmental Quality Element

This element is intended to protect and preserve the County's natural resources including soils, vegetation, wildlife, streams, wetlands, riparian habitat, air, and other resources. It also guides development to ensure adequate amounts of open space and recreational opportunities.

The project is consistent with all policies aimed at protecting Stream and Creekside Conservation Areas. Proposed erosion control actions and vegetation projects along San Anselmo Creek will improve the Stream Conservation Area, consistent with Policy

EQ-2.24 and Policy EQ-2.26. Water quality in the perennial streams will be improved over the existing situation, consistent with Policies EQ-2.27 and EQ-2.31. Implementation of the Draft Management Plan will expand the area available for wildlife use, consistent with Policy EQ-2.42. Special Status Species will be protected by retaining large areas through which trails and roads will not pass and by avoiding nests and other habitat needed for these species, consistent with Policy EQ-2.88.

The project maintains open space and recreational opportunities, consistent with all policies listed under Objective EQ-4. The construction of the two new trails at the north end of the White Hill Preserve are consistent with the recommendations of the Countywide Trail Plan and Policy EQ-4.2. A review of all policies and programs in this element indicates that the project is not inconsistent with any of its policies or programs.

Community Development Element

This element guides future development to ensure that it fits harmoniously with the natural and built environments. The Preserves are designated Open Space, and their use as open space preserves is consistent with this designation.

Transportation Element

This Element aims to coordinate land use with an efficient transportation system. The Plan is not inconsistent with any policies or programs of this Element.

Housing Element

This Element aims to provide sufficient housing opportunities for future residents of the county. The Draft Management Plan is not inconsistent with any of the policies or programs of this Element.

Noise Element

This Element aims to ensure that residents are not exposed to excessive noise. The project will not generate substantial noise and is not inconsistent with any of the policies or programs of this Element.

Environmental Hazards Element

This Element aims to protect residents from environmental hazards. The Draft Management Plan includes recommended actions to reduce the fire hazard in the area. These recommended actions are consistent with Policy EH-11.4 calling for construction of fuel breaks and emergency access routes and Policy EH-11.6 calling for reduction of hazardous vegetation. The Draft Management Plan is not inconsistent with other policies and programs of this Element.

Agriculture Element

This Element aims to protect agriculture in the County. The project site is not designated agriculture nor does it contain agricultural soils. The Draft Management Plan is not inconsistent with policies and programs of this Element.

Community Facilities Element

This Element aims to ensure that adequate community services and infrastructure are available to serve the County's population. The Draft Management Plan is not inconsistent with policies and programs of this Element.

Parks and Recreation Element

This Element aims to ensure the County's population is provided with sufficient parks and recreational opportunities. Because the two Preserves are parks, they meet the basic aims of this Element.

Trails Element

This Element aims to provide the County's population with sufficient trail resources. The two proposed multi-use trails at the north end of the White Hill Preserve are both shown as proposed trails on the Countywide Trails Plan Map, and both are shown as "combined use." The Draft Management Plan is consistent with these designations. Policy TR-3.3 states that trail design should ensure safety for all user groups. The Draft Management Plan plus this EIR require new trail construction to be done in such a fashion as to reduce safety impacts to users of these trails.

Summary

The Draft Management Plan is consistent with the goals, objectives, policies, and programs of *The Marin Countywide Plan*.

Fairfax General Plan

While the Fairfax General Plan does not apply to the Preserves, the following discussion is provided to ensure full disclosure.

Open Space Element

This Element requires protection of wildlife habitat. ridgelines, stream courses, public open space, and other elements of the natural environment. Policy 2.1 includes a recommendation that the intensity of recreational use allowed on public lands should be determined in light of the requirements of wildlife for natural habitats. The Elliott Nature Preserve is currently relatively heavily used and is not considered prime wildlife habitat. The Draft Management Plan will not substantially increase use of the Preserves and will provide more protected wildlife habitat than currently exists. The Draft Management Plan appears consistent with the recommendation, but existing uses of the Preserve could be seen as partly inconsistent with this recommendation.

Recommendations under Policy 3.5 (*Preserve public open space.*) state that development on public open space lands should "be considerate of the natural characteristics and open space value of the site." Because this recommendation is vague, it is not possible to state whether recommended actions in the Draft Management Plan are "considerate" or not. The preparers of the EIR believe the Draft Management Plan is consistent with this recommendation, but the Town could find the project partly inconsistent with this recommendation.

Other Elements

A review of the policies of the other elements of the Town's General Plan indicates that the project is consistent with other goals and policies.

Conclusions

The Draft Management Plan is consistent with the goals, objectives, and policies of *The Marin Countywide Plan*. The Draft Plan also appears consistent with the goals and policies of the *Fairfax General Plan*. There is no apparent inconsistency with either plan that would require amending the General Plans in order to adopt the Draft Management Plan.

3.11 OTHER FACTORS

The appended Initial Study describes how the project would have no or less than significant impacts in the areas of air quality, cultural resources, hazards and hazardous materials, noise, and population and housing. The reader is referred to that Initial Study for a discussion of these environmental resources and the rationale used to determine the lack of impact significance.

4.0 TOPICAL ISSUES AND IMPACT SUMMARIES CHAPTER

4.1 GROWTH-INDUCING IMPACTS

CEQA mandates that an EIR assess potential growth-inducing impacts of a project. The *CEQA Guidelines* describe the required assessment in the following way:

> *Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment (CEQA Guidelines, Section 15126.2(d)).*

Growth-inducing impacts usually occur when a project will provide new infrastructure or public services that can be used to serve other projects. The analysis should be balanced with the general rule that EIRs should evaluate foreseeable, but not speculative, impacts. Note that the assessment of growth-inducing impacts is not the same assessment that is required for cumulative impacts (which are assessed in Section 4.2). Growth-inducing impacts refer to impacts that might arise from the project if it were approved while cumulative impacts are the impacts resulting from the project plus other projects that have been specifically approved or proposed.

The proposed project is a management plan to guide future development of the two Preserves. The plan does not extend any public infrastructure nor roads serving undeveloped properties. It will not induce new development in the area and will have no significant growth-inducing impact.

4.2 CUMULATIVE IMPACTS

"Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects (*CEQA Guidelines*, Section 15355[a]).

The "probable future" projects to be included in the assessment include 1) projects with applications received at the time the NOP was prepared for this project, 2) projects included within an adopted capital improvements plan, general plan, regional

transportation plan, or other similar plans, 3) projects included in a summary of projected projects (or development areas designated) in a general plan or similar plan, 4) projects anticipated as a later phase of a previously approved project, and 5) public projects for which money has been budgeted (*CEQA Guidelines* Section 15130[b][1][B][2]).

As discussed in greater detail in Section 1.7, there are four projects that have been identified as possibly combining with the proposed project to generate cumulative impacts. These are construction of an additional 15 homes on the French Ranch development, construction of the bridge project on Sir Francis Drake Boulevard, approval of the Grading Permit for the trail system on Camp Tamarancho, and MMWD's Watershed Road and Trail Management Plan.

The MMWD Watershed Road and Trail Management Plan has been adopted. That Plan identifies erosion sources on MMWD's road and trail system and develops measures to reduce that erosion. Some of this work would occur within the watershed on San Anselmo Creek. The future control of erosion on roads and trails contributing sediment to San Anselmo Creek and its tributaries would be a beneficial cumulative impact. When combined with the recommended erosion control measures on the Preserves, there would be less sediment reaching that creek than is currently the case. The two projects together would have a beneficial cumulative impact as regards erosion and stream sedimentation.

The Grading Permit for the Camp Tamarancho trail system, if approved, would simply allow continued use of the existing trail system. It would not create any new impacts that do not already exist.

French Ranch is located several miles to the west of the Preserves. Site-specific impacts of that development would not combine with impacts of the project to create any new significant cumulative impacts. Residents of French Ranch would use Sir Francis Drake Boulevard for access. The project would add approximately a daily average of 150 daily trips to SFD, of which approximately 125 would travel west on SFD as far as Fairfax. The proposed Draft Management Plan would add an average 10-33 trips per day to SFD (figuring 1.5 visitors per vehicle). Together, these projects would increase volumes on SFD (west of Fairfax) by about 1.3%. Of this new traffic, approximately 83% would be generated by the already-approved French Ranch project. The Draft Management Plan would increase traffic on SFD by a maximum of 0.03%. This is an insignificant increase; it is about the number of trips that would be added by one to three single-family residences. This conclusion is consistent with the findings of the Initial Study which concluded that the project, individually or cumulatively, would not have a significant traffic impact.

The bridge project on Sir Francis Drake Boulevard is completed. The road grading that was done on the White Hill Preserve to install and subsequently remove power poles was covered with straw to control erosion. However, at the time this Draft EIR was written (October 2003), much of this straw had blown off the graded areas. It is likely that some erosion of soils that were disturbed during this construction will be washed off the site and potentially enter Fairfax Creek. The new connector trail will likely follow the same route that was used to develop this access road. Thus, the predicted erosion along this section of the trail will now happen whether or not the trail is constructed (since the disturbance is currently in place). This disturbed area is larger than will occur if a trail is constructed along this route. Thus, the existing disturbed area could combine

with the proposed trail project to generate more erosion and sedimentation than predicted for the project itself.

As part of that trail construction, MCOSD has stated that any previously graded area that is outside the actual trail (i.e., graded area up and downhill of the trail route) will be further stabilized and restored to control erosion if the earlier restoration efforts done by the County are deemed inadequate for long-term erosion control along the trail. To ensure there is no new significant cumulative impact as regards sedimentation and water quality, the County's stated intention is hereby formalized as a mitigation measure, namely:

CI.1 When the connector trail between Sir Francis Drake Boulevard and the end of Sherwood Forest Fire Road is constructed, and if that trail is constructed within the area previously graded as part of the Sir Francis Drake Boulevard bridge project, the applicant will restore any graded area not previously stabilized by additional grading, placement of straw or netting, and/or seeding and planting.

To conclude, the project plus the other four projects will not have any significant cumulative impacts with the addition of the one mitigation measure listed above.

4.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES OF THE PROJECT AS PROPOSED

The use of nonrenewable resources including diesel fuel, gasoline and other energy source and wood and other materials to construct various improvements recommended in the Draft Management Plan would be irreversible since a large commitment of such resources makes removal or non-use thereafter unlikely. However, the use of energy and materials is relatively minor and would not be considered significant.

Construction of the two new trails at the north end of the White Hill Preserve commits MCOSD to increased usage of other trails and roads on the Preserves as well as other Preserves and public lands in the area. However, as described in Chapter 3.0 of this EIR, the construction and use of those trails would not have significant impacts so long as mitigation measures recommended in this EIR are implemented.

4.4 PROJECT ALTERNATIVES

CEQA requires that the EIR assess alternatives to the project if the project will have significant environmental impacts, even if these impacts can be mitigated to a level that is less than significant. As noted in Chapter 3.0 of this EIR, the project will have a number of significant impacts. As such, this EIR assesses alternatives to the project.

The *CEQA Guidelines* offer a number of requirements and recommendations regarding the alternatives' analysis. The more pertinent issues are summarized below.

1. A range of reasonable alternatives must be assessed. The range must be sufficient to permit a reasonable choice of alternatives so far as environmental aspects are concerned. The EIR need not assess multiple variations of alternatives. The range of alternatives to be assessed is governed by a rule of reason.

2. Alternatives must be ones that could feasibly attain most of the basic objectives of the proposed project. While alternatives can impede the attainment of the objectives, they should not substantially impede those objectives. Alternatives that fundamentally change the nature of the project do not meet the basic objectives of the project.

3. The alternative must be feasible. Feasibility takes into account factors such as site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans and regulatory limitations, jurisdictional boundaries, and ability to acquire, control, or access alternative sites.

4. The analysis of the alternative must determine whether it reduces the significant impacts identified for the project. If the alternative would generate additional significant impacts, those must be identified and discussed.

The EIR must assess the identified alternatives and determine which among the alternatives (including the project as proposed) is the environmentally superior alternative. One of the alternatives to be assessed is the "no project" alternative (see discussion below under that heading). If the no project alternative is identified as the environmentally superior alternative, then another of the alternatives shall be identified as the environmentally superior alternative of the remaining alternatives.

Potential environmental impacts for each alternative are provided in comparison to the proposed project. The advantages and disadvantages of each alternative, compared to the proposed project, are presented. Any significant environmental impacts created exclusively be an alternative are also identified. Table 10 presents a summary of the project alternatives analyzed and their environmental advantages and disadvantages.

Given these mandates, this EIR assesses the following alternatives:

1. No project - no new development
2. No project - future development under existing plans
3. Cascade Canyon Bottomlands bridges
4. No new trail development
5. Construct new trails for hikers and equestrians only
6. Cascade Canyon Bottomlands use restrictions
7. Eliminate prescribed burning
8. The Draft Management Plan plus EIR-recommended mitigation measures

1. Alternative 1 - No Project, No Development

Under this alternative, no actions recommended in the Draft Management Plan would occur. MCOSD would continue to manage the Preserves under their existing policies, and the public would continue to use the Preserves. As this alternative assumes no future projects on the Preserves, it is a baseline against which to measure the other alternatives. This alternative would have the following impacts as compared to the Draft Management Plan.

a. Geology and Soils

Existing erosion would continue. There would be increased sedimentation of streams adversely affecting water quality. There would be more erosion and sedimentation than would occur under the Draft Management Plan.

b. Hydrology

There would be no new road and trail construction, and, thus, no need to install crossings of ephemeral stream channels. There would be no increase in runoff from the Preserves. However, neither of these two impacts are significant given EIR-recommended mitigation measures. There would be increased sedimentation of streams since no erosion control actions would be implemented. There would be more impacts to water quality than would occur under the Draft Management Plan.

c. Vegetation

As no new trails or roads would be constructed, there would be no loss of vegetation. Broom and other non-native plants would not be removed. There would be no restoration of disturbed areas. Trails would not be closed, so vegetation would not recover in those areas. No vegetation would be displaced by construction of fuel reduction zones or through cutting and pile burning.

d. Wildlife

There would be no new impacts to wildlife. However, there would continue to be impacts from dogs on wildlife, especially in the Cascade Canyon Preserve. No new Sensitive Wildlife Areas would be established. Steelhead would continue to be affected by water quality impacts from erosion sources. Steelhead studies and monitoring would not occur.

e. Fire

There would be no reduction in fire hazard. A future wildfire could burn many of the resources on the Preserves as well as nearby residences and private property.

f. Recreation

There would be no new recreational opportunities open to the public. There would be no increased patrolling and enforcement, so current illegal uses might continue. No new signs to educate and warn people of illegal or undesirable actions would be installed.

g. Traffic

There would be no increase to traffic volumes or the need for parking along SFD. Existing user conflicts and accident potential on roads and trails would remain.

h. Aesthetics

There would be no changes in the viewshed.

i. Public Services

The demand for ranger response would remain essentially similar to the existing situation.

j. Land Use

There would be no change to land use. MCOSD would not have a blueprint for future management of the Preserves.

k. Summary

This alternative is not the environmentally superior alternative because existing problems of soil erosion, with consequent impacts on water quality and steelhead, would remain unaddressed. Wildlife would continue to be impacted by uncontrolled dogs and a too extensive trail system. The critical fire hazard on the Preserves would remain unaddressed. While none of the potentially significant impacts of the proposed Draft Plan would occur, none of the existing problems on the Preserves would be addressed. The alternative would be inconsistent with the objectives of the project to preserve and enhance natural resources, reduce the threat of wildfire, and enhance recreational opportunities (consistent with resource protection). The alternative is also inconsistent with the objective of developing a trail system connecting SFD to White Hill Fire Road.

2. Alternative 2 - No Project, Future Development Under Existing Plans

CEQA requires that the discussion of the No Project alternative also address what future impacts would occur with future development consistent with applicable land use plans and the availability of public services. In this case, this alternative assumes continued management of the Preserves consistent with general MCOSD policies and with a Settlement Agreement reached in 1999 between the County, MCOSD, and two local residents ("the petitioners"). This Settlement Agreement contains the following provisions:

- An environmental stewardship group was formed consisting of, but not limited to, representatives of the Cascade Canyon neighborhood, the public, the California Native Plant Society, the Marin Bicycle Trails Council, MCOSD, and MMWD. This group remains in effect until a Land Management Plan is approved for the Preserve and certain other enforcement provisions are in place. This group has the authority to prepare an annual, specific list of areas in the Preserve requiring "priority attention" (such as restoration measures, trail closures, or other measures to restore

and enhance the Preserve). The Group may also review other land management issues such as fire hazard reduction and restoration of native plants.

- The District's General Manager must determine which of these recommended actions will be implemented and so recommend to the District Board. If the District has inadequate funds to implement the priority list of actions, then the District may consider closure of the Wagon Wheel Trail or any other trail found to be environmentally degraded or a threat to public safety until such time as funds are available for priority list actions.

- The District shall continue to enforce prohibitions on riding bicycles except on designated roads and trails. The Settlement Agreement specifies certain monitoring and reporting requirements regarding these enforcement actions.

Under this alternative, this stewardship group would retain its ability to prepare an annual list of priority actions for the year. For this alternative, it will be assumed that the following actions may occur:

- Correction of erosion problems as time and materials become available.
- Continuing patrolling of trails and roads to address hazards.
- Continuing patrolling to educate and/or cite illegal dog and bicycle uses.
- Possible construction of fuel reduction zones.
- Possible actions, including volunteer labor, to restore damaged areas and/or remove broom.

It would not include new trail or road construction, new restrictions on dogs, chaparral cutting or pile burning, or other specific actions included in the Draft Management Plan. As noted above, some actions would be implemented, but only as time and materials are available.

This alternative would have the following impacts as compared to the Draft Management Plan.

a. Geology

There would be no increase in usage other than a possible incremental increase from the Preserves becoming better known to the local population and the increase in the regional population. There would be no substantial increased usage of trails and roads, and, thus, no increased erosion above existing rates. While MCOSD may address existing erosion problems, it is expected that this restoration will be considerably slower without an adopted management plan, based on observations of the amount of erosion control work done over the past three years. It is likely that there will be more erosion and sedimentation of streams under this alternative than under the Draft Management Plan. While the Draft Management Plan does increase usage, it calls for specific erosion control measures that must be implemented prior to opening new trails and roads. Thus, there will be less erosion and sedimentation occurring under the Draft Management Plan even after new trails and roads are opened. The trail and road closures recommended in the Draft Management Plan and this EIR will also likely happen sooner under the Draft Plan. Over the long term, it is possible that this alternative would result in less erosion and sedimentation, assuming that MCOSD

implements all the erosion control recommendations included in this Draft Management Plan and EIR. However, it could take many years for this to happen.

There would be no chaparral cutting or pile burning under this alternative. This would eliminate the erosion and sedimentation impacts resulting from chaparral treatment.

b. Hydrology

There would a small decrease in new runoff, but this impact is not significant in any case. The sedimentation and water quality impacts could be reduced over the long term as described above.

c. Vegetation

There would be no loss of vegetation from new trail and road construction. There would be no loss of vegetation or special status species of plants from chaparral cutting and pile burning. The alternative would likely not significantly reduce broom and other nonnative plant populations. While broom removal may occur under this alternative, it is likely to occur quite slowly, given what work has been done over the past three years. It is also less likely that disturbed areas would be restored. Trails recommended for closure would not be signed and patrolled. Thus, it is less likely that native vegetation would recover in those areas.

d. Wildlife

There would be no direct loss of wildlife habitat from new trail and road construction or chaparral cutting and pile burning. There would not be as strict controls on dogs. Trail closures and the creation of new Sensitive Wildlife Areas would not occur. Steelhead studies and monitoring would not occur.

e. Fire

The alternative would eliminate cutting and pile burning of chaparral. This would make it less likely that a wildfire could be suppressed. Future wildfires would be larger and more intense and consequently affect more resources on and off the Preserves.

f. Traffic

The alternative would not attract new users to the degree the Draft Management Plan would. There would not be large numbers of new users traveling on SFD nor seeking to park near the top of White Hill.

There would be fewer new users on trails and roads, thereby reducing the chance of accident and user conflicts. This alternative would not require the patrolling and monitoring of bike use recommended in the Draft Management Plan. The EIR allows MCOSD to close trails to bicycle use if accidents or illegal speeding persist. It is not known whether MCOSD would conduct such additional patrolling and monitoring if the Draft Management Plan were not adopted.

g. Recreation

The alternative would not expand recreational opportunities on the Preserves nor provide a public access route from Preserves to the east and public lands to the west. Use rates of the Preserves would remain low.

h. Aesthetics

The alternative would eliminate the visual impacts resulting from chaparral cutting and pile burning. On the other hand, a large wildfire would be more likely in the future, and such a fire would have substantial visual impacts.

i. Public Services

The alternative would not increase the demand for ranger patrolling, monitoring, and response. Rangers would continue to patrol and respond to calls for service at their current level.

j. Land Use

The alternative would be consistent with the Town of Fairfax's General Plan and the Town's desires that additional users not be attracted to the Cascade Canyon Bottomlands. However, this is not an environmental impact since the Fairfax General Plan does not apply to the Preserves.

k. Summary

This alternative is not environmentally superior to the Draft Management Plan because it does not ensure that existing erosion impacts and fire hazard are addressed in a timely manner. In addition, the alternative is inconsistent with the objectives of the project to preserve and enhance natural resources and enhance recreational opportunities (consistent with resource protection), and partially inconsistent with the objective of reducing the fire hazard. The alternative is also inconsistent with the objective of developing a trail system connecting SFD to White Hill Fire Road.

This alternative would eliminate the direct environmental impacts associated with new trail and road construction as well as chaparral cutting and pile burning. The alternative will not substantially increase use so there will be less chance of accident and user conflicts and less new traffic. Many of the beneficial actions of the Draft Management Plan either will not occur or occur more slowly. The recreational opportunities of the Preserves as well as adjacent public lands will be restricted. As objectives of MCOSD include reduction of fire hazard and to provide a public access connection across White Hill Preserve, this alternative does not meet all the objectives of the Plan.

If the project were denied and another alternative identified in this EIR were not adopted, this alternative would govern future use and management of the Preserves. Any future erosion control projects would comply with the mitigation measures set forth in this EIR. Any future construction of fuel reduction zones would also comply with the mitigations set forth in this EIR. Removal of broom and continued patrolling would not require mitigation

3. Alternative 3 - Cascade Canyon Bottomlands Bridges

The Draft Management Plan identified a number of alternatives for future access through the Cascade Canyon Bottomlands. These alternatives were not recommended due to a number of potential impacts as well as the fact that the public did not favor any of the alternatives. However, MCOSD staff requested that one of the alternatives be assessed in this EIR. That alternative includes the following elements (as shown on Figure 12):

- Construct pedestrian/bicycle bridges across the first and fourth crossings. The two bridges would be at least 36 feet in length; the bridge at the first crossing may need to be 80 feet long (i.e., two 40-foot sections to avoid one end being within the floodplain).

- Reroute Cascade Fire Road between the first and fourth crossing as shown on Figure 12. The road would be routed to the south and cross Carey Camp Creek at the location of the existing footbridge. This road relocation would eliminate two of the stream crossings. The existing bridge over Carey Camp Creek would be enlarged to carry motor vehicles.

- High Water Trail would not be needed and could be closed and revegetated.

- All other actions recommended in the Draft Management Plan would be included in this alternative.

This alternative would provide access for all users through the Cascade Canyon Bottomlands without the need to travel through the creek. This should eliminate or significantly reduce illegal trail use by bicyclists in the area. Other than the elements listed above, all other parts of the Draft Management Plan would be included in this alternative. This alternative would have the following impacts as compared to the Draft Management Plan.

a. Geology and Spoils

Once the bridges and road realignment were constructed, there would be no traffic through the creek. This would reduce erosion and turbidity in the stream. Closure and restoration of the High Water Trail would further reduce erosion and sedimentation. However, construction of the new road would generate new erosion, and placement of the bridges would result in potential erosion. Given mitigation measures included in the Draft Management Plan and this EIR, future erosion and sedimentation in the Cascade Canyon Bottomlands would be reduced to a less than significant level. However, this alternative would reduce long-term erosion to a greater degree.

b. Hydrology

The alternative would reduce impacts to water quality by reducing erosion and reducing trips through the streams when there is water present, thereby decreasing turbidity caused by vehicles. Bridges would need to be free-span bridges to avoid filling of the stream channel. The bridges could impede flood flows in the creek and would need to be designed and constructed to not cause additional downstream flooding.

c. Vegetation

This alternative would require removal of a few small trees, some shrubs, and some grasses and herbs for constructing the new road alignment. Some vegetation along the streambanks may need to be removed to install the bridges. There would be more impact to vegetation than under the Draft Management Plan, though the impact is not expected to be significant, and no sensitive vegetation species would be affected.

d. Wildlife

The alternative would improve water quality and thus benefit steelhead. Otherwise, the alternative would have approximately the same impacts as the Draft Management Plan.

e. Fire

This alternative would have impacts similar to the Draft Management Plan as regards fire hazard reduction.

f. Traffic

The alternative would facilitate the movement of people through the area. It is possible that the presence of bridges would attract additional bicyclists though the Bottomlands, since some bicyclists likely avoid the area when there is high water in the creek. As such, there could be increased bicycle traffic through the Bottomlands as well as on adjacent roads leading to the Bottomlands.

g. Aesthetics

The nature of the Bottomlands would be changed as users would see the two bridges spanning the creek. In addition, the area on the south bank where the new road would be located would lose some of its wildland views. The area would look less like a wildland park, and more like a developed park.

h. Public Services

The alternative would not have substantially different impacts on rangers. While it is possible there could be less illegal use of trails by bicyclists, it is also possible that bicyclists could increasingly illegally use the Canyon Trail which extends from the end of Canyon Road to Cascade Fire Road.

i. Recreation

The main advantage of this alternative is that it would allow users to cross the creek during periods when there is water in the creek. People entering on one side could cross to the other side. As noted above, it is possible that this alternative would result in increased use of the Bottomlands, which is already the most heavily used area on the Preserves. Additional use of the fire road by bicyclists could result in additional user conflicts.

j. Land Use

The Town of Fairfax would need to approve construction of the bridges and the new road. As the Town has stated in the letter it submitted in response to the Notice of Preparation that no bridges should be constructed in the Bottomlands, it would appear that this alternative may be infeasible.

k. Summary

This alternative is not environmentally superior to the Draft Management Plan nor to Alternative 2. The principal benefits of this alternative are improving access in the area and some reduction in sedimentation of the stream. The main disadvantages are the short-term sedimentation impacts from bridge and road construction, loss of vegetation, and loss of wildland views. The possibility of the alternative attracting additional users to this already-heavily used area is an adverse impact. Additional user conflicts are possible. In addition, though it is not an environmental concern, there would be considerable expense to construct the bridges and the new road. The alternative would have more significant impacts than the Draft Management Plan. The alternative was not favored by members of the public to whom it was presented at scoping meetings. Finally, the alternative may not be feasible as the Town of Fairfax has indicated it would not approve new bridge construction.

4. Alternative 4 - No New Trail Development

This alternative would include all the recommendations in the Draft Management Plan except there would not be construction of the two new trails at the north end of the White Hill Preserve.

a. Geology and Soils

The alternative would reduce erosion and sedimentation as the two new trails would not be constructed. Providing erosion control measures for the existing non-recognized trail would reduce future erosion. In addition, there would not be an increase in use of existing roads and trails which may slightly reduce future erosion.

b. Hydrology

The alternative would reduce sedimentation to Fairfax Creek thereby improving water quality. There would be a slight decrease in new runoff to Fairfax Creek. There would be less use of other roads and trails which would reduce erosion from those trails and roads.

c. Vegetation

There would be no loss of trees, shrubs, grasses, or herbs along the routes of the two new trails. No stream crossings would be required.

d. Wildlife

There would be no potential disturbance of nesting birds during trail construction. The areas through which the new trails would be constructed would remain undisturbed wildlife habitat. The eastern portion of the Preserve would continue to be lightly used.

e. Fire

This alternative would have impacts similar to the Draft Management Plan as regards fire hazard reduction.

f. Traffic

If the new trails are not constructed, there would not be as many new users attracted to the existing trailheads on SFD. The main reduction would be for bicyclists since there would be no through trail to the west side of White Hill Preserve. Hikers and equestrians would still be able to access the west side of the Preserve by using the Martha McCormack Trail and/or White Hill Fire Road. Hikers and equestrians approaching from Loma Alta Preserve to the east would be able to travel beneath SFD via the new undercrossing and would then need to walk or ride downhill along the side of SFD to the Sherwood Forest entrance and Martha McCormack Trail. This EIR predicts a peak day use of 25-75 hikers and 4-12 equestrians using the proposed new trailhead on SFD. It is likely this number of new users would be less if the new trail connecting to the SFD undercrossing were not constructed.

There would be less predicted increase in usage of trails and roads on the two Preserves as well as public lands to the west. There would be less potential for increased accidents and user conflicts.

g. Public Services

There could be less demand on MCOSD rangers to patrol trails and roads. However, it is likely that some bicyclists will illegally use the existing non-recognized connector trail at the northwest end of the White Hill Preserve. This could result in the need for increased patrolling in this area.

h. Aesthetics

There would be less removal of vegetation. Views at the trailhead on SFD would not change.

i. Recreation

There would be a decrease in recreational opportunity. Bicyclists would be unable to travel between public lands to the east and west of the White Hill Preserve.

j. Land Use

The alternative would likely be considered more consistent with the Town of Fairfax's desires, given that the Town is opposed to a parking facility on SFD that would attract more users to the Cascade Canyon Bottomlands. While some new users would still be attracted to the White Hill Preserve under this alternative, they would be hikers and equestrians who would likely not travel as far as the Cascade Canyon Bottomlands.

k. Summary

This alternative is environmentally superior to the Draft Management Plan. It is also environmentally superior to the other alternatives. In addition to eliminating the site-specific impacts that would result from construction of the two trails, this alternative would reduce the potential increased use of other trails and roads on the Preserves, especially the Cascade Canyon Bottomlands and Wagon Wheel Trail. The one disadvantage of this alternative is that it would eliminate bicycle access from the west to the east side of the White Hill Preserve. MCOSD staff specifically requested that the Draft Management Plan contain this trail connection as a multi-use trail. As such, this alternative does not meet one of MCOSD's objectives for the project. All impacts of this alternative would be reduced to a less than significant level.

Alternative 5 - Construct New Trails for Hikers and Equestrians Only

This alternative would restrict the two new trails at the north end of the White Hill Preserve for use only by hikers and equestrians; bicycles would be prohibited. This alternative would have the following impacts as compared to the Draft Management Plan.

a. Geology and Soils

There would be some decrease in erosion if the two new trails were not used by bicyclists, since the trails would need only be 18 inches wide and there would be less traffic on the trails. There would also be a reduction in erosion from existing roads and trails since they would not be used by additional bicyclists. Again, this impact can be reduced to a less than significant level by mitigations recommended in this EIR.

b. Hydrology

There would be less erosion and sedimentation as described above.

c. Vegetation

Because the trails would not need to be as wide, less vegetation would be displaced. Because there would be less bike use of new and existing trails and roads, there would be less chance of trail or road widening, though this impact is not expected to occur given EIR-recommended mitigation measures.

d. Wildlife

Fewer bicycles would mean that trails and roads would be quieter, with less potential disturbance of wildlife. However, this impact is not considered significant as wildlife living near roads and trails is expected to be habituated to bicycle-caused noise.

e. Fire

This alternative would have impacts similar to the Draft Management Plan as regards fire hazard reduction.

f. Traffic

The elimination of bicycles from these trails would substantially reduce the number of motor vehicles drawn to the trailhead and the need for parking. The reduction in bicycle traffic on the new trails and existing trails and roads would reduce the chance of accidents and user conflicts.

g. Aesthetics

There would be no change in aesthetic impacts.

h. Public Services

Elimination of bicycles and the corresponding decrease in bicycle use on existing roads and trails would reduce the chance of illegal activity and user conflicts. This could reduce the demand for ranger response, though, again, increased patrolling might be required to respond to illegal bicycle use of the new trails.

i. Recreation

This alternative would reduce bicycling recreational opportunities. Bicyclists would be unable to cross White Hill Preserve and access public lands and legal roads and trails to the west and east of the White Hill Preserve.

j. Land Use

It is likely that the Town of Fairfax would find this alternative more consistent with their General Plan and wishes. The alternative would not attract large numbers of new users who would increase use rates of the Cascade Canyon Bottomlands.

k. Summary

This alternative is environmentally superior to the Draft Management Plan. This alternative would reduce erosion, sedimentation, vegetation, and wildlife impacts, though these impacts can be mitigated to a less than significant level by EIR-recommended mitigation measures. There would be less demand for ranger response and less traffic and parking on SFD. The number of users of the Preserves would not significantly increase. This alternative is environmentally superior to Alternatives 1, 2, and 3. This alternative does not reduce impacts as much as Alternative 4 (No New Trail Development). The one disadvantage of this alternative is that it would eliminate bicycle access from the west to the east side of the White Hill Preserve. MCOSD staff specifically requested that the Draft Management Plan contain this multi-use trail connection. As such, this alternative does not meet one of MCOSD's objectives for the project. However, it meets the objective better than Alternative 4 which would not provide the new trail for any user group. All impacts of this alternative would be reduced to a less than significant level.

Alternative 6 - Cascade Canyon Bottomlands Use Restrictions

This alternative would restrict uses of the Cascade Canyon Bottomlands. In addition to requiring all dogs to be on leash in this area, the alternative would prohibit bicycle use of Cascade Fire Road. Signs would be placed at appropriate locations to warn bicyclists and equestrians that the Cascade Canyon Bottomlands was closed to equestrians and bicyclists. Otherwise, this alternative would contain the recommendations of the Draft Management Plan and this EIR. This alternative would have the following impacts as compared to the Draft Management Plan.

a. Geology

There would be some decrease in erosion potential, though erosion problems on Cascade Fire Road would be reduced to a less than significant level by mitigations recommended in this EIR. There would be a decrease in turbidity as bicycles would not travel through the creek when water is present.

b. Hydrology

This alternative would reduce erosion and turbidity, thereby improving water quality.

c. Vegetation

There would not be a substantial change in impacts to vegetation. While there would be no risk of road widening from bicycle use, this impact is not expected to be significant given measures included in the Draft Management Plan and this EIR.

d. Wildlife

The alternative would not have substantially different impacts on wildlife other than the slight improvement in water quality due to reduced erosion and sedimentation.

e. Fire

This alternative would have impacts similar to the Draft Management Plan as regards fire hazard reduction.

f. Traffic

There would be no bicycle traffic in the Cascade Canyon Bottomlands. As such, there would be a reduced chance of accidents and user conflicts.

g. Public Services

There would be fewer user conflicts and fewer incidents of illegal trail use in the area. This would reduce the demand for ranger response. On the other hand, it is possible there would be an increase in illegal use from bicyclists who ignored or did not see signs warning that Cascade Fire Road was not open to bicycle use. It could be that this alternative would result in additional demand for ranger response.

h. Recreation

This alternative would reduce the recreational opportunities available to bicyclists. Not only would bicyclists not be able to use the Cascade Canyon Bottomlands, it is likely that this closure would also mean considerably less use of Blue Ridge Fire Road, Creekside Fire Road, and Middle Road Fire Road, since there would be no southern outlet so that bicyclists using these roads would need to travel back uphill to leave the Preserves.

On the other hand, the alternative would reduce use in the most heavily used portion of the Preserves.

i. Land Use

This alternative would be consistent with the Town of Fairfax General Plan and the Town's wishes.

j. Other Factors

The alternative would not have substantial changes in impact as regards visual resources. There would be no changes in fire impacts.

k. Summary

This alternative would be environmentally superior to the Draft Management Plan. Though the reduction in impacts to environmental resources from this alternative would not be substantial, there would be some reduction in erosion potential. However, this impact is not expected to be significant for the Draft Management Plan given EIR-recommended mitigation measures. The main advantage of this alternative is that it would reduce overall use of the area and eliminate potential conflicts between user groups.

The main disadvantage is that it would remove existing recreational opportunities for bicyclists. This would be inconsistent with the objective of maintaining recreational opportunities. The objective of maintaining recreational opportunities is incumbent on those recreational opportunities not damaging natural resources of the Preserves. This EIR has concluded that the natural resources of the Cascade Canton Bottomlands can be preserved and enhanced by the Draft Management Plan actions and EIR recommended mitigation measures. Thus, reducing recreational opportunity in the canyon bottom would be inconsistent with MCOSD objectives.

The alternative would be environmentally superior to the Draft Management Plan and to Alternatives 1, 2, and 3. but it would not be environmentally superior to Alternative 4 (No New Trail Development) because Alternative 4 would eliminate the site-specific impacts

of new trail construction plus not increase use of the Preserves. This alternative would also not be superior to Alternative 5 (Construct New Trails for Hikers and Equestrians Only), because Alternative 5 would not substantially increase use of the Preserves.

7. Alternative 7 - Eliminate Prescribed Burning

This alternative was part of the Draft EIR and would have removed prescribed burning from the Draft Management Plan. All other actions included in the Plan and this EIR would remain. This alternative could be combined with any other previous alternatives. Based on comments received on the Draft EIR, this alternative has been deleted since prescribed burning of chaparral is no longer part of the Management Plan.

8. Alternative 8 - The Draft Management Plan Plus EIR-recommended Mitigation Measures

This alternative has been assessed in Chapter 3.0 of this EIR. This alternative would reduce all environmental impacts to a less than significant level. This alternative would increase use of the Preserves. This alternative would be consistent with MCOSD's objectives for the project.

9. Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative. If the environmentally superior alternative is determined to be the "No Project" alternative, then the second most environmentally superior alternative must be identified. The following is a comparison of the alternatives. In addition, see Table 10.

Alternative 1 - No Project, No New Development is not environmentally superior to the Draft Management Plan because it does not address existing environmental effects of the public using the Preserves, including erosion impacts, impacts to wildlife, and the existing fire hazard. While MCOSD would continue to manage the Preserves, it is unlikely that the major erosion control and fire hazard reduction projects recommended in the Draft Management Plan, as well as the many other recommended actions of the Draft Plan, would be implemented.

Alternative 2 - No Project, Future Development Under Existing Plans would reduce or eliminate several impacts. However, this alternative would also eliminate many of the beneficial actions of the Draft Management Plan, significantly retard the implementation of other beneficial actions, and not reduce fire hazard impacts as well as the Draft Management Plan. In addition to these direct environmental effects, the alternative significantly reduces recreational opportunities, especially the public access connection from public lands east and west of the Preserves. This alternative is not as consistent as the Draft Management Plan with MCOSD objectives regarding natural resource protection and enhancement, provision of recreational opportunities, fire hazard reduction, and provision of the connector trail at the north end of the White Hill Preserve.

Alternative 3 - Cascade Canyon Bottomlands Bridges does not substantially reduce environmental impacts and would increase visitor use in the most heavily used portion of the Preserves. This alternative is not environmentally superior to the Draft Management Plan or Alternatives 1 and 2. In addition, this alternative may not be feasible as it requires authorization by the Town of Fairfax which has indicated its opposition to new bridges.

Alternative 4 - No New Trail Development eliminates the site specific impacts that would result from construction of the two new trails at the north end of the White Hill Preserve. It would also reduce the attraction of new users to the Preserves thereby somewhat reducing erosion and wildlife impacts as well as reducing the chance for accidents, user conflicts, and increased use of the Cascade Canyon Bottomlands. The alternative

reduces the potential traffic safety problems from people parking at turnouts near the new trailhead on SFD. This is the environmentally superior alternative. However, this alternative is inconsistent with MCOSD's objective of constructing a new connector trail at the north end of the White Hill Preserve. This alternative is environmentally superior to the Draft Management Plan and the other project alternatives.

Alternative 5 - Construct New Trails for Hikers and Equestrians Only will reduce the amount of new usage of the Preserves, and thus reduce the chance for accidents and user conflicts and slightly reduce erosion impacts. It would reduce traffic and parking demand on SFD. This alternative would not reduce impacts as much as Alternative 4 since it would include the site-specific impacts of constructing the two new connector trails. However, this alternative would better meet MCOSD's objective of constructing the new trail connection. This alternative would be environmentally superior to the Draft Management Plan and all other alternatives except Alternative 4.

Alternative 6 - Cascade Canyon Bottomlands Use Restrictions would somewhat reduce sedimentation impacts in the Bottomlands as well as reduce the amount of use this area receives. This alternative does not substantially reduce impacts to natural resources. It would reduce existing recreational opportunities. It also appears to be inconsistent with MCOSD's objective of maintaining recreational opportunities. The alternative would be environmentally superior to the Draft Management Plan and to Alternatives 1, 2, and 3. but it would not be environmentally superior to Alternatives 4 and 5.

Alternative 8 - Draft Management Plan Plus EIR-recommended Mitigation Measures would reduce all environmental impacts to a less than significant level. This alternative would increase use of the Preserves and the chance for accidents and user conflicts. However, these potential impacts can be reduced to a less than significant level by implementing the recommendations included in the Draft Management Plan and this EIR. This alternative would be consistent with MCOSD goals and objectives as regards protection of natural resources, providing recreation, reducing wildfire hazard, and providing the new connector trail at the north end of the White Hill Preserve. This alternative is superior to Alternatives 1, 2, 3, and 7. Alternatives 4, 5, and 6 are environmentally superior to this alternative, but Alternatives 4 and 5 do not meet the objective of developing a multi-use trail at the north end of White Hill as well as this alternative, while Alternative 6 reduces recreational opportunities in the Cascade Canyon Bottomlands and is thus inconsistent with the objective of maintaining recreational opportunities.

To summarize, without considering project objectives, the following ranks the alternatives starting with the environmentally superior alternative:

1. Alternative 4 - No new trail development
2. Alternative 5 - Construct new trails for hikers and equestrians only
3. Alternative 6 - Cascade Canyon Bottomlands use restrictions
4. Alternative 8 - The Draft Management Plan plus EIR-recommended mitigation measures
5. The Draft Management Plan as proposed
6. Alternative 1 - No project - future development under existing plans
7. Alternative 2 - No project - no new development
8. Alternative 3 - Cascade Canyon Bottomlands bridges

Comparing alternatives consistency with the five project objectives, none of the alternatives except the Draft Plan and the Draft Plan plus the EIR-recommended mitigation measures meets all the objectives. Alternatives 4 and 5 meet all objectives except the new connector trail (and, thus, some reduction in the objective of increasing recreational opportunities). Alternative 6 meets all the objectives except for maintaining recreational opportunities Of those three alternatives, Alternative 5 best meets the objectives, as it would provide a new connector trail for all users except bicyclists and not reduce recreational opportunities in the Cascade Canyon Bottomlands.

Table 10

Table 10

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Analysis of wildlife impacts was partly done by Mischon Martin, MCOSD Naturalist

Appendix B

The County circulated a Notice of Preparation (NOP) to prepare an EIR for the project in November 2000; the close of the comment period for the NOP was December 22, 2000 The Notice of Preparation is included in this Appendix.

In response to this NOP, the City received letters from the following agencies and individuals.

- Christi Rathod
- Paula Byrd
- Town of Fairfax
- Friends of Corte Madera Creek

A summary of the comments, requests, and questions included in those letters is presented below. The letters are presented on the pages following this summary. In addition to these four response letters, this Appendix contains copies of correspondence with the National Marine Fisheries Service regarding the DEIR approach to assessing impacts to steelhead. These letters are also summarized below. There are also letters from the Town of Fairfax and the Town of Fairfax Police Department submitted while the DEIR was being prepared.

Christi Rathod

- The commenter stated that the management plan should not give undue consideration to bicycling opponents.

  Response: The EIR objectively examines the impacts of bicycling. No undue consideration is given to those impacts.

- The Management Plan should identify a strategy for eradicating broom.

  Response: The Draft Plan identifies broom removal strategies on pages 20 to 21. The DEIR discusses broom on pages 87-88 and 94-95.

- The management plan should include a community awareness program to solve problems like broom removal.

  Response: Such a volunteer program is recommended in the Draft Plan on page 21. Also see recommendations regarding the Environmental Stewardship Program on page 94 of the Draft Plan

Paula Byrd

- Fire hazard should be addressed including prohibitions on wood heating stoves. This should be a joint effort between MCOSD and the Town of Fairfax. In addition, these devices create substantial air pollution.

Response: The Draft Plan contains a complete Fire Management Program (beginning on page 37). MCOSD does not have the ability to adopt or enforce laws regarding the use of woodburning devices on private property. The commenter would need to make any request about control of stoves and heaters directly to the Town.

- MCOSD should assist the Town of Fairfax in correcting drainage problems in the town.

  Response: Increased runoff from the Preserves caused by the project are discussed on pages 77 to 81. The DEIR concludes that adoption of the Draft Plan would not substantially increase runoff through Fairfax and that no mitigation would be required, Mitigation measures recommended to control erosion (pages 69-73 of the DEIR) would reduce the amount of erosion on the Preserves to below the amount currently produced. Existing drainage inadequacies within the Town's jurisdiction would continue to be the responsibility of the Town.

Town of Fairfax

- The Town did not envision a change in use from a nature preserve when it deeded the Elliott Nature Preserve to MCOSD.

  Response: This statement is noted for the record. The DEIR throughout Chapter 3 (starting on page 53) fully assesses all possible impacts to that part of the Preserves that includes the Elliott Nature Preserve so that the Town can see what impacts might occur there.

- The Town insists that Elliott Nature Preserve be managed first and foremost as a nature preserve.

  Response: This statement and request are noted for the record. The DEIR throughout Chapter 3 (starting on page 53) fully assesses all possible impacts to that part of the Preserves that includes the Elliott Nature Preserve so that the Town can see what impacts might occur there.

- MCOSD should more aggressively enforce its rules and regulations to preserve natural values.

  Response: The Draft Plan contains numerous recommended actions to preserve native vegetation, plant communities, wildlife, and other natural resources. The Draft Plan contains a Enforcement Program (pages 87-90 of the Draft Plan) which includes additional enforcement recommendations beyond those applied on an ongoing basis.

- The Endangered Species Act should be actively enforced.

  Response: See Pages 9 to 35 of the Draft Plan that describes actions to protect endangered species and other natural resources. See pages 91-93 and 104-112 of the DEIR regarding possible impacts to endangered and special status species.

- MCOSD should regularly consult with the Town Parks and Recreation Commission and Police Department regarding management and enforcement issues.

  Response: See page 136 of the DEIR for a description of contacts with the Fairfax Police Department regarding sharing police response. The recommendation of the Town is noted for the record and will be forwarded to MCOSD for its consideration.

- Cascade Canyon and Elliott Nature Preserve have been seriously damaged in the last ten years by mountain bikers and overuse from all users and that it should be managed to preserve, protect, restore, and enhance the natural lands.

  Response: See the Use Program (pages 64-78 of the Draft Plan) for a discussion of the "overuse" of the Preserve. Discussions of the impact of current use on Preserve resources is contained in most sections of Chapter 3 of the DEIR.

The remaining comments in this letter were responded to point by point in the Land Use section of Chapter 3.0; see pages ___.

Friends of Corte Madera Creek

- Steelhead/rainbow trout should be identified as Special Status Species occurring on the Preserves.

  Response: See pages 97-98 of the DEIR.

- What steps are taken to protect steelhead from dogs?

  *Respons*e: See pages 27-30 of the Draft Plan

- How will burning affect erosion and how would the erosion affect steelhead?

  Response: See pages 73-75 and 109-112 regarding impacts from burning and other vegetation control practices. Prescribed burning is no longer a part of the Plan.

- The plan should state that Upper San Anselmo and Cascade Creeks are perennial.

  *Respons*e: The Final Plan will so state.

- What will be done to protect springs and encourage groundwater recharge.

  Response: See page 94 of the DEIR wherein it states that springs and seeps will be avoided. No pavement is proposed, so groundwater recharge should remain the same as currently occurs.

- What does the Geomorphic Report prepared for the Friends of Corte Madera Creek state or imply that is relevant to the management plan?

  Response: This report was used in developing the Draft Plan and DEIR.

- Tree cutting and fire on upper watershed lands should be prevented to minimize bedload sediment loading of Corte Madera Creek.

  Response: As described in the Fire Management Program of the Draft Plan, few to no trees would be removed in constructing fuel reduction zones. Very few trees of any size would be removed for new trail construction. See pages 94-95 of the DEIR. See pages 73-75 and 79-80 regarding erosion and sedimentation impacts from burning. Prescribed burning is no longer a part of the Plan.

National Marine Fisheries Service (April 5, 2000 letter)

- The Draft Plan should address impacts to steelhead.

Response: See pages 29-30 and 32-34 of the Draft Plan and 63-75 and 104-106 of the DEIR.

National Marine Fisheries Service (May 16, 2001 letter)

There is a letter from Leonard Charles and Associates and NOAA - Fisheries preceding the response letter from the National Marine Fisheries Services (NOAA - Fisheries). These two letters are presented so the reader can see what NOAA - Fisheries was responding to in their letter, which is summarized below.

- The DEIR should address potential effects to threatened coho salmon and their designated critical habitat as well as to steelhead.

Response: The impacts to coho are the same as would be expected for steelhead. The DEIR does state on page ___ that coho habitat is present.

- NOAA - Fisheries concurs with the DEIR analysis that the project would result in a net reduction of sediment input and that Cascade Creek below the falls would not be affected by any new trail construction.

Response: This is discussed in Impact 3.1-C of the DEIR.

- NOAA - Fisheries concurs with the analytic approach used in the DEIR to assess sedimentation impacts.

Response: This approach was used in identifying and assessing the impacts of trail, and road construction and use in the DEIR.

- Erosion control measures should be monitored in the winter.

Response: Monitoring is required in the Draft Plan (see page 91 of the Draft Plan).

- If feasible, reduce the number of road crossings of San Anselmo Creek.

*Response: S*ee the discussion of alternatives on pages 74-77 of the Draft Plan and 164-167 of the DEIR.

- Consider a pedestrian and vehicle bridge across Cascade Canyon Creek.

Response: See page 105 of the DEIR.

Town of Fairfax

This letter provides answers to a query letter that was sent to the Town when preparing the DEIR. The answers provided were used in preparing the DEIR.

Town of Fairfax Police Department

This letter provides answers to a query letter that was sent to the Town when preparing the DEIR. The answers provided were used in preparing the DEIR.

Appendix C

The following discussion summarizes what elements of the Draft Management Plan may induce additional use and predicts future new use of the Preserves. It is recognized at the outset that attempting to predict future use of parks is speculative. Nevertheless, the predictions are offered to provide a basis for determining future impacts on the environment if the Draft Management Plan is adopted. This appendix begins with a discussion of how the Draft Management Plan may induce additional use of the Preserves. This is followed by predictions of what that new use may be.

1. Increase in Use That Could Be Caused by the Draft Management Plan

Most of the programs and actions recommended in the Draft Management Plan are aimed at reducing existing environmental problems and impacts and are not expected to increase use. The one area of recommendations that would increase use involves the construction of two new trails near the north end of the White Hill Preserve. The following sections describe how various actions recommended in the Draft Management Plan impact use of the Preserves.

a. Biodiversity Management Program

The Biodiversity Management Plan contains actions to improve the habitat of the Preserves to allow protection of and restore native plants, remove broom and other invasive non-native species, protect aquatic wildlife from increased sedimentation, close trails to reduce erosion and provide additional wildlife habitat, and control dogs to avoid impacts on wildlife. The recommended actions in this program to preserve and restore environmental resources are not expected to significantly increase use. Closure of some trails may mean that users would increasingly use other trails, but the overall use rate is not expected to increase. Increased restrictions on dog use (i.e., requiring dogs to be on leash at all times within the Cascade Canyon Preserve) could mean a reduction in use of that Preserve by dog owners and perhaps increased use of fire roads on the White Hill Preserve (where dogs would be allowed to be off leash but under control on the fire roads). However, there would not be an overall increase in use, nor is it expected that there would be a substantial number of people currently using the Cascade Canyon Bottomlands driving up the hill to walk their dogs on the White Hill Preserve.

Erosion control measures recommended in the Biodiversity Management Program would improve road and trail surfaces, but there is no evidence that users currently avoid roads and trails due to rutting or other erosional processes. Removing ruts and repairing road surfaces may make it easier to walk and bike, however these improvements are not expected to substantially increase use. The primary constraints on use are the remoteness of portions of the Preserves and the significant elevation changes encountered when accessing most portions of the Preserves. These use constraints would remain whether or not erosion problems are addressed.

b. Fire Management Program

The Fire Management Program recommends a range of actions to reduce the fire hazard on the Preserves. These actions are not expected to increase use.

c. Signs and Information Program

The Signs and Information Program includes recommendations for new signs on the Preserves. These signs would facilitate use of the Preserves as well as inform users of allowed and prohibited uses. While informational trail signing may facilitate Preserve use, especially by those unfamiliar with the trail system on the Preserves, these signs are not expected to attract substantial new users to the Preserves, since users are not particularly attracted to a park or open space preserve due to its signing program. This Program also recommends clear designation of Preserve accesses and recognized trails when the District republishes its small map/guide to the Preserves. This information would facilitate use of the Preserves, but, again, is not expected to attract a substantial number of new users to the Preserves. A more important factor in increasing use through dissemination of information is the new book titled *Open Spaces - Lands of the Marin County Open Space District* (Spitz, 2000). This trail guide describes all the recognized trails and fire roads on the two Preserves.

d. Use Program

The Use Program does not include any recommendations other than increased signing, and this would not affect overall use of the Preserves. This Program did assess a number of alternatives for trails and roads in the most heavily used portion of the Preserves, the Cascade Canyon Bottomlands. Some of the alternatives assessed included constructing bridges across the creek and realigning Cascade Fire Road. These alternatives could induce additional use as they would eliminate the need to cross through the creek, which can be an impediment to use during periods of high water. However, these alternatives were not included in the Draft Management Plan's final recommendations.

e. Enforcement Program

The Enforcement Program describes how MCOSD staff would monitor trails for illegal bike use and allows the District to close trails to bike use if illegal bike use increases. This program would not induce additional use.

To summarize, the programs listed above are not expected to significantly increase use of the Preserves. The two Programs that could induce a significant amount of new use are the Access Program and the Trails Program.

f. Access Program and Trails Program

These Programs include construction of a new trailhead on Sir Francis Drake Boulevard (SFD) near the top of White Hill. No parking lot is proposed at this location in the Access Program. The Trails Program recommends minor new trail construction on two trails (the southernmost end of the connector trail between Concrete Pipe Fire Road and the Carey Camp Loop Trail and the easternmost end of the Martha McCormack Trail) and one roadway realignment (the southernmost end of the Blue Ridge Fire Road). These improvements are recommended to address erosion problems, and are not expected to substantially increase the use patterns of the two trails and the road.

The Burnt Tree Trail would be changed by constructing a new eastern connector to Creekside Fire Road while abandoning the existing southern leg of the trail. This

recommendation was made to improve wildlife habitat. It is possible that this new trail would increase hiker and equestrian use of that trail; bicycle use would be prohibited. However, the new trail is not expected to substantially increase hiker or equestrian use of the Preserves given its isolated location and relatively difficult access.

The Trails Program recommends closure of a number of trails. These closures would not increase use. One existing non-recognized trail (Split Rock Trail) would be redesignated as a recognized trail. This could increase hiker and equestrian use of the trail, but again because of the relative isolation, difficult access, and steep elevation change and because this trail already exists, this change is not expected to substantially increase use. Bike use would continue to be prohibited on this trail. While some bicyclists currently illegally use this trail, there is no reason to conclude that simply because it is re-designated to a recognized trail that illegal bike use would substantially increase. In addition, the Draft Management Plan requires increased patrolling of this trail and possible trail closure if illegal bicycle use does increase.

The existing non-recognized Martha McCormack Trail would also be re-designated to a recognized trail status. This redesignation could induce additional use of this trail, particularly if subsequent maps and guides publicize the trail and its trailhead. However, use would be limited to hikers, and the increase in use is not expected to be substantial, especially given the new connector trail located immediately to the north; this new connector trail is discussed below.

The new recommended access point on SFD and the two new trails proposed for the north end of the White Hill Preserve are the improvements most likely to increase use of the Preserves. The first trail would be a new, possibly multi-use, trail that connects SFD with the Sherwood Forest Fire Road. The second is a new, possibly multi-use trail that would connect two sections of White Hill Fire Road to the west of Sherwood Forest Fire Road; this connection would replace an existing non-recognized trail where bicycle riding is illegal. For purposes of this EIR, it is assumed that the new trails would be multi-use. This assumption allows a "worst case" analysis of environmental impacts since it assumes that bicycle riders as well as equestrians and hikers would use these two trails in the future.

2. New Users Attracted by the New Recommended Access Point and the Two New Connector Trails

It is impossible to accurately predict the number of new users who would be attracted to the area as compared to those who would be attracted to the area if the trails were not constructed. The new road undercrossing and future trail connection to the Loma Alta Fire Road would increase use of White Hill Preserve regardless of new trail construction on that Preserve. If the proposed new trail to Sherwood Fire Road were not constructed, it is possible for users who travel under SFD (via the new bridge undercrossing) to travel downhill on the west side of SFD to either the existing MCOSD access point at Sherwood Forest or further downhill to the existing south end of White Hill Fire Road (the entrance on Bothin Road). Thus, some increased usage of the Preserve as well as public lands to the west and east by hikers and equestrians would likely occur even if the proposed new connector trails are not constructed. However, if the multi-use trail linkage between the two sections of White Hill Fire Road is not constructed, then bicyclists would still not have legal access to fire roads and legal trails to the west and south. Some bicyclists may use the non-recognized trail that currently provides this

linkage; however, such use is illegal, and the Draft Management Plan calls for patrolling and monitoring of illegal bike use and possible trail closure if illegal bike use increases. Thus, even if the new trails are not constructed, there still would be an increase in hiker and equestrian use of the Preserves, and a small increase in bicycle use on the east end of White Hill Fire Road (to the point where that fire road travels off the Preserve).

While it is clear that the two new trails, in combination with the road undercrossing and trail connection to the Loma Alta Fire Road, would substantially increase use of the Preserves, it is not possible to precisely estimate what the actual increase would be. While the increase may be relatively small for the first few years, the number of users would increase as the extensive road and trail system to the south and west and available parking became known either through word of mouth or by publicization either by MCOSD, the Bay Ridge Council, bicycling and hiking groups, or others. It is entirely possible that in a few years time, the new trails could be used by several hundred people during a peak use day. While there is expected to be some increase in hiker and equestrian use from these two new trails, the most noticeable increase is expected to be from the biking community. This is because of the relative lack of biking trails in the County and because the new trail from SFD would provide a convenient location to access the extensive road and trails system to the west. The increase in hiker use is not expected to be substantial since hikers already have access to this area via the Martha McCormack Trail at the Sherwood Forest access point, so even if the new trails were not constructed, hikers could access the White Hill Preserve immediately downhill from the road undercrossing.

There could be an increase in equestrian use. First, the large turnouts provide locations where horse trailers can park so that horses can be trailered to the Preserve, though there is an existing public equestrian access at the Baywood Canyon stables to the east. The new trails would provide a convenient access point to trails and roads to the west. In addition, equestrians would be able to travel from the Loma Alta Preserve beneath SFD and onto the Preserve without having to ride along SFD. Given the existing stables and equestrian access adjacent to the Loma Alta Preserve, there would be some increase in equestrian use.

Bicycle use would be expected to increase more dramatically since the new trails would provide an easy access to the top of the ridge plus legal access from the east to the west side of White Hill Preserve.

These two new trails would facilitate access, primarily by bicyclists, to higher elevations on White Hill Fire Road as well as access to the Camp Tamarancho bike trail and Wagon Wheel Trail circuit. Bicyclists accessing the bike trail circuit on Camp Tamarancho and the Wagon Wheel Trail currently access that circuit from a number of access points, with the major accesses including the Cascade Canyon and Toyon Fire Road access points on the Cascade Canyon Preserve as well as from Ridge Trail to the east of the Cascade Canyon Preserve, White Hill Fire Road to the west, and from Iron Springs Road to the east. The latter is the primary access point as it requires traveling the least distance to access the trail system plus provides a moderate climb.

The new trails and access point could be used as an exit point by bicyclists who access the Camp Tamarancho trail system from Iron Springs Road, Ridge Trail, or other accesses to the south. Bicyclists tend to seek loop trips rather than out and back trips. Bicyclists could enter the Camp Tamarancho trail system from the south and then exit

the new trails and trailhead and ride back down SFD to either their homes or parked vehicles.

In an attempt to get some idea of the possible number of new bicyclists that could be attracted to this trailhead, the EIR preparers contacted staff of the California Department of Parks and Recreation at China Camp State Park and Annadel State Park (both local parks that allow bike use of trails). Based on their observations of high use trails, it is predicted that on a peak day the number of bicyclists attracted to the new trails, once the access becomes known, could be as many as 200 riders (based on conversations with Mazzucotelli, 3/26/02 and Hastings, 3/27/02; Marla Hastings not only oversees trail planning at Annadel State Park but periodically rides her bicycle on Camp Tamarancho trails and is familiar with local bicycle use patterns). Average daily use would be much lower with very little use expected on days with bad weather and/or in the winter.

It is recognized that using these estimates based on conversations with two State Park staff is speculative. However, there is no scientific way to gauge future use of this trailhead and the trail system it accesses. There are not similar situations in other areas within the county or the area where a new trailhead would be constructed on the major arterial in the area, where there is ample parking (which most trailheads lack), and where the trailhead provides access to a desirable single-track trail system open to bicyclists. Attempting to compare such a trailhead with other trails in the area would be as speculative as the estimates provided by staff familiar with bicycle use patterns in the area.

To ensure that the EIR assesses the worst case scenario to determine impacts to natural resources along the trail/road system and traffic impacts, peak day use is estimated to be 125-225 bicyclists. These peak days would occur infrequently. Even most weekend days during good weather would not reach these peak day estimates. As this EIR was going to press, the Initial Study for the Camp Tamarancho trail system was nearing completion. The traffic study done for that Initial Study included a count of bicyclists on the trail system on two weekend days in August 2003. The study showed a Sunday use by 87 bicyclists. While this is not necessarily peak day use, it is noted that the peak day use estimate presented here is 1.4-2.6 times greater than the actual Sunday summer use. It is thus re-emphasized that the use projections in this EIR are likely high.

Estimates of future use by hikers and equestrians are even more speculative. Again, hikers and equestrians already have access across the north end of White Hill. Hiker and equestrian use of the Preserves would increase due to the proposed road undercrossing. However, as described above, hikers and equestrians already have access to the White Hill Preserve via the Martha McCormack trailhead. The new trailhead would facilitate access, particularly for equestrians.

Given the uncertainties summarized above, the following range of new users of the new recommended access will be applied when assessing traffic and other impacts. The average day use is based on comparing user counts for peak weekend days and non-peak days that were done when preparing the Draft Management Plan. It was determined that while hiker use was reduced by two-thirds on a weekday, bicycle use was reduced by 80-90%. Because the weekday counts were done in the Spring, the reduction would be more substantial during the wet weather season. As a worst case analysis, it will be assumed that the average day use would be one-third of the peak day

use for hikers and equestrians and one-fifth of peak day use for bicyclists. Table 1 below shows the estimated range of new users that would use the new access point and two new connector trails.

Table 1
New Use Attracted by the New Access Point

	Bicyclists	Hikers	Equestrians
Peak weekend day	125-225	25-75	3-12
Average day	25-45	8-25	1-4

The range of new users described above is a worst case analysis. It is entirely possible that the estimates overstate the new use, but it is considered very unlikely that new use would exceed the upper predicted ranges. Parking in the area along SFD is limited to 85-110 vehicles, and a number of these parking spaces are located at a considerable distance from the trailhead. Some of the new users would not park on SFD (i.e., they would come from the Loma Alta Preserve or bicyclists would start to the south or west and exit the new trailhead and ride east on SFD). The number of new users who would drive to the trailhead would be limited by available parking.

3. Distribution of New Trips on the Preserves

Attempting to determine where these new users would travel after entering the new trailhead or before leaving the new trailhead is even more speculative. Hikers are not generally expected to travel long distances. Most hikers would likely not travel much further than the top of White Hill (about a 5-6-mile round-trip walk). Equestrians would be expected to stay mainly on ridgetop fire roads (i.e., White Hill Fire Road and roads on MMWD property).

Bicyclists are able to travel much greater distances and some could be expected to use trails on Camp Tamarancho, the Wagon Wheel Trail, and fire roads at the southern end of the Cascade Canyon Preserve. Some bicyclists would enter at the new trailhead and proceed west and south and ride the Camp Tamarancho/Wagon Wheel Trail circuit and then exit the new trailhead. Others would proceed further west onto MMWD property (or even further west) and then either retrace their route back to the new trailhead or exit to the south through Cascade Canyon Preserve, MMWD (via Pine Mountain Fire Road), Ridge Trail, or the Iron Springs Road access. A few might exit to the north towards San Geronimo Valley. Other bicyclists could start their trip at the southern or northern access points listed above and exit through the new access and then ride back down SFD to their homes or vehicles. Some bicyclists could start in Fairfax and ride up SFD to the new trailhead and then make a loop back down through one of the southern exits. However, the number riding this circuit is likely to be small as bicyclists prefer to ride down SFD than up it.

It is possible that the new trailhead would increase bicycle traffic exiting the Preserves via Cascade Fire Road. Given user counts shown in Table 1, it is not likely that the new trailhead would attract bicyclists to enter at the Cascade Fire Road entrance and then exit the new trailhead. The user counts show that very few bicyclists enter at this trailhead because of the steep climb out of the Cascade Canyon Bottomlands. On the other hand, the new trailhead could reduce the number of bicyclists existing via Cascade Fire Road. Currently, bicyclists seeking a loop often entering Camp Tamarancho from Ridge Trail or Iron Springs Road and then loop west on White Hill Fire Road and Pine Mountain Fire Road and then travel east on Cascade Fire Road to leave the Preserve. Others ride the Camp Tamarancho/Wagon Wheel Trail loop and then travel south via Toyon, Creekside, or Blue Ridge Fire Road and exit via Cascade Fire Road.

Thus, it is uncertain whether the new trailhead and trails would result in more or fewer bicycle traffic through the Cascade Canyon Bottomlands. It is recognized that this is a key issue to some members of the public who are concerned about overuse of the Cascade Canyon Bottomlands and is subject to intense controversy.

Because the EIR needs to assess the "worst case" scenario, it will be assumed that the new access and trails will result in additional trips through the Cascade Canyon Preserve.

It will be assumed that some bicyclists will park their vehicle near the new trailhead and ride south through the Cascade Canyon Preserve and then ride back up SFD to their vehicle. Other bicyclists who live in the area or park their vehicle in Fairfax or points to the east will make a loop through the Loma Alta Preserve, the new trails, Cascade Canyon Preserve, and back to their home or vehicle. It is assumed that the new trails and trailhead will result in few bicyclists entering the Cascade Fire Road entrance and then riding up to the new trailhead and then back down SFD and west to their home or vehicle.

If it is assumed that some bicyclists entering at the new access point would exit via another access point, there are a variety of exit points. While some might use roads leading to the Cascade Canyon Bottomlands and out via Cascade Fire Road, others can be expected to exit via Toyon Fire Road, Ridge Trail, the Iron Springs Road access, as well as more distant exits on MMWD or to the north to San Geronimo Valley. It is as likely that bicyclists exiting to the south would use the Iron Springs Road access, Ridge Trail, and/or Toyon Fire Road as the Cascade Fire Road access, since those three accesses are nearer the center of the Town of Fairfax and SFD.

As a worst case, it will be assumed that a maximum of 50% of the bicyclists entering the new trailhead will leave via another access point, it will then be assumed, again as a worst case, that of the 50% leaving by another access point 45% of these bicyclists will leave via Cascade Fire Road, 50% via Iron Springs Road, Ridge Trail, and/or Toyon Fire Road, and 5% via other access points. Thus, 22.5% of the new bicycle trips entering the new access point could exit Cascade Fire Road. Again, these are worst case assumptions, as they assume that 50% of the bicyclists entering at the new access point have either ridden uphill on SFD at the beginning of their ride, started to the east and ridden across Loma Alta Preserve, or will end their ride by having to ride up SFD to their vehicle. Some bicyclists will enter via these southern access points and exit the new trailhead. For purposes of this analysis, it is estimated that on a peak day 10-20 bicyclists might enter from the Iron Springs Road access, 2-3 from Toyon Road, 2-3 from Cascade Fire Road, and 2-3 from Ridge Trail.

If one assumes 125-225 new bicyclists could enter White Hill Preserve on a peak day via the new access, a maximum of 30-50 bicyclists could exit via Cascade Fire Road. For the average day, the number would be 6-10 bicyclists leaving via Cascade Fire Road. Again, the numbers would be much less during the winter when there is high water in the creek, given the Draft Management Plan-recommended signs warning bicyclists of high water in the Bottomlands. Approximately, 25-45 would exit Iron Springs Road, 5-10 Toyon FR, 2-5 Ridge Trail, and 5-10 Pine Mountain Road or points north and south from MMWD property.

Table 2 shows a projected distribution of these trips for the peak day. These distributions assume that some bicyclists will exit the new access point onto SFD or proceed east to Loma Alta or more distant points to the south and/or east having started their trip at some other entrance (i.e., some bicyclists may start at the Iron Springs Road access and exit via the new access, ride down the Loma Alta Fire Road and exit at White Hill Middle School). While many of the above predictions are speculative, the estimates and distribution of new trips starting at other entrances and exiting the new access of SFD are even more speculative.

Table 2
Number of Existing and New Trips On Trails and Roads on Peak Days

Trail or Road	Bicyclists		Hikers		Equestrians	
	Exist.	New	Exist.	New	Exist.	New
Westbound at the new White Hill trailhead	0	125-225	0	25-75	0	3-12
Eastbound at the new White Hill trailhead	0	70-125	0	25-75	0	3-12
Southbound on White Hill FR, south of Camp Tamarancho trail intersection	NA	30-55	NA	15-50	NA	3-12
Northbound on White Hill FR, north of Camp Tamarancho trail intersection	NA	20-40	NA	15-50	NA	3-12
Eastbound on Blue Rock FR at Preserve boundary	NA	15-20	NA	4	NA	0
Westbound on Blue Rock FR at Preserve boundary	NA	5-10	NA	3	NA	0
Wagon Wheel Trail	52	100-180	5	2	0	0
Southbound on Blue Rock FR south of Wagon Wheel Trail	5	8-15	2	2	0	0
Northbound on Blue Rock FR south of Wagon Wheel Trail	2	0-1	2	0	0	0
Southbound on Toyon FR (north of Middle Road FR)	5	15-30	20	2	0	0
Northbound on Toyon FR (north of Middle Road FR)	2	2-6	10	2-5	0	0
Southbound on Creekside FR	NA	4-6	NA	2	NA	0
Northbound on Creekside FR	NA	0-1	NA	NA	NA	
Eastbound on Middle Road FR east of Blue Ridge FR	NA	20-35	NA	4	NA	0
Westbound on Middle Road FR east of Blue Ridge FR	NA	1-2	NA	0	NA	0
Eastbound on Cascade FR	26	30-50	21	1	0	0
Westbound on Cascade FR	6	2-3	24	0	0	0

NA = Not Available
Note: This table does not distribute trips to the Camp Tamarancho Trail system or public accesses to that system that are not on the Preserves.

Table 3 predicts expected existing and new uses for the average day (that is, an expected daily average which combines peak days with weekday days during nice weather and low use winter days). This table was developed by comparing peak day use counts and two Wednesday counts shown in Table 2 of the Draft Management Plan. It was determined that while hiker use was reduced by two-thirds on a weekday, bicycle use was reduced by 80-90%. Because the weekday counts were done in the Spring, the

reduction would be more substantial during the wet weather season. As a worst case analysis, it will be assumed that the average day use would be peak day use times 0.33 for hikers and equestrians and peak day use times 0.2 for bicycle use. Many days during the winter or when weather is poor will have considerably fewer trips than predicted for the average day.

Table 3
Number of Existing and New Trips On Trails and Roads on Average Day

Trail or Road	Bicyclists		Hikers		Equestrians	
	Exist.	New	Exist.	New	Exist.	New
Westbound at the new White Hill trailhead	0	25-45	0	8-25	0	1-4
Eastbound at the new White Hill trailhead	0	15-35	0	8-25	0	1-4
Southbound on White Hill FR, south of Camp Tamarancho trail intersection	NA	5-10	NA	5-17	NA	1-4
Northbound on White Hill FR, north of Camp Tamarancho trail intersection	NA	3-8	NA	5-17	NA	1-4
Eastbound on Blue Rock FR at Preserve boundary	NA	3-5	NA	1	NA	0
Westbound on Blue Rock FR at Preserve boundary	NA	1-3	NA	1	NA	0
Wagon Wheel Trail	10	20-40	2	1	0	0
Southbound on Blue Rock FR south of Wagon Wheel Trail	2	2-3	1	1	0	0
Northbound on Blue Rock FR south of Wagon Wheel Trail	1	0-1	1	0	0	0
Southbound on Toyon FR (north of Middle Road FR)	2	3-5	7	1	0	0
Northbound on Toyon FR (north of Middle Road FR)	1	0-1	7	0-2	0	0
Southbound on Creekside FR	NA	1-2	NA	1	NA	0
Northbound on Creekside FR	NA	0-1	NA	NA	NA	
Eastbound on Middle Road FR east of Blue Ridge FR	NA	4-7	NA	1	NA	0
Westbound on Middle Road FR east of Blue Ridge FR	NA	0-1	NA	0	NA	0
Eastbound on Cascade FR	5	6-10	7	1	0	0
Westbound on Cascade FR	1	0-1	8	0	0	0

NA = Not Available
Note: This table does not distribute trips to the Camp Tamarancho Trail system or public accesses to that system that are not on the Preserves.

The estimates provided above are worst case. Because the estimates begin with an estimate of a high number of new users entering the new trailhead and then assume a high percentage of new bicyclists will exit southern access points, the estimates compound worst case assumptions. While there could be predictive errors in the precise distribution of these new trips, these errors should be more than compensated for by the worst case assumptions regarding the number of new users predicted to use the new trailhead and the assumption that 50% of the bicyclists entering at the new access would not exit via this access.