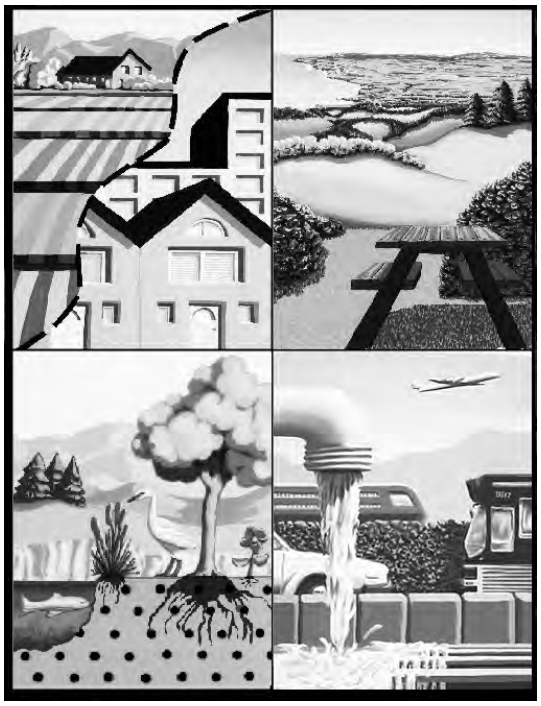
General Plan

November 1986



Overview
Background & Issues
(Chapters 1-16)

Environmental Services Agency
Planning and Building Division ▪ San Mateo County ▪ California

General Plan

As approved by the
Board of Supervisors
November 18, 1986

Department of Environmental Management
Planning and Building Division ▪ San Mateo County ▪ California

Publisher's Note:

This comprehensive edition of the General Plan is divided into two parts: Part 1 & Part 2. Each part is contained in a separate binder.

Part 1 consists of:

- **Overview**
- **Background and Issues (Chapters 1-10)**

Part 2 consists of:

- **Background and Issues (Chapters 11-16)**
- **Policies**
- **Maps**

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Preface

In November, 1986, San Mateo County adopted an updated General Plan to guide decision-making for the future of the unincorporated area. This comprehensive edition of the General Plan is divided into two parts: Part 1 and Part 2. Each part is contained in a separate binder.

Part 1 consists of the following components:

(1) Overview and
(2) Background and Issue statements for Chapter 1-10.

Part 2 consists of the following components:

(1) Background and Issue statements for Chapters 11-16,
(2) Maps and
(3) Policies.

In the previous edition of the General Plan, as approved by the Board of Supervisors, Chapters 1-6, which deal with resource topics, were included in a volume entitled Resource Management, and Chapters 7-10, which deal with development topics, were included in a volume called Community Development. In this comprehensive edition of the General Plan, these volumes have been combined into one document, but bound in two binders (Part 1 and Part 2) for the convenience of the user.

The Overview provides a discussion of the function and organization of the General Plan, and a description of the physical, political, social and economic settings of San Mateo County. Background and Issues present factual descriptions of existing conditions and assessments of current and future problems and needs, while the Policies set forth prescribed actions the County will take to achieve the goals and objectives of the General Plan. The maps provide a graphic representation of factual information and County land use policy.

General Plan Goals

PROJECT GOAL

Provide overall policy guidance to assure orderly, balanced utilization and conservation of all County resources.

GOALS OF THE RESOURCE MANAGEMENT VOLUME

1. Natural Resources

   Promote a balance between the conservation and productive use of natural resources.

2. Cultural Resources

   Conserve and enhance cultural resources to preserve their aesthetic, historic and visual quality for the use, education and enjoyment of current and future generations and their contributions to a sense of community and common identity.

3. Recreational Resources

   Promote the acquisition and development of park and recreation systems to enhance the physical and spiritual quality of life for County residents consistent with determined needs.

4. Coordination of Efforts for Resource Management

   Encourage all Federal, State, regional, county, and city agencies with jurisdiction in San Mateo County to cooperate and coordinate the management, enhancement, and protection of the County's resources.

GOALS OF THE COMMUNITY DEVELOPMENT VOLUME

1. Land Use

   Designate land uses for urban and rural areas that balance fiscal, economic, environmental, developmental and social opportunities and constraints.

2. Housing

   Encourage the supply of an adequate and affordable housing stock to meet the needs of all San Mateo County residents and workers.

3. Infrastructure

   a. Promote the provision and maintenance of public and private services and facilities that are basic to human habitation, including water supplies, wastewater management, transportation systems and solid waste management.

b. Promote the provision and maintenance of infrastructure improvements at all levels commensurate with the type and density of development anticipated in adopted land use plans.

c. Promote the provision of infrastructure improvements in a manner that minimizes their environmental impacts, conserves energy, protects communities and efficiently uses public funds.

4. Hazards

Protect human life and property from natural and man-made hazards.

5. Coordination of Efforts for Community Development

Encourage all Federal, State, regional, county, and city agencies with jurisdiction in San Mateo County to cooperate and coordinate in the use and development of land in unincorporated areas in a manner consistent with the County General Plan.

GOALS FOR IMPLEMENTATION OF THE GENERAL PLAN

1. Accessibility of Information and Regulations to the General Public

Ensure that new or revised information and planning regulations meet the following criteria:

a. Regulations and information are clear, concise, readily available to the public and easily understood;

b. Regulations demonstrate a beneficial effect on the County; and

c. The impacts of new or revised regulations on property owners have been considered.

2. Continue the Principles of Existing Regulations

Continue those measures which are consistent with and necessary to carry out the goals, policies and objectives of the General Plan.

3. Periodic Review of General Plan

Review the General Plan at a minimum of every five years and identify the need for revisions to policies to reflect current needs and conditions.

4. Resolution of Conflicts

a. Recognize that conflicts may occur between two or more policies of the General Plan.

b. Resolve any conflicts in a manner which, on balance, results in the maximum advancement of the goals and policies of the General Plan. For example, broader policies which concentrate development in urban areas may override the objectives of a narrow, more specific resource protection policy.

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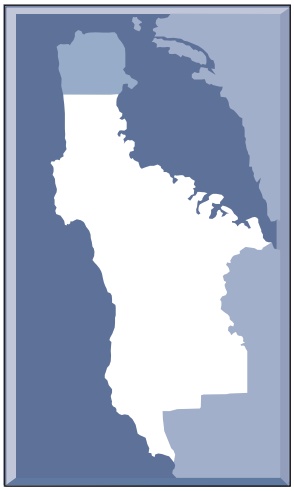
Overview



GENERAL PLAN FUNCTION AND ORGANIZATION

I. LEGAL REQUIREMENTS FOR GENERAL PLAN CONTENTS

One of the major objectives of this update of the General Plan is to produce documents which satisfy the State's legal requirements for a General Plan. Topics covered by these documents were selected to meet this legal mandate.

This section contains a summary of the legal requirements for General Plan contents. A detailed description of the legal requirements for each General Plan topic is included in the introduction to each chapter.

A. REQUIRED ELEMENTS

State planning law requires each locality to adopt a General Plan. General Plans are required to contain background, issue and policy statements on nine specific subjects which are called "elements." The nine mandatory elements are: (1) Land Use, (2) Circulation, (3) Housing, (4) Conservation, (5) Open Space, (6) Seismic Safety, (7) Noise, (8) Scenic Highway, and (9) Safety. Table 1 summarizes the information required to be addressed for each of the nine mandatory elements. Some elements, like Open-Space, encompass a number of issues; while others, like Scenic Highway, focus on a single topic.

State law requires that some General Plan elements be more specific than others. In some cases, it is mandated that specific background data and analysis be included (e.g., Open Space, Seismic Safety, Noise and Housing Elements), while in other cases requirements for background data are more generalized. The specificity of policy and implementation measures required by State law also varies greatly depending on the topic.

B. OPTIONAL ELEMENTS

State law also authorizes local governments to prepare additional elements which address locally relevant issues. Because optional elements have the same force and effect as required ones, their adoption can expand a local government's authority. For instance, the Quimby Act provision of the Subdivision Map Act authorizes a city or county with an adopted Recreation Element to require park dedications as a condition of subdivision approvals.

C. AREA PLANS

1. Optional Area Plans

State planning law also allows Area Plans to be developed for portions of a city or county and then incorporated into the General Plan. Area Plans allow for more local application of General Plan element policies and are adopted in the same manner as General Plan elements. Area Plans

TABLE 1

REQUIRED CONTENTS OF THE NINE MANDATORY ELEMENTS

ELEMENT	CONTENT
1. Land Use	Designate the general distribution, location, and extent (including standards for population density and building intensity) of the uses of land for housing, business, industry, open space, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses.
2. Circulation	Identify the general location and extent of existing and proposed major roads, highways, railroad and transit routes, terminals, and other local public utilities and public facilities.
3. Housing	Identify existing and projected housing needs and establish goals, policies, objectives, and programs for the preservation, improvement, and development of housing to meet the needs of all economic sectors of the community.
4. Conservation	Provide for the conservation, development, and use of natural resources, including water, forests, soils, rivers, lakes, harbors, fisheries, wildlife, minerals, and other natural resources.
5. Open Space	Detail plans and measures for the preservation of open space for natural resources, for the managed production of resources, for outdoor recreation, and for public health and safety.
6. Seismic Safety	Identify and appraise seismic and geologic hazards.
7. Noise	Examine noise sources yielding information to be used in setting land use policies for compatible uses and for developing and enforcing a local noise ordinance.
8. Scenic Highway	Prescribe the development, establishment, and protection of scenic highway corridors.
9. Safety	Establish standards and plans for the protection of the community from fires and geologic hazards.

do not need to address all the topics required by State law for the jurisdiction-wide General Plan (see Table 1), as long as the General Plan documents taken together satisfy these requirements.

2. Local Coastal Program (LCP)

The 1976 California Coastal Act requires every local government with land within the Coastal Zone to prepare a Local Coastal Program, including a land use plan. The Coastal Act requires this land use plan to be part of the General Plan. This land use plan and all amendments must be approved for consistency with Coastal Act policies by the California Coastal Commission.

Many of the Coastal Act's requirements for the LCP Land Use Plan overlap with the Government Code's requirements. Both require, for example, that policies for land use, transportation, seismic safety and conservation be developed for the Coastal Zone. However, the Coastal Act's requirements are generally much more specific. Further, State law requirements call for certain topics to be addressed which the Coastal Act does not. For example, the Coastal Act requires the establishment of policies for diking, dredging, filling and shoreline access, while the Government Code requirements for the General Plan do not. Conversely, the Government Code requires the General Plan to address housing and noise, while the Coastal Act has no such requirements. Finally, since the LCP Land Use Plan is a part of the General Plan, it is subject to the Government Code's requirement that the General Plan be internally consistent. As a result, General Plan and LCP policies cannot be inconsistent.

D. ADDITIONAL GENERAL PLAN REQUIREMENTS

There are a number of special General Plan requirements related to: (1) mineral sites; (2) timberlands; (3) development within earthquake fault zones; and (4) land use around airports. Under the Surface Mining and Reclamation Act, a jurisdiction's General Plan must include policies to protect mineral resources if the area contains resources of statewide or regional significance. The Timber Productivity Act requires that where there are parcels zoned as timber preserve (production), the General Plan must contain a timber preserve element or timber preserve policies. The Alquist-Priolo Special Studies Zones Act and its implementing regulations call for the inclusion of special policies and standards for development in the general plans of those jurisdictions that contain zones designated as having surface fault hazards. Finally, the Airport Land Use Commission Law requires cities and counties containing airports to bring their general plans into conformity with adopted Airport Land Use Plans or to make special findings.

E. REQUIREMENT FOR INTERNAL CONSISTENCY

State planning law requires that all parts of the General Plan comprise an integrated, internally consistent and compatible statement of policies. These standards imply that: (1) all elements of the General Plan

have equal legal status; (2) all goals, objectives, policies, principles, standards and plan proposals in the General Plan must be consistent; and (3) any implementation programs set out in the plan must follow logically from the plan's goals and policies.

F. TIME PERIOD REQUIREMENTS

Since a General Plan affects the welfare of future generations as well as serving the needs of the current one, State law requires that the General Plan take a long-term perspective. The time frame for this General Plan is the year 2000. In some cases, as required by State law, the General Plan establishes shorter term objectives and implementation measures. The Housing Element requirement, for example, calls for a "program which sets forth a five-year schedule of actions" to carry out Housing Element policies. Short-term objectives and measures establish benchmarks for monitoring progress toward long-term goals.

II. PURPOSE OF THE GENERAL PLAN

A. HISTORY OF THE GENERAL PLAN

San Mateo County began its general planning efforts in 1960 when it adopted a Master Plan for Land Use and Circulation. Since that time, the County added seven additional elements to its General Plan, both to keep pace with the expanding legal requirements and to address issues which are of particular local concern, such as Historic Resources and Parks and Recreation. This General Plan is the first comprehensive revision of San Mateo County's General Plan. The County has adopted Area Plans for portions of the unincorporated area (see Table 2). These Area Plans are part of the General Plan and contain more specific policies for certain geographic areas.

B. GENERAL PLAN OBJECTIVES

The objectives of the General Plan are to: (1) update and expand the data base to include, at minimum, information required by State law; (2) insure that all parts of the General Plan, particularly policies, are consistent with each other; (3) support Area Plan policies and ordinances; (4) guide Area Plan policies and ordinances which need revision; (5) create a consolidated General Plan usable to decision makers, the staff and the public; and (6) provide an opportunity for the general public, the Planning Commission and the Board of Supervisors to develop General Plan policy that reflects current community values which will serve as a guide for development and conservation.

C. ROLE OF THE SAN MATEO COUNTY GENERAL PLAN

Preparing, adopting and maintaining a General Plan serves several functions in a community. For San Mateo County, the General Plan provides the following:

TABLE 2

STATUS OF THE PREVIOUS SAN MATEO COUNTY GENERAL PLAN ELEMENTS AND AREA PLANS

DOCUMENT	STATUS
Elements	
1. Original Master Plan (Land Use and Circulation)	Adopted 1960[1]
2. Conservation and Open Space	Adopted 1973
3. Scenic Roads	Adopted 1975
4. Seismic and Safety	Adopted 1976
5. Parks and Recreation	Adopted 1978
6. Noise	Adopted 1979
7. Historic Resources	Adopted 1982
8. Housing	Adopted 1982
Area Plans	
9. San Bruno Mountain General Plan Amendment	Adopted 1976
10. Emerald Lake Hills Community Plan	Adopted 1977
11. Montara-Moss Beach-El Granada Community Plan	Adopted 1978[2]
12. North Fair Oaks Community Plan	Adopted 1979
13. Local Coastal Program (LCP)	Adopted 1980
14. Skyline Area General Plan Amendment	Adopted 1983

Notes: [1]Most parts have been superseded.

[2]Now included in the Local Coastal Program.

1. Information Base

The General Plan provides information on existing natural and man-made conditions of the physical environment. These local conditions can then be analyzed and problems and opportunities concerning resource management and community development can be addressed.

2. Coordination Tool

The General Plan identifies key plans, regulations and agencies that affect planning decisions. The plan makes recommendations for improving this coordination.

3. Guide to Development

The General Plan indicates the type of development that the County desires, where it should be located and how it should be regulated. This information is useful to developers and other agencies. It reduces uncertainty about the kinds of development that are acceptable.

4. Guide for Local Decision Making

Until fairly recently, the General Plan was regarded as an advisory document with little legal effect. Since the 1970's, however, State law has required more and more local governmental decisions to be consistent with or based on consideration of the General Plan. Table 3 contains a summary of General Plan consistency requirements which affect local decision making.

III. ORGANIZATION AND CONTENT OF THE GENERAL PLAN

A. GENERAL ORGANIZATION OF THE GENERAL PLAN

1. Four Editions

The General Plan is available in four editions: (1) Comprehensive Edition, (2) Selected Chapter Edition, (3) Summary Edition, and (4) Abstract Edition. Each addition is made up of a combination of various components. The Comprehensive Edition contains the full text and all parts of the General Plan. It consists of: Background and Issue statements for all chapters, (3) Policies for all chapters, and (3) all Maps. The Selected Chapter Edition may comprise any number of Background, Issue and Policy statements from General Plan Chapters that may need to be assembled. The Summary Edition contains a Summary of the General Plan, all Policies, and all Maps, while the Abstract Edition contains just the Summary and all Maps.

2. Relation to Current and Future Area Plans

Part 1 and Part 2 contain policies that apply to the entire unincorporated area. The Area Plans Summary consists of a consolidated set of all adopted Area Plans, whose policies apply to specific parts of the

TABLE 3

GENERAL PLAN CONSISTENCY REQUIREMENTS

CONSISTENCY REQUIREMENTS	DECISIONS
A. Actions Which Must be Consistent with the General Plan	1. Adoption of zoning ordinances and rezonings. 2. Subdivisions (tentative and parcel maps). 3. Reservation of land for public use within a subdivision. 4. Acceptance or approval of open space easements. 5. Development agreements between developers and local governments. 6. Redevelopment plans. 7. Housing projects undertaken by housing authorities. 8. Parking facilities developed by public parking authorities. 9. Creation of on-site wastewater disposal zones. 10. Agricultural preserves established under the Williamson Act and the proposed alternate land use when the contract is cancelled. 11. Establishment or expansion of solid waste facilities. 12. Preparation of development plans for large-scale urban development projects. 13. Acceptance or approval of open space easements.
B. Actions Which Must be Consistent with a Particular Element of the General Plan	1. Acquisition, disposal or regulation of open space land (Open Space Element). 2. Building permits (Open Space Element). 3. Subdivision map (Open Space Element). 4. Open space zoning ordinance (Open Space Element). 5. Dedication of land or payment of fees for park and recreational purposes as a condition of subdivision (Recreation Element). 6. Certain housing and housing programs for individuals with special needs (Housing Element). 7. Land use decisions affecting areas with minerals of regional or statewide significance (mineral resource management policies of the Conservation Element).

TABLE 3 (continued)

GENERAL PLAN CONSISTENCY REQUIREMENTS

CONSISTENCY REQUIREMENTS	DECISIONS
C. Actions Where Consistency with the General Plan Must be Considered	1. Proposed city, County and special district capital improvement projects, including land acquisition and disposal. 2. Preparation of an initial study under CEQA. 3. Approval of electrical transmission or distribution lines of municipal utility districts. 4. Preparation of specific plans.

unincorporated area. These Area Plans are condensed and organized in a standard format in the Area Plans Summary.

The General Plan will not resolve all local issues for all the unincorporated areas. It is anticipated that future Area Plans will be prepared or revisions to existing Area Plans will be undertaken to resolve problems unique to a particular unincorporated area.

3. Environmental Impact Report

An environmental impact report on the General Plan is available at the County Planning Division Office. The review of the environmental impact report took place concurrently with the review of the General Plan.

B. ORGANIZATION AND CONTENT OF THE GENERAL PLAN

1. Chapter Format

The chapters of the General Plan do not address issues in the traditional format of nine separate elements. Instead, as permitted by State law and recommended by the General Plan Guidelines produced by the State Office of Planning and Research in 1980, the required topics are organized into chapters. This organization presents information in a logical order, eliminating the duplication and overlapping found in the nine element format. Table 4 provides a list of the chapters and the mandated topics each chapter covers.

2. Design of Chapters to Facilitate Discussion

The chapters are designed to encourage and assist public discussion of General Plan issues. The chapters incorporate substantial background information and analysis, so that this information is available to the public and decision makers, particularly during the review period. Policies are contained in a separate component. They reflect current community values and serve as guides for development.

3. Extent of Revisions to the Existing General Plan Elements

The amount of research, analysis and policy development that occurred during the preparation of each chapter has varied. Generally, revision of the older elements required more new research and analysis to meet State law requirements and to address current issues. For these reasons, the Land Use and Transportation Chapters are completely new. They use none of the background information and policies from the twenty year old elements they replace. In contrast, the Historical and Archaeological Resources Chapter is essentially the same as the 1982 Historic Resources Element it replaces, except for some format changes to make the chapter consistent with the rest of the General Plan and an expansion of the discussion of Archaeological Resources. Other chapters generally incorporate: (1) some updating of policies and data from previous elements, (2) adding topical analyses required by law, or (3) developing new policies.

4. Planning Area for the General Plan Chapters

The planning area for the chapters includes all the unincorporated areas of the County. Many chapters also contain background information on cities in order to provide a broader context in which to review unincorporated areas. In most cases, policy direction is limited to unincorporated areas, where the County has direct regulatory control.

However, certain issues must be viewed in a regional or countywide perspective, and they have policy implications for other jurisdictions. Included in this category are the topics of Housing, Transportation, Parks and Recreation, and General Land Use. Implementation of policies contained in these chapters often requires coordination with other jurisdictions.

IV. PUBLIC PARTICIPATION

A. PUBLIC PARTICIPATION PROCESS OBJECTIVES

The public participation and review of the General Plan was intended to efficiently meet the following objectives: (1) furnish adequate opportunity for the general public to understand and provide input into the General Plan, (2) promote dialogue between the Planning Commission, Board of Supervisors, advisory groups, the public and the staff to generate new information, issues and alternatives, and (3) develop General Plan policies that the Planning Commission and Board of Supervisors concurred with as guidelines for development decisions.

B. LEGAL REQUIREMENTS

The Government Code (Sections 65351 and 65355) requires that the Planning Commission and the Board of Supervisors each hold at least one public hearing before formally adopting a General Plan. Apart from these legal requirements, there is a great deal of flexibility in how the plan is publicly reviewed and adopted.

C. THE PUBLIC PARTICIPATION PROCESS

Both the Planning Commission and the Board of Supervisors held workshops and public hearings before they adopted the General Plan. The Planning Commission began review in August 1984, held 27 hearings and finished in November 1985. Review started with Resource Management Chapters and then proceeded to Community Development Chapters. The Board of Supervisors held 13 hearings beginning in December 1985 and concluding in November 1986.

Workshops were scheduled for both the Planning Commission and the Board of Supervisors to provide an introduction to General Plan Chapters and to discuss major issues. These workshops were used to generate new information, issues, alternatives and policy directions that the Planning Commission and the Board wanted addressed. Public hearings followed these workshops to resolve final policy direction.

TABLE 4

GENERAL PLAN CHAPTERS AND THEIR RELATION TO STATE MANDATED GENERAL PLAN ELEMENTS[1]

CHAPTERS	MANDATED ELEMENTS								
	Land Use	Circulation	Housing	Conservation	Open Space	Seismic Safety	Noise	Scenic Highways	Safety
RESOURCE MANAGEMENT									
1. Vegetative, Water, Fish and Wildlife Resources				X	X				
2. Soil Resources				X	X				
3. Mineral Resources				X	X				
4. Visual Quality								X	
5. Historical and Archaeological Resources[2]									
6. Parks and Recreation Resources					X				
COMMUNITY DEVELOPMENT									
7. General Land Use	X								
8. Urban Land Use	X								
9. Rural Land Use	X								
10. Water Supply				X					
11. Wastewater[2]									
12. Transportation		X							
13. Solid Waste[2]									
14. Housing			X						
15. Natural Hazards						X			X
16. Man-Made Hazards							X		

[1]The "X" marks in the matrix indicate the chapter(s) of the County General Plan in which the main body of background text and policies are contained which meet the legal requirements for each of the State's mandated General Plan Elements. These chapters may also meet other legal requirements for General Plans. The introduction to each chapter explains any additional legal requirements the chapter satisfies.

[2]Elements addressing these topics are optional in a General Plan. The Solid Waste Chapter is needed to meet other legal requirements for a General Plan.

The public participation process involved a wide range of citizens and groups, especially community groups from unincorporated areas, groups which were advisory to the Board of Supervisors and other groups most affected by the General Plan. These groups were invited to attend workshops and hearings with the Planning Commission and the Board on topics in which they had an interest.

V. REVISING AND AMENDING THE GENERAL PLAN

The General Plan is a dynamic document, because it is based on an understanding of existing and projected conditions and needs, all which change continually. These documents will periodically need comprehensive revision to reflect new conditions and attitudes. Approximately every five years such a revision should take place. There will also be amendments to parts of the Plan in the short term. With some minor exceptions, local governments cannot amend their General Plan more than four times in one calendar year (Government Code Section 65361 and Health and Safety Code Section 56032(d)). Each of these amendments can encompass several different changes.

PHYSICAL SETTING

San Mateo County, situated along the Central California coastline, encompasses the major portion of the San Francisco Peninsula. The County covers approximately 554 square miles, with land accounting for approximately 448 square miles and inland waters and San Francisco Bay tidal areas accounting for the remainder. The County is roughly 42 miles in length and varies from seven to twenty miles in width. Approximately 55 miles of the County's western border is Pacific shoreline, and roughly 34 miles of the eastern border is Bay shoreline. The County is bounded on the north by the City and County of San Francisco and on the south and southeast by Santa Cruz and Santa Clara Counties.

I. TOPOGRAPHY

The topography of the County is extremely varied. Elevation ranges from sea level to 2,572 feet atop the Santa Cruz Mountains. This mountain range, running in a north-south direction, divides the County into two distinct regions, the Bayside and the Coastside. Much of the Bayside consists of mudflats, marshes, artificial fill and broad, flat alluvial plains. This level, low-lying region changes into gently rolling Bayside foothills, increasing in slope to the 15-30%. The San Andreas Fault parallels the Santa Cruz Mountain Range, demarcating the end of the Bayside foothills and the beginning of the mountain range.

The topography of the Santa Cruz Mountains is generally rugged, with densely forested slopes often exceeding 50%, particularly on the western side of the range. Skyline Ridge, which forms the crest of the mountains, is fairly level and grass-covered, providing a number of spectacular vistas of the Ocean and the Bay Area.

Coastside topography ranges from gently sloping foothills abutting the western face of the Santa Cruz Mountains to broad, nearly level coastal terraces. Small valleys created by streamflow appear throughout the foothills. Features along the shoreline range from wide, sandy beaches to rocky coves. Where wave action has eroded the coastal terraces, high, steep cliffs rise out of the ocean.

II. CLIMATE

Dry, mild summers and moist, cool winters characterize San Mateo County's overall climate. Temperatures are strongly influenced by large saltwater bodies on the east and west and the Santa Cruz Mountains. This combination of features has resulted in a variety of microclimates throughout the County with hill and ridgetop areas, valley floors and coastal areas each experiencing different temperatures and precipitation patterns.

The Coastside experiences a marine climate, characterized by cool, foggy summers and relatively wet winters. Fog, the result of condensation over the ocean near the coast, provides moisture and cool air for the coastal terraces. These elements are largely responsible for the emergence of the Coastside region as an agricultural area, featuring a number of specialty crops. The Coastside's average annual temperature is about 55°F, with average minimum and maximum temperatures deviating only 7-9°F.

Bayside climates are generally warm and sunny, particularly in the summer months when hot air from the valleys moving to the east warms the prevailing cool ocean breezes. Average annual temperatures are about 58-59°F with temperatures deviating about 12-13°F.

About 74% of the total annual precipitation in San Mateo County occurs from December through March. During this wet season, precipitation levels average from 3.07 to 4.32 inches per month. One of the key influences upon precipitation is elevation. Annual precipitation generally increases with elevation and ranges from 15 inches at sea level to approximately 50 inches in the mountains. A given elevation on the Bayside generally receives less precipitation than the same elevation on the Coastside, because the Santa Cruz Mountain Range acts as a rain shield causing moisture-laden air moving in from the Coastside to condense and deposit much of its moisture in the form of rain or fog as it reaches the higher, colder mountains.

III. PATTERN OF DEVELOPMENT

Initial urban development in the County was heavily influenced by topographic characteristics. The easily accessible Bayside first served by the San Francisco-San Jose Railroad and having land suitable for urban expansion, developed quickly. Land use activities sought advantageous sites. Manufacturing and warehousing activities settled on water level sites, business activities occupied large level areas and residential areas occupied gently sloped areas.

Development of the Coastside, however, was quite different. The geographic barriers of the Santa Cruz Mountains delayed construction of major transportation arteries to the coast. The Ocean Shore Railroad briefly provided access and generated development; however, engineering problems, the geologic havoc created by the 1906 earthquake, and financial difficulties forced the railroad to cease operations. The failure of the railroad adversely affected the seasonal development already established and effectively precluded the speculative development planned for the area.

Today, roads provide access to the Coastside and several small communities exist. Development occurred primarily along the ocean in the Mid-Coastside. There was also some residential development, small subdivided areas and rural service centers, in the more remote mountainous areas. Often the physical infrastructure of coastal communities, particularly sidewalks and paved roads, is missing. It is not uncommon

to see unpaved roads or no sidewalks or curbs in residential areas. The absence of these improvements contributes to the rural atmosphere. Much of the Coastside, however, remains undeveloped and many topographic features remain undisturbed. Most of the rolling foothills, valleys and coastal terraces continue in an undeveloped state, or in use for agriculture and grazing thus retaining much of their scenic beauty.

Bayside development has obscured many topographic features. As the flat plains areas become increasingly crowded, development spread into the foothills. Today, over 95% of the County's developed land is on the Bayside which now appears as a continuous corridor of fully urbanized cities and towns. Scattered throughout these municipalities are pockets of unincorporated communities and neighborhoods. Frequently, these pockets can be distinguished from the surrounding cities by the absence of physical improvements. A lack of sidewalks, curbs, sewers and other municipal improvements is common and the result of inconsistent development standards for public works projects.

While development has overcome many of the constraints imposed by the varied physical settings of the County, sometimes to the point of obscuring and removing topographic features, a substantial amount of the natural physical setting remains undisturbed and is appreciated by scores of County residents and visitors.

POLITICAL SETTING

This section first discusses the political history of the unincorporated area. It then discusses the major local, regional and State governmental agencies and groups that make or affect planning decisions for the unincorporated areas.

I. POLITICAL HISTORY OF UNINCORPORATED AREAS

The unincorporated area includes a variety of urban pockets east of Route 280 and most of the rural area west of Route 280. A number of physical and political factors have caused these geographic areas to remain unincorporated.

A. URBAN AREAS

Historically, many property owners have preferred that their area remain under the County's jurisdiction (unincorporated) rather than be incorporated into a city, because before the passage of Proposition 13 in 1978, property taxes were appreciably lower. Development standards were also less stringent and associated fees less costly. Additionally, many property owners preferred the less developed character of these areas.

Cities chose not to annex particular unincorporated pockets for a number of other reasons. Sometimes the type and standard of development within an unincorporated area was different, usually below city standards, than the development in the adjacent city and these areas were often considered incompatible. Sanitary sewers, curbs, gutters, sidewalks, street lights and other standard improvements were not required by the County at the time many of the unincorporated pockets were developed. As a result, cities were hesitant to annex unincorporated pockets where major capital expenditures were required to bring them up to city standards. Today, these factors continue to discourage the annexation of urbanized unincorporated pockets by adjacent cities.

B. RURAL AREAS

Within San Mateo County, the vast majority of unincorporated lands are located in rural areas. These areas have developed very slowly, primarily because of limited accessibility and rugged terrain. Today these areas remain undeveloped or developed at very low densities. Public policy has discouraged the annexation of the rural unincorporated areas to cities because most rural lands are located far from the boundaries of cities, making the provision of urban services physically impractical and economically unfeasible. It is for these reasons, as well as to discourage urban sprawl, that the Local Agency Formation Commission (LAFCo) has not assigned city spheres of influence for most unincorporated rural lands.

II. PLANNING FOR UNINCORPORATED AREAS

Planning is a required function of local government in California. The Board of Supervisors and the Planning Commission, with the assistance of the Planning and Development Division, are responsible for planning for unincorporated areas. Likewise, each city plans for lands within its own jurisdiction.

A. ROLE OF THE BOARD OF SUPERVISORS, PLANNING COMMISSION AND PLANNING DIVISION

1. Board of Supervisors

The Board of Supervisors, a five member body, has direct jurisdiction for land use in unincorporated areas. As the County's legislative body, it is the Board of Supervisors that ultimately adopts the General Plan and acts on zoning and subdivision matters for unincorporated areas.

2. Planning Commission

The Planning Commission advises the Board of Supervisors on the General Plan, zoning, and subdivision proposals and decides, through its delegated powers, on use permits, variances, and other development permits, subject to appeal to the Board of Supervisors. The Planning Commission consists of five members, each appointed by the Board of Supervisors. Advising the Planning Commission on legal and other technical matters are representatives from the District Attorney's Office, the Public Works Department and the Environmental Health Department.

3. Planning Division

The Planning and Development Division advises the Planning Commission, carries out technical work on the General Plan, and prepares recommendations on current planning matters, such as development applications. In many cases, the Board of Supervisors has delegated the responsibility for day-to-day current planning matters to the planning staff, subject to appeal to the Planning Commission and the Board of Supervisors.

B. ROLE OF ADVISORY GROUPS

1. Regional Planning Committee (RPC)

The Regional Planning Committee's participation in County planning is important in fulfilling countywide planning objectives. Upon the recommendation of the Board of Supervisors, the Regional Planning Committee of San Mateo County was organized in 1964 by the cities and County of San Mateo. Currently, RPC is composed of one representative from the city council of each incorporated city within the County, three members of the Board of Supervisors, and six nongovernmental members appointed by a committee from the Council of Mayors and Board of Supervisors and serving a three-year term.

The RPC discusses planning issues of Countywide importance, assists in coordinating planning programs which require concerted action by a number of cities or by cities and the County. Projects undertaken by RPC through subcommittees have included: circulation, housing, parks, recreation and open space, energy, bayfront planning, bikeways, and solid waste. While the RPC is primarily an advisory board to the Board of Supervisors, it also serves as the Airport Land Use Commission for the County.

2. Agricultural Advisory Committee

To assist in the achievement of the objectives of the Planned Agricultural Zoning District (PAD) regulations, the Board of Supervisors established the Agricultural Advisory Committee. The Agricultural Advisory Committee consists of 17 members appointed by the Board of Supervisors, including farmers familiar with Coastside crops, agricultural experts, and representatives of the general public interest. The Committee actively assists in the preservation of agriculture of the Coastside by reviewing agricultural permits and providing advice and recommendation to the Planning Commission and Board Supervisors to achieve the objectives of the PAD.

3. Historic Resources Advisory Board

In 1978, a County Historical Resources Advisory Board was appointed by the Board of Supervisors to advise the Planning Commission, Parks and Recreation Commission and the Board of Supervisors on matters relating to the protection and preservation of man-made resources of historical, cultural and architectural significance. The jurisdiction of the Board is limited to unincorporated areas.

C. ROLE OF OTHER LOCAL BODIES

1. Local Agency Formation Commission (LAFCo)

The Local Agency Formation Commission was created by the Legislature in 1963 and is responsible for the discouragement of urban sprawl and the encouragement of the orderly formation and development of local governmental agencies. There is a LAFCo in each county in California except the City and County of San Francisco. LAFCo is a five-member commission comprised of two city council members, two supervisor members, and one public member.

The three acts that empower LAFCo to carry out its mandate are the Knox-Nisbet Act, the District Reorganization Act and the Municipal Organization Act. These laws require LAFCo to decide on proposals for: the incorporation of cities, the annexation or detachment of territory from a city, the consolidation of two or more cities, the formation of a special district, and the dissolution, reorganization, consolidation or merger of a special district.

In addition, the Commission has the responsibility of determining the sphere of influence, or ultimate service area boundary, of each city and special district in the County. State law requires that spheres of influence studies be completed for all cities and special districts by January 1, 1985. In recent years, there have been a number of sphere of influence studies completed by LAFCo that have explored the ultimate service area boundaries for some of the major unincorporated areas. Areas where studies have been completed include: Redwood City-North Fair Oaks, 1977; San Bruno Mountain, 1979; East Palo Alto, 1981; and cities and special districts in Southern San Mateo County (Atherton, Menlo Park, Portola Valley and Woodside), 1984. Additional sphere of influence studies are anticipated for the Mid-County area (Redwood City, San Carlos, Belmont, Foster City and San Mateo), the Mid-Coast area (Half Moon Bay, Montara, Moss Beach and El Granada) and the North Coast area (Pacifica). State planning law requires cities and counties to refer proposed general plan documents to LAFCo for review and comment prior to adoption.

2. Special Districts

Special districts created under a host of statutes offer a range of services similar to those provided by cities and counties. The City and Special District Handbook, prepared by the San Mateo Local Agency Formation Commission in 1984, outlines the services of the 74 special districts currently operating in the County. Special districts provide many important services including, but not limited to, air pollution control, water supply, fire protection, garbage and refuse collection and disposal, mosquito abatement, open space preservation, resource conservation, transit, sanitation, highway lighting, flood control and sewer maintenance.

3. Airport Land Use Commission (ALUC)

As required by State planning law, the San Mateo County Airport Land Use Commission (ALUC) is charged with developing a land use plan for the area surrounding the County's three airports to protect the public from aviation hazards. This function has been assigned to the Regional Planning Committee of San Mateo County (RPC), which established a subcommittee to carry it out. In March 1981, the ALUC adopted its most recent Airport Land Use Plan, establishing policies for noise compatibility, height of buildings and airport approach zones.

D. REGIONAL PLANNING AGENCIES

There are a number of agencies that are mandated by State law to prepare areawide plans, with which local general plans should be coordinated. Included in this category are the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC).

1. Association of Bay Area Governments (ABAG)

The Association of Bay Area Governments (ABAG) was created in January, 1961. It was founded in recognition of the fact that the physical, economic and social well-being of the entire region and of its individual communities depends on continuing areawide cooperation and coordination. It provides a forum for addressing regional problems and for formulating and implementing regional development policies. ABAG's programs are financed by membership dues, special assessments, grants, other regional agencies, and the State and Federal governments. Its governing board is composed of elected city and county officials. ABAG's regional growth projections serve as the foundation of Federal and State mandated regional plans and review of Federally funded programs in the region. As the council of governments for the Bay Area, ABAG is sometimes required by State law to perform certain functions for the region. For example, ABAG is required to determine existing and projected housing need for the region and for each jurisdiction. In turn, local governments are required to use this information as a basis of the housing needs discussion required in the Housing Element.

2. Metropolitan Transportation Commission (MTC)

MTC carries out comprehensive transportation planning for the nine-county, San Francisco Bay Area. MTC is required to prepare a Regional Transportation Plan and Transportation Improvement Program covering highways, selected mass transit, railroads and aviation facilities and services. All street, highway, and most mass transit projects supported by Federal and State transportation grants must be consistent with these plans and programs.

E. STATE AGENCIES THAT EXERCISE DIRECT LAND USE CONTROL IN SAN MATEO COUNTY

There are two agencies that exercise considerable planning and regulatory control over land use in the County: the California Coastal Commission and the San Francisco Bay Conservation and Development Commission (BCDC).

1. California Coastal Commission

The California Coastal Act, enacted by the State Legislature in 1976, established policies for coastal protection and development to be implemented through cooperative action by State and local governments. The Coastal Act created a permanent California Coastal Commission. The Coastal Commission certifies Local Coastal Programs (LCP), prepared by local governments for land within the Coastal Zone, for consistency with Coastal Act policies. The Coastal Commission certified the San Mateo County Local Coastal Program in 1980.

Until a Local Coastal Program has been certified, the Coastal Commission retains permit authority over development within the Coastal Zone. After LCP certification, the local government takes over issuing coastal development permits consistent with its LCP. San Mateo County began

issuing coastal development permits in 1981. The Commission, however, retains permanent jurisdiction over development on State tidelands, submerged lands, public trust lands, and lands within the boundaries of specified ports. In addition, the Commission acts on appeals of certain local decisions affecting the Coastal Zone and must approve all Local Coastal Program amendments.

2. San Francisco Bay Conservation and Development Commission (BCDC)

In 1955, the McAteer-Petris Act created the San Francisco Bay Conservation and Development Commission giving it the responsibility of preparing a comprehensive and enforceable plan for the conservation of the water of San Francisco Bay and the development of its shoreline. The McAteer-Petris Act was subsequently amended to make the Commission permanent and to give the resulting San Francisco Bay Plan the force of law.

To implement the San Francisco Bay Plan, the Commission: (1) regulates all filling and dredging in San Francisco Bay, (2) provides public access to the Bay to the maximum extent feasible, within a 100 foot wide strip inland from the Bay, and (3) minimizes pressures to fill the Bay by ensuring that the limited amount of shoreline property suitable for regional high priority water-oriented uses is reserved for these purposes.

The placement of fill, dredging, or any substantial change in use of the Bay or shoreline requires a permit from BCDC. Under the BCDC law, the Commission must complete action on a permit application within 90 days after a completed application has been filed or the permit is automatically granted. Permits are classified as either "major" or "administrative." Administrative permits are issued by the Executive Director for "minor repairs and improvements," as defined in the Commission's laws and regulations. All other permits are major permits and require a public hearing and action by the Commission. Permits are issued only if the project is consistent with the policies of the San Francisco Bay Plan and the McAteer-Petris Act.

SOCIAL AND ECONOMIC SETTING

Interactions between population, land use, and the economy shape the County's man-made environment, and usually impact the natural environment as well. Therefore, social and economic trends such as population growth, changes in the age structure, declines in household size, and shifts in economic activity are significant in planning for land use, transportation, and housing. These trends also impact many types of facilities and services provided by government and the private sector.

This section provides a brief survey of regional population and economic growth, and the County's role in regional development. That discussion is followed by discussions of trends and geographic distribution of population in the County, an analysis of some important population changes, and a review of employment trends. Also presented are projections of future County population and employment growth.

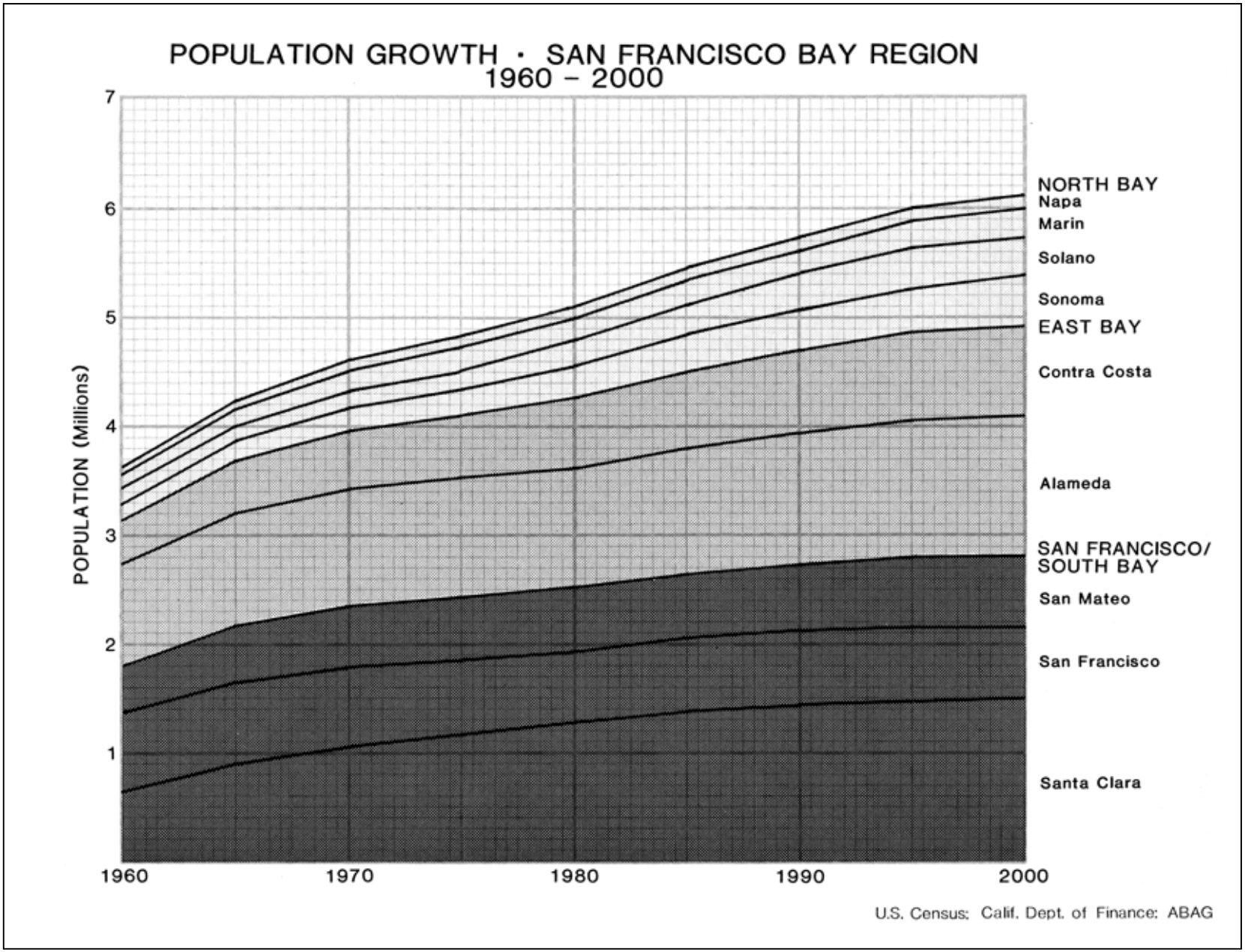
I. REGIONAL GROWTH AND CHANGE: THE COUNTY'S ROLE

The nine-county San Francisco Bay Region experienced extremely rapid population and employment growth in the two decades following World War II. In the 1950s and 1960s, a large share of regional growth was suburban "spillover" from older central city areas such as San Francisco and Oakland. In this period, San Mateo County, with an available supply of flat, accessible land, was a focal point of regional growth. In the 1970s, the pace of regional growth slowed somewhat and the focus shifted to the center of "high technology" in the Santa Clara Valley. Projections for the next twenty years show a continuation of substantial growth in Santa Clara County and an accelerated rate of employment expansion and population growth in the East Bay. Growth in San Mateo County, however, will be comparatively moderate.

A. POPULATION TRENDS AND PROJECTIONS

The graph of Population Growth-San Francisco Bay Region shows regional population growth trends since 1960, and the Association of Bay Area Governments' (ABAG) projections to the year 2000. In the 1960-1980 period, the region's population grew about 42% to 5.2 million people in 1980. During this period, about half of the regional growth occurred in the three-county San Francisco/South Bay area, principally in Santa Clara County. San Mateo County's population increased by 32% to 587,000 in 1980. However, most of the County's growth was in the 1960-1970 decade; the 1970-1980 growth rate was only 6%.

The Bay Region's population growth rate for the next twenty years will be considerably slower than the rate for the last 20 years. Nevertheless, the region will gain an additional one million residents and population at the turn of the century is projected by ABAG to be 6,142,000.


POPULATION GROWTH · SAN FRANCISCO BAY REGION
1960 – 2000
POPULATION (Millions)
7
6
5
4
3
2
1
1960
1970
1980
1990
2000
NORTH BAY
Napa
Marin
Solano
Sonoma
EAST BAY
Contra Costa
Alameda
SAN FRANCISCO/
SOUTH BAY
San Mateo
San Francisco
Santa Clara
U.S. Census; Calif. Dept. of Finance; ABAG

Over the next two decades, increasing amounts of regional population growth will take place in the East Bay and North Bay counties. Also, the pace of the phenomenal growth in Santa Clara County will slow somewhat. Nevertheless, the three-county San Francisco/South Bay Area's population will increase by 20%, with most of the increase in Santa Clara County. San Mateo County's growth in this period is predicted to be a comparatively modest 37,000, little more than was added in the ten-year period 1970-1980.

B. EMPLOYMENT TRENDS AND PROJECTIONS

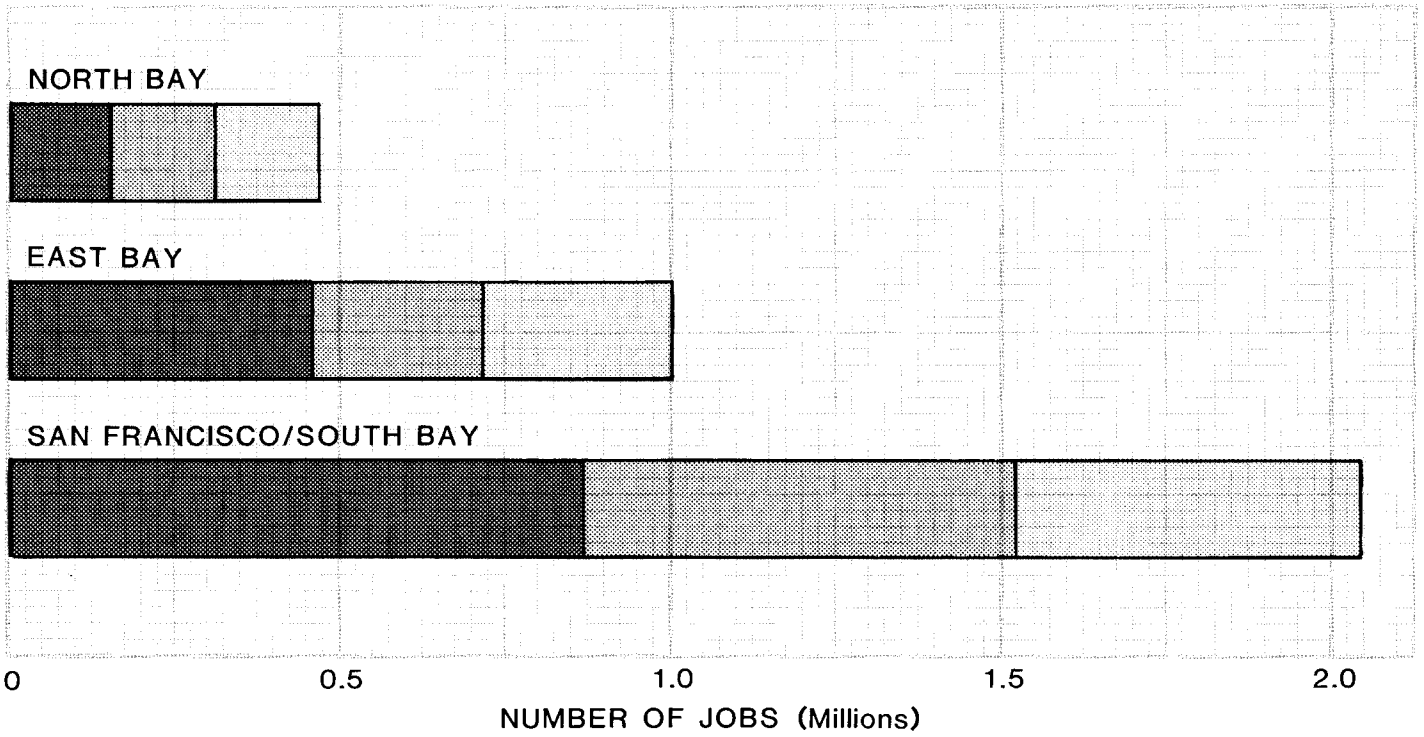
Employment composition and growth statistics provide measures of the economic makeup and changes in the regional economy. Economic growth is also linked to population growth since it affects migration to the State and region. Regional employment trends and projections are illustrated in the chart of Employment Growth-San Francisco Bay Region.

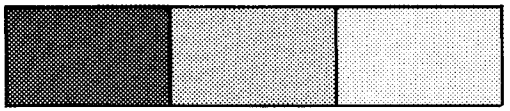
For several decades, regional employment growth has outstripped population growth. In the 1960-1980 period, employment increased 75%, while population increased only 42%. ABAG projects that over the next 20 years the rates of both regional employment and population growth will moderate, but employment will continue to expand more rapidly than population due to continued rises in labor force participation rates, notably among women. In this period, regional economic expansion (as measured by employment) will occur at a rate of 39%, compared with a predicted 19% rise in population.

San Mateo County now has about 10% of the jobs available in the region. In many ways, the County's distribution of jobs by type of industry resembles the region-wide distribution. However, there are some significant differences. For example, the County has only 6% of the region's employment in manufacturing. However, it has almost one-third of the regional employment in transportation because of the location of San Francisco International Airport in the County.

Over the next twenty years, as shown in the chart of Employment Growth, the three-county San Francisco/South Bay segment of the Bay Area will exceed growth in the remainder of the region, despite accelerated economic growth predicted for the East Bay counties. The three-county area will add 536,000 jobs in the twenty year period 1980-2000. Almost two-thirds of the employment growth in the three-county area will occur in Santa Clara County (341,000 additional jobs), while the increase for San Francisco (103,600 jobs) will only slightly exceed San Mateo County's gain (91,000 jobs). Continued rapid employment growth in San Francisco and South Bay counties, while creating added pressures on land, transportation and housing in the area, will assure future San Mateo County residents of continued access to an important and growing segment of the regional job market.

EMPLOYMENT GROWTH · SAN FRANCISCO BAY REGION
1960 - 2000





EMPLOYMENT 1960 | INCREASE 1960-1980 | INCREASE 1980-2000

U.S. Census: ABAG

II. COUNTY POPULATION GROWTH AND COMPOSITION

A. POPULATION DISTRIBUTION

For analytical purposes, it is useful to divide the County into several major subareas which can be easily identified. The Map of Unincorporated County Lands shows the boundaries of five County statistical areas for which data have been compiled: North County, Mid Bayside, South Bayside, Mid Coastside, and South Coastside. Also shown are the boundaries of major unincorporated areas and the boundaries of the unincorporated "rural" lands in the southwestern part of the County. The 1970 and 1980 census counts of population and housing units for individual cities and unincorporated communities are presented in Appendix A.

Population for County statistical areas in 1970 and 1980, and ABAG's population projections to the year 2000, are shown in Table 5. The Mid-Bayside statistical area registered the largest numerical population gain in the 1970-1980 decade, with the addition of 14,500 residents. Most of this growth is attributable to the continued development of Foster City during that period. Population growth of 11,800 in the North County area was centered in Daly City, while most other North County cities were stable or experienced small losses due to declines in household size. The South Bayside, where household size decline started early in the decade, had a small population loss.

The most rapid rate of population growth in the 1970-1980 decade occurred in the Mid-Coastside area, consisting of Half Moon Bay and the unincorporated communities of Montara, Moss Beach, El Granada, and Princeton. The 6,600 new residents added in these communities represented a population gain of 75%. The South Coastside area also had a substantial percentage increase in population. However, numerical growth there was slight, and the 1980 population count in that vast rural area was only 5,600.

The primary reason for the relatively slow rates of population growth in established urbanized areas of the County in the 1970-1980 decade is the progressive decline in average household size throughout the period. If household size had remained constant, the County would have experienced a 23% growth in population, rather than the 5.6% increase which actually occurred.

B. POPULATION PROJECTIONS

ABAG's population projections by County statistical areas, shown in Table 5, are based on demographic and economic assumptions relating to household size, fertility, interest rates, and other variables which affect growth. In addition, the projections reflect information collected by ABAG in 1982 on local government land use policies.

SAN MATEO COUNTY GENERAL PLAN

UNINCORPORATED COUNTY LANDS

UNINCORPORATED COUNTY LAND

COUNTY STATISTICAL AREAS

0 4000 8000 16000 32,000 FEET

99 320nc

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

NORTH COUNTY
(urban)

MID-BAYSIDE
(urban)

MID-COAST
(rural)

MID-COAST
(urban)

SOUTH BAYSIDE
(urban)

SOUTH COAST/SKYLINE
(rural)

PACIFIC
OCEAN

SANTA CLARA
COUNTY

SANTA CRUZ
COUNTY

OLYMPIC COUNTRY CLUB
SHARP PARK
COLMA
GUADALUPE VALLEY QUARRY
MUSSEL ROCK
McLELLAN NURSERY
SAN BRUNO MOUNTAIN
SIERRA POINT
OYSTER POINT
CALIFORNIA GOLF CLUB
POINT SAN BRUNO
SAN FRANCISCO BAY
PACIFICA
COUNTRY CLUB PARK
SAN FRANCISCO JAIL
SAN FRANCISCO INTERNATIONAL AIRPORT
MORI POINT
POINT SAN PEDRO
COYOTE POINT
BURLINGAME HILLS
FOSTER CITY
HILLSBOROUGH
MONTARA
MONTARA POINT
MOSS BEACH
PENINSULA GOLF AND COUNTRY CLUB
HIGHLANDS/BAYWOOD PARK
HARBOR INDUSTRIAL
IDEAL CEMENT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
EL GRANADA
PILLAR POINT
DEVONSHIRE
MOBILEHOME PARKS
MALCOLM PARK
HARBLER AREA
OAK KNOLL
NORTH FAIR OAKS
KENSINGTON SQUARE
EDGEWOOD PARK
EMERALD LAKE HILLS
MORGAN RANCH
MENLO OAKS
PARK FOREST/ WATKINS
SEQUOIA TRACT
WEST MENLO PARK
WEEKEND ACRES
STANFORD LANDS
LADERA
SEAL ROCK
PORTOLA VALLEY
LA HONDA
SAN GREGORIO
PESCADERO
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
ANO NUEVO POINT

TABLE 5

POPULATION
SAN MATEO COUNTY - STATISTICAL AREAS
1970-2000

	POPULATION			
COUNTY STATISTICAL AREAS	1970	1980	1990	2000
URBAN	552,421	581,408	600,400	617,000
North County	217,992	229,771	237,500	236,200
Mid-Bayside	153,288	167,648	172,600	169,600
South Bayside	172,291	168,507	172,100	185,000
Mid-Coast	8,850	15,482	18,200	26,200
RURAL	4,184	5,921	6,700	8,000
Mid-Coast	300	321	400	500
South Coast/Skyline	3,884	5,600	6,300	7,500
TOTAL COUNTY	556,605	587,329	607,100	625,000

Sources: 1970-1980: U.S. Census.
Projections: Derived from ABAG, Projections '83.

Countywide population growth in the twenty year period 1980-2000 will be quite slow relative to previous periods. A total gain of 37,000 (6.4%), or an average increase of 1,850 per year, is projected. During this period, household size declines, while somewhat smaller than those experienced in the 1970s, will continue to limit population growth. The number of households (occupied housing units) will increase three times as rapidly as population (20% gain), and average household size will drop from 2.61 to about 2.32.

Almost half of the County's population gain (16,500) in the next twenty years will occur in the South Bayside area, principally in Redwood City, followed by an increase of 10,700 in the urban Mid-Coastside area. Population growth in the North County and Mid-Bayside areas will be considerably slower, although rates vary from community to community within these areas. The Map of Population and Employment Growth illustrates projected growth patterns by community.

C. POPULATION AND HOUSEHOLD COMPOSITION

1. Age Composition

A major demographic shift which produced a number of very evident consequences occurred during the 1970-1980 decade. In this period, many members of the post-World War II "baby boom" generation passed out of the school system and entered young adulthood. They left in their wake vacant schools and parents with smaller "empty nest" households. As these young adults formed their own households, they created a sudden demand for housing at a time when housing production was lagging. As they entered the labor force, competition for jobs increased and economic growth scarcely kept pace with the demand for employment. Birth rates in this generation were low, and the population under 10 years of age declined in the decade. While this was occurring, the County's senior population (60 and over) began an increase which becomes more marked as time passes.

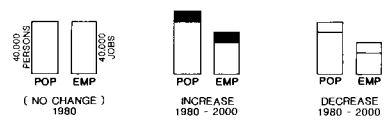
Table 6 shows changes in the percentage distribution of age groups projected through 2000. The slight increase in the proportion of juveniles which appears in the late 1980s and into the 1990s reflects the "second wave" of the "baby boom"--births to the large number of young adults who were born in the post World War II period. Generally, the trend over the next 20 years is toward an "aging" population. Median age in 1980 was 32.9 years; for 2000, it is projected to be 41.5 years.

Although these projected trends in age composition will be felt to some extent in all parts of the County, the impact will vary somewhat from area to area. See Table 7 for subarea variations in the proportions of population in two major age groups in 1980.

0.2M

SAN MATEO COUNTY GENERAL PLAN

POPULATION AND EMPLOYMENT GROWTH 1980 – 2000



SOURCE: ABAG, " Projections '83 "
NOTE: Data relate to ABAG " subregional study areas ", generally equivalent to LAFCO " spheres " (cities plus related unincorporated areas)

99 320 ac.

0 4000 8000 16000 32,000 FEET

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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north

DALY CITY
COLMA
BRISBANE
SOUTH SAN FRANCISCO
PACIFICA
SAN BRUNO
SAN FRANCISCO INTERNATIONAL AIRPORT
MILLBRAE
BURLINGAME
HILLSBOROUGH
SAN MATEO
FOSTER CITY
BELMONT
HALF MOON BAY
SAN CARLOS
REDWOOD CITY
EAST PALO ALTO
ATHERTON
MENLO PARK
WOODSIDE
RURAL COASTSIDE
PORTOLA VALLEY

BRISBANE
SIERRA POINT
OYSTER POINT
SAN FRANCISCO BAY
POINT SAN BRUNO
MUSSEL ROCK
MORI POINT
POINT SAN PEDRO
COYOTE POINT
FOSTER CITY
HILLSBOROUGH
MONTARA POINT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
PILLAR POINT
MENLO PARK
EEL ROCK
SEAL ROCK
PORTOLA VALLEY
MUSSEL ROCK
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
ANO NUEVO POINT

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

TABLE 6

AGE COMPOSITION
SAN MATEO COUNTY
1970-2000

POPULATION	PERCENT OF TOTAL					
AGE GROUP	1970	1980	1985	1990	1995	2000
0 - 4	7.7	5.9	6.9	6.4	5.9	5.3
5 - 19	27.4	21.0	17.9	17.4	18.1	18.1
20 - 29	15.6	17.9	15.9	13.7	10.9	10.1
30 - 44	18.9	22.1	24.9	25.8	24.8	22.4
45 - 64	22.7	22.6	21.9	21.8	23.9	27.2
65 and Over	7.7	10.5	12.5	14.9	16.4	16.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Median Age (Years)	29.5	32.9	35.1	37.3	39.4	41.5

Sources: 1970-1980: U.S. Census.
Projections: Derived from California Department of Finance data.

TABLE 7

SOCIAL AND ECONOMIC CHARACTERISTICS
SAN MATEO COUNTY - STATISTICAL AREAS
1980

STATISTICAL AREA/PLACE	POPULATION	PERCENT UNDER AGE 18	PERCENT AGE 60+	PERCENT NON-WHITE (NON-HISPANIC)	PERCENT HISPANIC (ALL RACES)	PERCENT 1-PERSON HOUSEHOLDS	MEDIAN HOUSEHOLD INCOME ($)
URBAN	581,408	23.6	15.5	16.8	12.5	25	23,100
North County	229,771	25.8	12.7	23.4	17.1	22	22,700
Incorporated	223,617	25.8	12.6	23.4	17.1	22	22,600
Unincorporated	6,154	23.3	13.7	24.8	19.2	20	24,400
Broadmoor	4,054	26.1	15.1	22.5	16.6	15	24,600
Other	2,100	17.8	11.2	29.0	23.7	29	21,600
Mid-Bayside	167,648	21.4	17.8	11.4	7.4	29	24,800
Incorporated	161,977	21.1	18.1	11.5	7.5	29	24,500
Unincorporated	5,671	28.6	11.6	9.5	4.6	7	40,000
Highlands/Baywood	4,531	29.6	9.4	10.5	4.5	6	40,000
Other	1,140	24.6	19.3	5.7	4.7	13	40,000
South Bayside	168,507	22.6	17.6	14.3	11.6	27	21,900
Incorporated	141,248	22.2	18.0	16.0	10.4	28	21,800
Unincorporated	27,259	24.6	15.4	6.0	18.0	21	24,800
Emerald Lake	3,400	22.9	16.7	2.9	5.9	15	27,600
North Fair Oaks	10,294	29.0	12.4	9.9	40.3	24	18,400
Sequoia	3,419	27.3	20.2	5.5	8.2	19	28,200
West Menlo Park	4,431	20.9	17.5	4.2	2.6	19	29,200
Ladera	1,592	27.6	10.2	2.6	1.3	6	41,700
Other	4,123	15.5	17.8	2.2	3.4	30	23,500

TABLE 7 (continued)

SOCIAL AND ECONOMIC CHARACTERISTICS
SAN MATEO COUNTY - STATISTICAL AREAS
1980

STATISTICAL AREA/PLACE	POPULATION	PERCENT UNDER AGE 18	PERCENT AGE 60+	PERCENT NON-WHITE (NON-HISPANIC)	PERCENT HISPANIC (ALL RACES)	PERCENT 1-PERSON HOUSEHOLDS	MEDIAN HOUSEHOLD INCOME ($)
URBAN							
Mid-Coast	15,482	27.2	10.3	4.7	8.6	19	25,000
Incorporated	7,282	26.7	12.7	5.4	10.6	18	25,500
Unincorporated	8,200	27.5	8.2	4.0	6.9	19	24,900
Montara/Moss Beach	3,840	26.8	9.1	3.4	6.1	16	28,000
El Granada	3,582	29.3	7.0	5.2	7.6	19	23,700
Other	778	23.0	*	*	*	*	*
RURAL	5,921	23.8	9.2	3.5	12.0	24	25,700
Mid-Coast	321	*	*	*	*	*	*
Unincorporated	321	*	*	*	*	*	*
South Coast/Skyline	5,600	24.0	9.4	3.6	11.9	25	25,500
Unincorporated	5,600	24.4	9.4	3.6	11.9	25	25,500
Skyline/Los Trancos/La Honda	3,397	21.9	8.3	3.3	9.2	18	30,800
Other	2,203	28.2	11.2	4.1	14.2	34	20,700
TOTAL COUNTY	587,329	23.6	15.5	16.7	12.5	25	23,200

2. Race and Ethnic Composition

Table 7 shows the percentage of nonwhite and Hispanic persons by County statistical areas, as determined in the 1980 Census. Some areas of the County, notably the North County and the South Bayside, show considerable ethnic diversity. In the North County area, 40% of the population is of nonwhite or Hispanic origin. Several North County communities have large and growing populations of Asian ancestry, which are the dominant nonwhite groups in this area. In the South County area, the nonwhite population is largely represented by the long-established black communities in East Palo Alto and Menlo Park, while the dominant concentration of Hispanic population is in unincorporated North Fair Oaks. In the Coastside areas, both nonwhite and Hispanic population percentages are below the Countywide levels.

3. Household Size and Types

Table 8 shows trends and projections in average household size. The continuing decline in average household size is reflected in the changing composition of the County's households. In the 1970-1980 decade, the number of one-person households increased from 18% to 25% of all households. In 1970, 92% of the population lived in "family" households (two or more related people), compared with 83% in 1980. In the same period, there were dramatic increases in the numbers of single parent families and divorced persons. It is likely that these trends, all of which contribute to declining household sizes, will persist and will continue to generate demand for additional housing.

4. Income Levels

Viewed as a whole, San Mateo County could be considered an affluent area. In 1979 (per the 1980 Census), median household income was $23,172, median family income was $27,279 (a family is a household consisting of two or more related persons), and per capita income was $10,723 (total income divided by total population). All of these measures are considerably above the regional, State and national levels.

As shown in Table 7, the highest median household income level ($25,450) was in the rural South Coast/Skyline statistical area. The lowest median household income level ($21,900) was in the South Bayside area, which includes a diverse mixture of small but relatively affluent cities, some large "medium" income areas, and two large communities with very modest income levels (East Palo Alto and North Fair Oaks).

With the notable exception of North Fair Oaks, household income levels in major unincorporated areas tend to be considerably higher than the average income of the respective County statistical areas in which they are located.

TABLE 8

HOUSEHOLD SIZE
SAN MATEO COUNTY
1970-2000

COUNTY STATISTICAL AREAS	PERSONS PER HOUSEHOLD 1970	1980	1990	2000
URBAN				
North County	3.26	2.79	2.68	2.53
Mid-Bayside	2.83	2.43	2.31	2.14
South Bayside	2.87	2.54	2.42	2.26
Mid-Coast	3.40	2.79	2.57	2.34
RURAL				
Mid-Coast	2.80	2.89	2.60	2.50
South Coast/Skyline	2.94	2.70	2.56	2.33
TOTAL SAN MATEO COUNTY	3.01	2.61	2.49	2.32

Sources: 1970-1980: U.S. Census.
Projections: Derived from ABAG, Projections '83.

III. COUNTY EMPLOYMENT AND ECONOMIC DEVELOPMENT

A. EMPLOYMENT STRUCTURE

1. Existing Employment

Economic activity and development in the County is reflected in its employment structure. For several decades County employment has grown more rapidly than population, and in 1980 there were some 259,000 jobs in the County.

The industry groups offering the most jobs in San Mateo County are services and retail trade (see Table 9). Together, they account for almost half of the County's employment. Government, a provider of services (including public education), accounts for 34,000 of the total 86,000 services jobs. This segment of service employment is stable, but private sector service employment is growing rapidly--including jobs in business services, medical services, hotel and recreation employment, and a wide variety of "personal services." Retail trade has also shown steady long-term growth, as might be expected in an area where above-average consumer income is matched with an abundance of quality shopping facilities.

Manufacturing is the County's third largest employment group. In recent years, however, it has shown little numerical growth, and is shrinking as a proportion of total employment. Currently, about one-third of manufacturing jobs are in the area of "nondurable goods," i.e., food products, printing, chemicals, etc.; and the remaining two-thirds are in "durable goods," primarily electrical and electronic equipment, with 8,600 employees.

The County's percentage of employment in the transportation, communications, and utilities group is considerably above the regional average, principally due to some 24,000 transportation jobs, mostly at San Francisco International Airport. Although not classified as "transportation," a significant number of jobs in other industry groups depend upon or are related to development at the airport. The airport is unquestionably the most important employment generator in the County.

In general, the County's employment structure is well balanced and is not dominated by industries that are very sensitive to rapid downturns in the economy. The increasing emphasis on "local-serving" employment (providing goods and services to the local population) and the de-emphasis of "basic" employment (the production of goods for export) is a local economic trend also occurring regionally and nationally. The high and relatively stable employment rates and high personal income levels of many residents of the County and adjoining areas have provided the basis for successful marketing of goods and services in the County.

TABLE 9

EMPLOYMENT BY INDUSTRY
SAN MATEO COUNTY
1980-2000

	NUMBER OF JOBS				
INDUSTRY GROUP	1980	1985	1990	1995	2000
Agriculture, Mining	4,487	3,900	3,600	3,600	3,500
Construction	13,859	14,000	13,000	12,400	12,500
Manufacturing	40,916	40,800	41,600	44,400	46,800
Transportation, Communications, Utilities	32,177	38,800	45,000	50,100	55,500
Wholesale Trade	18,572	19,800	21,200	22,800	23,800
Retail Trade	42,910	47,700	52,900	61,000	67,200
Finance, Insurance, and Real Estate	20,449	24,000	27,700	31,300	35,000
Services, Government	85,972	89,800	95,400	100,900	106,200
TOTAL	259,342	278,800	300,400	326,500	350,500

2. Future Employment

Employment projections prepared by ABAG are shown in Table 9. By the year 2000 some 91,000 jobs may be added, representing an employment gain of 35%. Substantial gains will take place in retail trade, transportation, the finance, insurance and real estate industries, and services. Manufacturing, agriculture, and construction will have stable employment, or even decline slightly. These projections represent a continuation of the current trend toward more "local-serving" employment and less "basic" employment in the County.

The ABAG employment projections do not indicate a large spillover of "high technology" employment from Santa Clara County. Rather, San Mateo County's employment growth appears to be more closely related to San Francisco's financial, administrative, trade, and service base, in addition to its local "population-serving" orientation.

B. LOCATION OF EMPLOYMENT

1. Existing Distribution

Table 10 shows the distribution of 1980 employment among the five County statistical areas. The North County and two Bayside areas are roughly equivalent in total employment opportunities, and together provide 98% of the County's employment. However, these areas differ somewhat in the mix of employment which they offer. The North County area's employment base is dominated by San Francisco International Airport, which supplies at least 20% of the jobs in that area. Estimates by the State Department of Employment Development show that the North County's traditional role as the location of "heavy" industry is waning considerably, although in 1980 it still contained almost one-third of the County's jobs in wholesaling and manufacturing. The Mid-Bayside area's employment base is oriented toward service and retail trade employment, although some wholesale distribution activity is appearing. The South Bayside has a considerable base in light manufacturing, particularly electrical equipment, but is also strong in retail trade and service employment. The small employment base in the Coastside areas is dominated by agriculture and retail trade.

2. Distribution of Future Growth

In the 1980-2000 period, the largest numerical growth will occur in the North County area, where 34,600 jobs will be added. This includes 5,000 additional jobs at the airport, with much of the remaining increase concentrated in the trade and service sectors. The Mid-Bayside areas will gain 22,800 jobs, mainly in the trade and service sectors. Employment in the South Bayside will grow by 32,000, with increases spread among several sectors, including manufacturing, wholesale, retail, and service employment. The Mid-Coastside will have the largest percentage growth in employment, but the numerical gain of 1,800 jobs is relatively insignificant in the Countywide picture.

TABLE 10

EMPLOYMENT
SAN MATEO COUNTY - COUNTY STATISTICAL AREAS
1980-2000

	NUMBER OF JOBS		INCREASE 1980-2000	
COUNTY STATISTICAL AREAS	1980	2000	AMOUNT	PERCENT
North County	89,500	124,100	34,600	38.7
Mid-Bayside	82,400	105,200	22,800	27.7
South Bayside	82,000	114,000	32,000	39.0
Mid-Coast	4,300	6,100	1,800	41.9
South Coast/Skyline	1,100	1,200	100	9.0
TOTAL	259,300	350,600	91,300	35.2

Source: Derived from ABAG, Projections '83.

C. JOBS-LABOR FORCE RELATIONSHIPS

1. Countywide Trends

In addition to representing the County's economic structure, jobs, wherever they are located, represent the economic well-being of employed residents of the County and their families. As discussed in the Transportation Chapter (see Volume II of the General Plan), about 60% of the County's employed residents work in the County, and thus have a direct stake in the continued availability of jobs here. According to ABAG's projections (Tables 10 and 11), jobs in the County will increase by 35%, the labor force (persons working or seeking work) will grow by 24%, and population will increase by only 6.4% in the 1980-2000 period. (See the Map of Population and Employment Growth.)

If, as ABAG projects, the number of jobs in the County increases considerably more rapidly than the resident labor force, it seems probable that more County residents should be able to find employment in the County--provided, of course, that the available jobs are suited to their skills. If, however, a large share of the employment increase is in lower paying jobs, while housing costs and income requirements remain high in San Mateo County, it is likely that most of the additional jobs will be taken by in-commuters from other areas, while large numbers of County residents continue to commute out.

2. County Subarea Trends

Comparison of the percent increases by County statistical areas in employment (Table 10) with the increases in the labor force (Table 11) shows that there is considerable variation between areas in the jobs-to-labor force ratio. The largest growth in jobs in relation to the labor force will occur in the North County, where a 38.7% increase in jobs is matched with a modest 17.5% growth in the labor force in the 1980-2000 period. On the other extreme, in the Mid-Coast area, employment is forecast to increase 41.9%, while the labor force will grow by 112%. If these projections are realized, there will be a considerable increase in out-commuters to work from the Coastside area.

TABLE 11

LABOR FORCE
SAN MATEO COUNTY - COUNTY STATISTICAL AREAS
1980-2000

	POPULATION IN LABOR FORCE		INCREASE 1980-2000	
COUNTY STATISTICAL AREAS	1980	2000	AMOUNT	PERCENT
North County	122,600	144,000	21,400	17.5
Mid-Bayside	92,600	111,700	19,100	20.6
South Bayside	87,600	113,300	25,700	29.3
Mid-Coast	8,300	17,600	9,300	112.0
South Coast/Skyline	3,400	4,500	1,100	32.4
TOTAL	314,500	391,100	76,600	24.4

Source: Derived from ABAG, Projections '83.

OVERVIEW APPENDIX

POPULATION AND HOUSING UNITS

APPENDIX A

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

	POPULATION			HOUSING UNITS		
AREA/JURISDICTION	1970	1980	CHANGE	1970	1980	CHANGE
SAN MATEO COUNTY TOTALS	556,605	587,329	30,724	190,588	233,200	42,612
Incorporated Areas	(508,303)	(534,124)	(25,821)	(174,696)	(213,185)	(38,489)
Unincorporated Areas	(48,302)	(53,205)	(4,903)	(15,892)	(20,015)	(4,123)
BRISBANE AREA TOTAL	3,003	2,969	-34	1,172	1,405	233
Brisbane	(3,003)	(2,969)	(-34)	(1,172)	(1,405)	(233)
DALY CITY-COLMA AREA TOTALS	74,188	84,390	10,202	24,363	30,025	5,662
Daly City	(67,614)	(78,519)	(10,905)	(22,276)	(27,823)	(5,547)
Daly City (uninc.)	(-)	(100)	(100)	(-)	(33)	(33)
Colma	(537)	(395)	(-142)	(171)	(166)	(-5)
Colma (uninc.)	(1,392)	(1,322)	(-70)	(467)	(597)	(130)
Broadmoor (uninc.)	(4,645)	(4,054)	(-591)	(1,449)	(1,406)	(-43)
SOUTH SAN FRANCISCO AREA TOTALS	46,965	49,538	2,573	14,375	18,073	3,698
South San Francisco	(46,646)	(49,393)	(2,747)	(14,283)	(18,020)	(3,737)
Country Club Park (uninc.)	(292)	(145)	(-147)	(82)	(53)	(-29)
McLellan (uninc.)	(27)	(-)	(-27)	(10)	(-)	(-10)

APPENDIX A (continued)

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

	POPULATION			HOUSING UNITS		
AREA/JURISDICTION	1970	1980	CHANGE	1970	1980	CHANGE
PACIFICA AREA TOTALS	36,060	36,899	839	10,013	13,165	3,152
Pacifica	(36,020)	(36,866)	(846)	(9,995)	(13,137)	(3,142)
Pacifica (uninc.)	(40)	(33)	(-7)	(18)	(28)	(10)
SAN BRUNO AREA TOTALS	36,984	35,917	-1,067	11,383	14,663	3,280
San Bruno	(36,254)	(35,417)	(-837)	(11,350)	(14,658)	(3,308)
San Francisco Jail (uninc.)	(655)	(454)	(-201)	(-)	(1)	(1)
S.F.I Airport (uninc.)	(75)	(46)	(-29)	(33)	(4)	(-29)
MILLBRAE AREA TOTAL	20,792	20,058	-734	6,839	7,773	934
Millbrae	(20,792)	(20,058)	(-734)	(6,839)	(7,773)	(934)
BURLINGAME AREA TOTALS	28,053	27,273	-780	11,741	13,044	1,303
Burlingame	(27,425)	(26,173)	(-1,252)	(11,535)	(12,659)	(1,224)
Burlingame Hills (uninc.)	(628)	(1,100)	(472)	(206)	(385)	(179)

APPENDIX A (continued)

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

AREA/JURISDICTION	POPULATION 1970	POPULATION 1980	POPULATION CHANGE	HOUSING UNITS 1970	HOUSING UNITS 1980	HOUSING UNITS CHANGE
HILLSBOROUGH AREA TOTALS	8,753	10,483	1,730	2,648	3,570	922
Hillsborough	(8,753)	(10,451)	(1,698)	(2,648)	(3,561)	(913)
Hillsborough (uninc.)	(-)	(32)	(32)	(-)	(9)	(9)
SAN MATEO-FOSTER CITY AREA TOTALS	92,944	105,387	12,443	33,310	44,847	11,537
San Mateo	(79,007)	(77,561)	(-1,446)	(29,364)	(34,267)	(4,904)
San Mateo (uninc.)	(-)	(8)	(8)	(-)	(11)	(11)
Foster City	(9,522)	(23,287)	(13,765)	(2,803)	(9,178)	(6,375)
Baywood Park (uninc.)	(1,471)	(1,921)	(450)	(415)	(614)	(199)
Highlands (uninc.)	(2,944)	(2,610)	(-334)	(728)	(776)	(48)
BELMONT AREA TOTAL	23,538	24,505	967	7,891	9,953	2,062
Belmont	(23,538)	(24,505)	(967)	(7,891)	(9,953)	(2,062)
SAN CARLOS AREA TOTALS	28,020	26,291	-1,729	9,718	10,978	1,260
San Carlos	(26,205)	(24,710)	(-1,495)	(9,306)	(10,350)	(1,044)
Harbor Industrial (uninc.)	(6)	(107)	(101)	(-)	(92)	(92)
Devonshire (uninc.)	(813)	(718)	(-95)	(232)	(266)	(34)
Palomar Park (uninc.)	(996)	(756)	(-240)	(180)	(270)	(90)

APPENDIX A (continued)

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

	POPULATION			HOUSING UNITS		
AREA/JURISDICTION	1970	1980	CHANGE	1970	1980	CHANGE
REDWOOD CITY AREA TOTALS	72,640	73,068	428	26,993	30,310	3,317
Redwood City	(55,686)	(54,951)	(-735)	(21,146)	(23,491)	(2,345)
Redwood City (uninc.)	(13)	(131)	(118)	(6)	(63)	(57)
Emerald Lake Hills (uninc.)	(3,432)	(3,400)	(-32)	(1,165)	(1,301)	(136)
Mobile Home Area (uninc.)	(-)	(378)	(378)	(-)	(263)	(263)
North Fair Oaks (uninc.)	(9,736)	(10,294)	(558)	(3,447)	(3,728)	(281)
Sequoia Tract (uninc.)	(3,773)	(3,914)	(141)	(1,229)	(1,464)	(235)
ATHERTON AREA TOTAL	8,085	7,797	-288	2,393	2,502	109
Atherton	(8,085)	(7,797)	(-288)	(2,393)	(2,502)	(109)
MENLO PARK-EAST PALO ALTO AREA TOTALS	51,940	50,529	-1,411	19,454	20,738	1,284
Menlo Park	(27,234)	(26,369)	(-865)	(10,510)	(11,541)	(1,031)
Menlo Park (uninc.)	(168)	(121)	(-47)	(53)	(53)	(-)
East Palo Alto	(18,099)	(18,191)	(92)	(6,611)	(6,783)	(172)
Menlo Oaks (uninc.)	(1,093)[1]	(709)[1]	(-384)[1]	(440)[1]	(269)[1]	(-171)[1]
Park Forest/Watkins (uninc.)	(392)	(417)	(25)	(187)	(227)	(40)
West Menlo Park (uninc.)	(4,658)	(4,431)	(-227)	(1,533)	(1,729)	(196)
Stanford Weekend Area (uninc.)	(296)	(291)	(-5)	(120)	(136)	(16)

APPENDIX A (continued)

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

AREA/JURISDICTION	POPULATION 1970	POPULATION 1980	POPULATION CHANGE	HOUSING UNITS 1970	HOUSING UNITS 1980	HOUSING UNITS CHANGE
PORTOLA VALLEY AREA TOTALS[2]	7,219	6,294	-925	2,142	2,115	-27
Portola Valley[2]	(4,996)	(3,939)	(-1,057)	(1,478)	(1,284)	(-194)
Ladera (uninc.)	(1,746)	(1,592)	(-154)	(481)	(530)	(49)
Los Trancos Woods/ Vista Verde and Environs (uninc.)	(477)	(763)	(286)	(183)	(301)	(118)
WOODSIDE AREA TOTALS	5,422	5,983	561	1,788	2,197	409
Woodside	(4,864)	(5,291)	(427)	(1,600)	(1,907)	(307)
Skylonda and Environs (uninc.)	(558)	(692)	(134)	(188)	(290)	(102)
MID-COASTSIDE AREA TOTALS	9,533	16,499	6,966	3,271	6,226	2,955
Half Moon Bay	(4,023)	(7,282)	(3,259)	(1,325)	(2,726)	(1,401)
El Granada, Miramar and Environs (uninc.)	(2,278)	(3,731)	(1,453)	(751)	(1,373)	(622)
Montara, Moss Beach and Princeton (uninc.)	(2,699)	(4,618)	(1,919)	(935)	(1,754)	(819)
West of Skyline, between Route 92 and Lobitos Creek (uninc.)	(533)	(868)	(335)	(260)	(373)	(113)

APPENDIX A (continued)

POPULATION AND HOUSING UNITS
SAN MATEO COUNTY - CITIES AND UNINCORPORATED AREAS
1970-1980 BY 1980 BOUNDARIES

	POPULATION			HOUSING UNITS		
AREA/JURISDICTION	1970	1980	CHANGE	1970	1980	CHANGE
SOUTH COASTSIDE AREA TOTALS	2,466	3,449	983	1,094	1,616	522
South of Lobitos Creek: San Gregorio, Pescadero, La Honda, and Environs (uninc.)	(2,466)	(3,449)	(983)	(1,094)	(1,616)	(522)

Notes: This tabulation provides comparisons of 1970 and 1980 Census counts of population and housing units for "constant" areas--jurisdictional boundaries as they existed in 1980. Therefore, the 1970 counts for cities which annexed inhabited lands during the decade will be somewhat higher than the official 1970 Census counts, and the count for unincorporated areas will be somewhat lower. Although East Palo Alto did not incorporate until 1983, because it is such a large area, it is shown as a city and not included in the unincorporated totals for 1970 and 1980.

[1]1970 population and housing unit totals for Menlo Oaks reflects a substantial uncorrected census overcount for that area.

[2]The official 1970 Census population and housing unit counts for the Town of Portola Valley shown here reflect an uncorrected error in the Census for that area. The County Planning Division estimates that the correct 1970 population count for Portola Valley was 3,885 and the housing unit count was 1,061.

Source: U.S. Bureau of the Census publications on the 1970 and 1980 Censuses of Population and Housing. Adjustments of 1970 data to 1980 boundaries were made by San Mateo County Planning Division.

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GLOSSARY

Acre-Foot: A standard measurement of volume equivalent to the amount of water required to cover one acre one foot deep. One acre-foot is equivalent to 325,851 gallons.

Agricultural Activities: Feasible activities, including but not limited to the cultivation of land to produce food, fiber, fuel, and flowers, the grazing, growing, or pasturing of livestock, and the handling, processing or marketing of agricultural products.

Approach Surface: The flat plane, sloping upward and outward from airport runways, representative of flight paths, as defined by the Federal Aviation Administration (FAA) and Airport Land Use Commission (ALUC).

Approach Zone: The area of high accident potential located at the ends of County general aviation airport runway as defined by the Airport Land Use Commission (ALUC).

Aquifer: Any geologic formation of sufficient porosity and permeability to store, transmit and yield water to springs and wells.

Area of Special Flood Hazard: The land in a flood plain subject to a one percent or greater chance of flooding in any given year; sometimes referred to as the "base flood" or "100-year" flood area, as defined in the County Flood Hazard Ordinance and the Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FEMA).

Arterial: A street or highway serving major activity centers, carrying the highest traffic volumes, with running speeds of 25 to 45 miles per hour along sections of uninterrupted flow.

Buffer Lands - Mineral Extraction: Lands which are used to protect public safety by providing sufficient distance and screening between mineral extraction activities and incompatible land uses.

Buffer Lands - Solid Waste: Land uses which protect public safety and provide sufficient distance and screening between solid waste disposal activities and incompatible land uses.

Buffer Zones - Sensitive Habitats: Those areas adjacent to sensitive habitats which are necessary to allow for periodic, seasonal or ecological changes which could affect the boundaries of sensitive habitats.

Capacity (related to highways): The maximum number of vehicles which has a reasonable expectation of passing over a given section of roadway during a given time period under prevailing roadway and traffic conditions.

Clear Zone: The area of high accident potential located at the ends of airport runways as defined by the Federal Aviation Administration (FAA).

Coastal Cliff Erosion: Wearing away of coastal cliffs due to wave action, wind and weathering, and resultant landsliding.

Community Noise Equivalent Level (CNEL): The average equivalent sound level, in decibels, during a 24-hour day, adjusted to account for the acoustic responses of the human ear, the total number of individual noise events and the greater human sensitivity to noise during the evening and nighttime.

Critical Facilities and Structures: Facilities or infrastructure serving or housing many people, including but not limited to hospitals, fire, police and emergency service facilities, water, electricity, natural gas supply, sewage disposal, communications and transportation facilities.

Debris Flow/Avalanche: Landslides involving mixture of rock fragments, gravel, sand, soil, mud, water and minor organic debris in which flow is the dominant transport mechanism. An extremely high-velocity debris flow landslide is known as a debris avalanche.

Decibel (dB): The system and unit for measuring sound energy based upon the mathematical scale of logarithms.

Development: The construction, reconstruction, conversion, relocation or enlargement of any structure; the division of a parcel of land into two or more parcels; any mining, excavation, landfill or land disturbance including grading; and changes in land uses.

Economically Valuable Vegetative, Water, Fish and Wildlife Resources: Those resources which are important to the economy because they:

1. Provide income, employment or tax benefits accruing to the landowner or operator;

2. Support experimental or research and development activities which hold future commercial potential;

3. Are essential to the continuance of other economic activity;

4. Are significant components of the scenic quality and uniqueness of San Mateo County which add to the value of property or attract visitors.

Epicenter: A point at the earth's surface that is closest to the subterranean origin of an earthquake.

Expansive Soils: Soils which tend to expand when wet and shrink when dry due to mineralogical composition.

Expressway: A highway for through traffic with partial control of access, which may or may not be divided and may or may not have grade separation at intersections.

Fault: An earth fracture or zone of fracture along which the rocks on one side have been displaced in relation to those of the other, in response to the accumulation of stress. A fault is considered to be active if displacement has occurred within the last 11,000 years (Holocene Time). When there is parallel motion along a fault, it is described as "strike-slip" displacement. Vertical motion is generally described as "thrust" displacement.

Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

Fire Hazards: Wildland or structural fires that occur in areas that are remote, have difficult access for fire vehicles, and/or contain potentially flammable vegetative communities.

Fish and Wildlife Resources: All non-domesticated animals.

Flooding Hazards: General and temporary conditions of partial or complete inundation of normally dry land areas due to: (1) the overflow of inland or tidal waters; or (2) the unusual and rapid accumulation of runoff of surface waters resulting from storms, blockage of drainage channels or failures of dams, impoundments, and/or other public works facilities.

Floodway: The channel of a watercourse plus any adjacent flood plain area that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights.

Freeway: A divided highway for through traffic with full control of access and grade separation at intersections.

Geotechnical Hazards: (1) seismic events, including but not limited to earthquakes, earthquake-induced landslides, liquefaction, subsidence, and tidal flooding damage from earthquake-induced tsunamis and seiches; (2) non-seismic unstable conditions, including but not limited to land-sliding, cliff retrenchment, erosion, subsidence, soil creep and shrink/swell conditions; and (3) debris flows and debris avalanches.

Ground Failure: A general term for occurrences when seismic activity causes the ground to lose its cohesiveness, as in liquefaction, subsidence and earthquake-related landslides.

Ground Shaking: The temporary acceleration of earth's surface caused by the released earthquake energy which can occur vertically, horizontally or in combination.

Hazardous Material: A substance which, because of quantity, concentration, physical or chemical characteristics, is capable of injuring life and/or the environment. Examples include toxic chemicals and metals, pesticides and explosives.

Hazardous Structure: A building or structure which is structurally unsafe, without adequate egress, a fire hazard or otherwise dangerous to human life by reason of improper construction, inadequate maintenance, dilapidation, obsolescence or abandonment, as specified in the San Mateo County Uniform Construction Code.

Hazardous Waste: A hazardous material requiring disposal.

Historic District: A geographically defined area containing historic resources which have a special, historical interest or aesthetic value or which represent one or more architectural periods or styles typical to the history of the County, and which improvements constitute a distinct section of the County that has been designated an historic district.

Historic Landmark: Any historic resource, district or paleontological site that has exceptional scientific, historic, cultural, archaeological, aesthetic character, interest, or value.

Home Based Trip: A trip which starts or ends at the home.

Historic Resource: Buildings, structures, signs, features, sites, places, areas or other objects of scientific, educational, cultural, architectural, archaeological, historical or paleontological significance to the citizens of the County.

Incompatible Vegetation, Fish and Wildlife: Any plant, fish, or animal, or concentration of plants or animals which are found to be harmful to the surrounding environment or pose a threat to public health, safety and welfare.

Landslide: A general term denoting downslope movement of slope materials composed of rock, soil, fill or combinations thereof.

Level of Service: A qualitative measure of the effect which a number of factors, including speed, travel time, traffic interruptions, freedom to maneuver, safety, and others, has on driving conditions of a given section of roadway.

Liquefaction: The transformation of a saturated granular layer into a fluid state due to intense ground shaking and/or increased pore water pressure.

Lurching: A sudden roll, pitch or sway of the ground resulting directly from the release of seismic energy.

Marine and Estuarine Habitats: Habitats of any marine-dependent plant or animal located in or near the Pacific Ocean or San Francisco Bay, including beaches, offshore reefs, kelp beds, tidepools, sea caves, islets and off-shore rocks, sea cliffs, bays and estuaries.

Million Gallons/Day (MGD): A rate of flow of water.

Mode: Basic methods of transportation, such as automobile, transit or bicycle.

Multi-Modal: Travel utilizing more than one mode.

Natural Hazards: Conditions of potential danger or risk to life and/or property resulting from acts of nature, man-made alterations to the natural environment that create hazardous conditions and/or hazardous conditions intrinsic to the natural environment.

Noise: An annoying, harmful or unwanted sound.

Noise Exposure Contours: Lines drawn around a noise source connecting points of equal noise level.

Noise Impact Areas: Those areas experiencing noise levels of 60 CNEL or greater.

Noise Sensitive Land Uses: Land uses most sensitive to noise intrusion, including, but not limited to, residential and the following institutional uses: hospitals, schools and libraries.

Non-Protective Use of Productive Soil: Any activity which eliminates, depletes, or significantly alters the availability and capacity of soil to support plant and animal life.

Non-Seismic Geotechnical Hazards: Geotechnical hazards not triggered by or related to seismic activity, including, but not limited to, landslides, subsidence, expansive soils and coastal stability problems.

Paratransit: Non-scheduled, collective transit, usually with smaller vehicles, such as jitneys, van pools, taxes, etc.

Peak Hours: The periods of the day when demand for highway space and transit use is the greatest.

Person Trip: One way travel by one person from an origin to a destination by any mode.

Potable: Water which is suitable, safe or prepared for drinking purposes.

Private Non-Profit Park and Recreation Facilities: Facilities serving primarily a recreation function and owned by private non-profit organizations. Such facilities include, but are not limited to, scout camps, YMCA camps, religious camps, music camps, sports-training camps and day camps.

Private or Commercial Park and Recreation Facilities: Facilities serving a recreation function and owned by private businesses. Such facilities include, but are not limited to, private beaches, stables, specialty stores, golf courses and racket clubs.

Productive Soil Resources: Soils in rural areas capable of feasible or economic agricultural and timber production.

Productive Soils With Timber Capability: Productive soils with timber capability include, but are not limited to:

a. Soils which have a combination of physical and chemical characteristics necessary for productive timber growth.

b. Soils which are supporting productive timber growth.

Productive Uses of Vegetative, Water, Fish and Wildlife Resources: Any activity involving the use, removal or alteration of vegetative, water, fish and wildlife resources from their natural environment for human use or economic purposes.

Protective Use of Productive Soil: Any activity which preserves, renews, and sustains the ability of the soil to support plant and animal life.

Public Park and Recreation Facilities: Lands and facilities serving a range of recreation and/or preservation functions and owned by public agencies or other non-profit organizations. Such facilities include, but are not limited to, public beaches, parks, recreation areas (including golf courses), natural preserves, wild areas and trails.

Public View: A range of vision from a public road or other public facility.

Quiet Areas: Areas with perceived low ambient noise levels.

Rare or Unique Species: Any plant or animal that is determined to be rare, endangered, threatened, unique to the County and adjacent areas or protected by Federal or State law and State and County EIR guidelines.

Resource Recovery: The reclamation or salvage of wastes for reuse, conversion to energy or recycling.

Ridgelines: The tops of hills or hillocks normally viewed against a background of other hills.

Riparian Corridors: The vegetative and wildlife areas adjacent to perennial and intermittent streams and other freshwater bodies, such as lakes, ponds, and reservoirs.

Rural Areas: Lands which are generally suitable for lower density/intensity land uses because they meet one or more of the following criteria: (1) used for agriculture, timber production, general open space, or as a watershed for a public water supply, (2) isolated subdivided areas and commercial centers which are not adjacent to incorporated areas, (3) divided into parcels 5 acres or more next to urban unincorporated areas, and (4) subdivided areas that use on-site wastewater management systems which are adjacent to but not surrounded by incorporated areas.

Rural Lands: Rural areas outside of Rural Service Centers and Rural Residential Subdivisions. Rural lands include, but are not limited to, those generally developed to lower residential densities, agricultural activities, resource extraction, timber harvesting, resource conservation, public or private recreation or open space. Rural lands can also include institutional uses and public service uses, such as solid waste disposal sites.

Rural Residential Subdivisions: Clusters of residential development subdivided into parcels that are generally less than or slightly larger than five acres. Rural Residential Subdivisions can include vacant parcels or neighborhood commercial uses, but are predominately developed with single family homes.

Rural Service Centers: Small rural communities having a combination of land uses which provide services to surrounding rural areas.

Sanitary Landfill: A site where solid waste is disposed of employing an engineered method by spreading solid waste, compacting to the smallest practical volume and applying cover material over all exposed wastes at the end of each operating day.

Scenic Corridors: Land adjacent to a scenic road right-of-way which, when seen from the road, provides outstanding views of natural landscapes and attractive man-made development.

Scenic Road: A designated travel route providing outstanding views of natural landscapes and attractive man-made development.

Seiche: Oscillating waves in an enclosed or partly enclosed body of water caused by seismic activity or sudden changes in atmospheric conditions.

Sensitive Habitats: Any area where the vegetative, water, fish and wildlife resources provide especially valuable and rare plant and animal habitats that can be easily disturbed or degraded. These areas include but are not limited to: (1) habitats containing or supporting rare or unique species; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; (6) wildlife refuges, reserves, and scientific study areas; and (7) important nesting, feeding, breeding or spawning areas.

Shear Surface: The plane on which a landslide mass moves with respect to the underlying earth.

Significant Mineral Resource Areas: Lands in rural areas containing minerals capable of being extracted for commercial use, including, but not limited to:

a. Lands on which minerals are being extracted for commercial use.

b. Lands classified as Mineral Resource Zone 2 (MRZ-2) by the State Geologist, and designated by the State Mining and Geology Board as containing mineral deposits of regional or statewide significance.

Skylines: The line where sky and land masses meet.

Soil: The mixture of mineral and organic matter that is capable of supporting plant life; formed from weathered rock by the action of climate and living organisms over time.

Soil Conservation Techniques - Good: Any activity which preserves, renews and sustains the ability of the soil to support plant and animal life; including but not limited to, public or private land in a natural condition, and properly managed agriculture and forestry.

Soil Conservation Techniques - Improper: Any activity which significantly alters the availability and capacity of soil to support plant and animal life.

Soil Contamination: The addition of chemical or other degrading substances to soil such that the soil becomes toxic or injurious to plant or animal life.

Soil Conversion: The process of (a) transforming productive soil from a protective use to a non-protective use, or, (b) shifting from good soil conversion techniques to poor soil conversion techniques.

Soil Creep: Imperceptibly slow downslope movement of soils at a relatively constant rate.

Soil Erosion: The process by which soil is detached and transported by running water, wind, and gravity. Include naturally occurring soil erosion, and that accelerated by human activity.

Soils With Agricultural Capability: As designated on the Productive Soils Resource Map, define productive soils with agricultural capability as including, but not limited to:

a. Soils with the best combination of physical and chemical features for the production of agricultural crops, or

b. Soils which have a good combination of natural, physical, and chemical characteristics for producing agricultural products,[1] and for which a dependable source of irrigation water is available, or

c. Soils that are of statewide importance for the production of food, feed, fiber, forage and oilseed crops, or

d. Soils other than those identified in subsection c. that are used for the production of specific high value food and fiber crops, or

e. Soils that have been identified as having local importance for agriculture by the County with the assistance of the Agricultural Advisory Committee, or

f. Soils which are or recently have been in agricultural production, or

g. Soils which support vegetation, whether grown naturally or managed, and are feasible for grazing or browsing of livestock.

Solid Waste Facility: A facility used to dispose of solid waste including, but not limited to, sanitary landfills, transfer stations and waste-to-energy facilities.

Special Urban Areas: Urban areas which are devoted primarily, but not necessarily or exclusively, to non-residential or special uses.

[1]As determined by the State Department of Conservation--Advisory Guidelines for the Farmland Monitoring Program (Sections 201.1, 202.1); April, 1984.

Structure: Anything constructed for use or occupancy whether constructed or erected on, above, or below the surface of land or water. This does not include roads, paved areas or temporary structures. Temporary structures are without a foundation or footings and can be removed when the designated time or use for which the structure was erected has ceased.

Subsidence: Lowering or sinking of a section of the earth's crust.

Transfer Station: An intermediate waste handling facility where solid wastes are transferred from hauling vehicles to a transfer vehicle and where the waste or portion thereof may undergo incidental processing, recycling or further handling before transport to a disposal site, waste processing facility, or other facilities.

Translational Motion: Motion in which all the particles in a landslide mass move at the same velocity along parallel paths.

Trip: One way travel from an origin to a destination for a particular purpose.

Trip End: The origin or destination of a trip; each trip has two trip ends.

Tsunami: Long, high-velocity sea waves resulting from seismic events which have relatively small wave height in deep water, but which rise significantly in shallow water.

Urban Areas: Lands which are generally suitable for urban land use because they meet one or more of the following criteria: (1) surrounded by incorporated areas, (2) adjacent to an incorporated area, generally divided into parcels 5,000 sq. ft. to 5 acres and served by sanitary sewers, or (3) adjacent to an incorporated area and the major transportation corridors of Highways 101 and 280.

Urban Community: Large, populated unincorporated areas which contain a wide range of residential land use densities and a mix of land uses which provide services to surrounding areas and meet, in part, the internal shopping, employment and recreational needs of the community residents.

Urban Neighborhood: Unincorporated areas which are primarily devoted to residential land uses and are generally functionally integrated with adjacent incorporated areas.

Urban/Rural Boundary: A line separating urban from rural areas in order to indicate clearly where intensive urban development, and less intensive rural development will be permitted in the County.

Vegetative Resources: Plants and plant communities, including timber but excluding agricultural crops.

Visual Quality: The visual attributes of natural landscapes, structures and communities.

Visual Resources: Those attractive visible elements of the natural and developed landscape, such as landforms, vegetative forms, water bodies, structures and communities.

Waste-To-Energy Facility: A facility where energy is recovered from solid waste for reuse including but not limited to facilities where the processes of bioconversion, thermochemical conversion and photochemical conversion are employed.

Water System: A system of integrated piping, storage tanks, and a source of supply used for providing water for domestic purposes.

Water Resources: All surface water bodies, groundwater bodies and recharge areas, including perennial and intermittent streams.

Wetlands: An area where the water table is at, near, or above the land surface long enough to bring about the formation of hydric soils or to support the growth of plants which normally grow in water or wet ground. Wetlands include fresh or salt water marshes, mudflats, brackish, tidal or seasonal wet areas and can occur along the margins of streams, lakes and ponds.

Wildlife Refuges, Reserves, and Scientific Study Areas: Those areas designated by public and/or owned by private agencies for the purposes of protecting, maintaining, and studying important vegetative, water, fish and wildlife resources.

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Vegetative, Water, Fish and Wildlife Resources

Background ▪ Issues

VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

San Mateo County's natural environment harbors an abundance of vegetative, water, fish and wildlife resources. Many of these resources provide significant economic returns to local economies; all of these resources are vital to human survival. The continued health of the County's natural resources is all the more difficult and important given the proximity of the highly urbanized and populous bay region.

This chapter of the General Plan inventories the vegetative, water, fish and wildlife resources in the unincorporated area of San Mateo County; summarizes the important uses of these resources; analyzes the issues of protecting the resources and their uses; and provides policies to address these issues. Vegetative, water, fish and wildlife resources have been combined in this Chapter to illustrate the interdependent nature of these resources and to provide more comprehensive protection of the resources and their uses.

B. STATE PLANNING LAW

Section 65302(d) of the California Government Code requires the County to adopt a conservation element as part of the General Plan, for the purposes of conservation, development, and utilization of natural resources. The conservation element should promote the protection, maintenance, and use of natural resources; prevent the wasteful exploitation, destruction and neglect of natural resources; and recognize that natural resources must be maintained for their ecological value as well as for their direct benefits to people. In addition, Section 65302(e) of the Government Code requires the County to adopt an Open Space Element which designates open space land for both the preservation and managed production of natural resources.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. 1973 Conservation and Open Space Element

In 1973, the County adopted a Conservation and Open Space Element as part of its General Plan. Changes in relevant legislation, information and the resources themselves have rendered this Element obsolete. This Chapter, once adopted, will replace the Water Resources, Natural Vegetative Resources, Fish and Wildlife Resource segments of the 1973 Conservation and Open Space Element. Those parts of the background information, goals, objectives and management policies in the Element which are still current have been incorporated into this Chapter.

b. Area Plans

The County has adopted, as part of the General Plan, the following area plans which include specific policies for the protection of vegetative, water, fish and wildlife resources and their uses: the Land Use Plan of the 1980 Local Coastal Program, the 1977 Emerald Lake Hills Community Plan, and the 1976 San Bruno Mountain General Plan Amendment. The policies in this Chapter are more generalized and apply to the entire unincorporated area of San Mateo County. Some of the background information and policies from the Sensitive Habitats Component of the Local Coastal Program have been incorporated in this Chapter in a modified, more generalized form.

2. Other Chapters of the Updated General Plan

The Vegetative, Water, Fish and Wildlife Resources Chapter of the General Plan provides policies to protect these natural resources and their uses. While this Chapter discusses the densities and intensities of land uses which are compatible with the protection of resources, it does not designate land uses (see the Land Use Chapters for land use designations). Likewise, this Chapter discusses the quantity and quality of water resources, but does not discuss water supply (see the Water Supply Chapter). In addition, this Chapter is only concerned with non-agricultural plants; agricultural crops are discussed in the Rural Land Use Chapter.

II. EXISTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

A. VEGETATIVE RESOURCES

1. Inventory of Vegetative Resources

a. Vegetative Types

San Mateo County hosts an abundance of vegetative types, with an unusually diverse number of plant species. This may be attributed to the interaction of several elements. The historical climate together with geology created the County's basic form and determined the suitability of an area for living organisms. Hydrology, climate, soil and successive vegetation further modified the landscape, producing the current distribution of plant communities.

The vegetative types found in the County can be categorized as coastal shoreline, coastal marine, salt marsh, freshwater marsh, coastal scrub, chaparral, grassland, woodland-savanna, mixed evergreen forest, coniferous forest, or streambank vegetation. The description and locational characteristics of these vegetative types can be found in Appendix A. A list of representative plants is available from the Planning Department. The Map of Vegetative Types depicts the general distribution of vegetative types within the unincorporated areas of the County.

SAN MATEO COUNTY GENERAL PLAN

VEGETATIVE TYPES

GENERALIZED BOUNDARY
OF VEGETATIVE TYPE

0 4000 8000 16000 32,000 FEET

99 320 ac.

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north

COASTAL STRAND
SCRUB
GRASSLAND
BRISBANE
SIERRA POINT
OYSTER POINT
MUSSEL ROCK
SAN FRANCISCO
POINT SAN BRUNO
SAN FRANCISCO BAY
PACIFICA
CHAPARRAL
FRESH WATER MARSH
GRASSLAND
MORI POINT
POINT SAN PEDRO
CHAPARRAL
COYOTE POINT
FOSTER CITY
COASTAL STRAND
GRASSLAND
CULTIVATED
COASTAL STRAND
GRASSLAND
MONTARA POINT
SCRUB
HILLSBOROUGH
FRESH WATER MARSH
MIXED EVERGREEN FOREST
CONIFEROUS FOREST
REDWOOD CITY
REDWOOD POINT
SALT MARSH
RAVENSWOOD POINT
GRASSLAND
FRESH WATER MARSH
COASTAL STRAND
MIXED EVERGREEN FOREST
PILLAR POINT
GRASSLAND
FRESH WATER MARSH
GRASSLAND
SCRUB
CULTIVATED
GRASSLAND
CULTIVATED
CHAPARRAL
CARLOS
MENLO PARK
SALT MARSH
MIRAMONTES
MIXED EVERGREEN FOREST
GRASSLAND
FRESH WATER MARSH
COASTAL STRAND
SCRUB
GRASSLAND
WOODLAND SAVANNA
SEAL ROCK
SCRUB
CONIFEROUS FOREST
CHAPARRAL
CULTIVATED
WOODLAND SAVANNA
SANTA CLARA COUNTY
GRASSLAND
MIXED EVERGREEN FOREST
PACIFIC OCEAN
SCRUB
SCRUB
PORTOLA VALLEY
COASTAL STRAND
MUSSEL ROCK
GRASSLAND
GRASSLAND
CULTIVATED
FRESH WATER MARSH
MIXED EVERGREEN FOREST
CULTIVATED
CONIFEROUS FOREST
GRASSLAND
CHAPARRAL
SCRUB
CULTIVATED
CONIFEROUS FOREST
GRASSLAND
COASTAL STRAND
MIXED EVERGREEN FOREST
SALT and FRESH WATER MARSH
GRASSLAND
PESCADERO POINT
CULTIVATED
SCRUB
FRESH WATER MARSH
GRASSLAND
CULTIVATED
CHAPARRAL
FRESH WATER MARSH
SCRUB
GRASSLAND
BOLSA POINT
SCRUB
CULTIVATED
CHAPARRAL
PIGEON POINT
MIXED EVERGREEN FOREST
SANTA CRUZ COUNTY
COASTAL STRAND
FRANKLIN POINT
CULTIVATED
GRASSLAND
CONIFEROUS FOREST
COASTAL STRAND
ANO NUEVO POINT

b. Rare and Unique Plants

At least 45 plant species in San Mateo County are considered to be rare or unique to the County. Appendix B identifies these plants and indicates their status in terms of rarity. Plants included in the appendix are those that are: (1) determined to be rare or endangered by the State of California; (2) listed or being considered for listing by the California Native Plant Society; (3) candidates for listing by the United States Fish and Wildlife Service; or (4) considered unique to San Mateo County. In addition, Table 1.1 identifies rare plant species once found in San Mateo County that are now considered to be extinct or extirpated.[1] However, an extensive search for three of these species has not yet been conducted to verify their extinction.

2. Value of Vegetative Resources

a. Ecological

Vegetative resources in their natural state provide many direct benefits for both animals and humans. Plants are essential elements of fish and wildlife habitats and are also an important part of human habitats. Vegetation stabilizes slopes, minimizes soil erosion and surface water runoff, facilitates water percolation which recharges groundwater supplies, moderates the climate by providing protection from wind, rain and sun, modifies the environment by purifying air and water resources and reducing noise pollution, and provides an important indicator of environmental health.

b. Scenic and Recreational

The natural vegetative cover is also important for its scenic quality and recreational benefits. San Mateo County's redwood forests, for example, provide a valuable recreational and aesthetic diversion for the proximate urban population (for further discussion, see the Visual Quality and Parks and Resources Chapters).

c. Consumptive

Vegetative resources are also important for their consumptive uses. Many plants are commercially valuable and the harvesting of these plants provides significant economic benefits in San Mateo County as well as useful plant products.

(1) Timber Harvesting

The most valuable consumptive use of vegetative resources in San Mateo County is the harvesting of timber resources. Of the 60,000 acres of commercially productive forests in the unincorporated area of San Mateo County, 43,000 acres are privately owned and available for harvesting.[2] These commercially productive forest lands include major coniferous forests, hardwoods and Christmas tree farms.

TABLE 1.1

RARE AND ENDANGERED PLANTS CONSIDERED TO BE EXTINCT OR EXTIRPATED
UNINCORPORATED SAN MATEO COUNTY
1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1] SI	CDFG	POSSIBLE OCCURRENCES
Legenere limosa	Legenere	E	L2	
Perideridia gairdneri ssp. gairdneri	Gairdner's Yampah	T	L2	Ano Nuevo Point
Potentilla hickmanii	Hickman's Cinquefoil	E	E,L2	Fitzgerald Marine Reserve

Legend: E = Endangered; T = Threatened; L2 = CNPS[1] List 2--Rare and Endangered Plant

Footnote: [1]Status designated by:

1) SI = Smithsonian Institute under the Federal Endangered Species Act of 1973;

2) CDFG = California Department of Fish and Game under the California Native Plant Protection Act of 1977, and the California Native Plant Society (CNPS lists are considered current species-of-concern by the CDFG).

Sources: California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, Special Publication #1 (Second Edition), April 1980; First Supplement, April 1981; and San Mateo County Planning and Development Division, 1982.

(a) Major Coniferous Forests

Major coniferous forests are commercially productive lands that have a mixture of at least 20% coast redwood and/or Douglas fir trees. Such forests are generally found in the Santa Cruz Mountains (see Map of Vegetative Types) where the majority of trees are comprised of redwoods, and approximately 10% or less are Douglas fir.[3]

(b) Hardwoods

Commercially valuable hardwood trees are found in woodland-savanna vegetation, and mixed evergreen and coniferous forests (see maps of vegetative types). The most commonly harvested trees are oak, eucalyptus, and madrone. While hardwood trees have historically been harvested only in small amounts (usually in conjunction with redwood or Douglas fir harvesting), the increase in energy costs over the past 10 years has created a growing demand for fuelwood, and the harvesting of hardwood trees is expected to increase in the future. Hardwoods, especially fast growing species such as eucalyptus, may also be replanted or grown for harvesting, similar to Christmas tree farms.

(c) Christmas Tree Farms

At least 14 Christmas tree farms[4] occupying over 300 acres[5] exist primarily along the coast or in the Santa Cruz Mountains. Approximately 90-95% of the trees grown are Monterey pine and the remaining 5-10% include Douglas fir and Scotch pine.[6] The Christmas tree harvesting table included in the Rural Land Use Chapter summarizes Christmas tree farm activity since 1969.

2. Grazing

Grazing is another significant consumptive use of vegetation, especially grasslands. In 1982, 35,550 acres of land was used for grazing.[7] The vast majority of this grazing land is found in unincorporated areas on the Coastside.

B. WATER RESOURCES

1. Inventory of Water Resources

Water as a resource appears in many forms. The Pacific Ocean and San Francisco Bay are large bodies of salt water that provide a moderating influence on climate, an environment for aquatic life and a means of transportation and recreation. Watersheds, creeks, streams, reservoirs and groundwater basins comprise the County's fresh water resources. The Map of Water Resources illustrates the location of the major water bodies

1.2M

SAN MATEO COUNTY GENERAL PLAN

WATER RESOURCES

WATERSHED BOUNDARIES

STREAMS

LAKES AND RESERVOIRS

GROUNDWATER BASINS

WETLANDS

0 4000 8000 16000 32,000 FEET

99 320 ac

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north

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

SAN FRANCISCO BAY

CANADA DE GUADALUPE

BRISBANE

COLMA

MILAGRA

PACIFICA

SAN BRUNO

CALERA

SAN PEDRO

San Pedro Valley Basin

MILLS

SAN MATEO

SAN VICENTE

PULGAS

LAUREL

BELMONT

DENNISTON

FRENCHMANS

ARROYO DE EN MEDIO

PILARCITOS

CORDILLERAS

Half Moon Bay Terrace Basin

CRYSTAL SPRINGS

REDWOOD

MENLO PARK

ARROYO CAMADA VERDE

PURISIMA

LOBITOS

SAN FRANCISQUITO

TUNITAS

PORTOLA VALLEY

SAN GREGORIO

San Gregorio Area Basin

POMPONIO

PESCADERO

Pescadero Valley Basin

BUTANO

ARROYO DE LOS FRIJOLES

YANKEE

GAZOS

JIM GULCH

WHITEHOUSE

CASCADE

Ano Nuevo Area Basin

ANO NUEVO POINT

in the County. More detailed maps are available at the Planning and Development Division Office.[8]

a. Surface Water Bodies

(1) Streams and Watersheds

There are 34 separate watersheds in the County, of which 22 drain into the Pacific Ocean and 12 drain into San Francisco Bay. On the Coastside, the most significant watersheds are those drained by three main streams: Pescadero Creek, with 39,449 acres of watershed area; San Gregorio Creek, with 34,042 acres; and Pilarcitos Creek, with 19,063 acres.[9] Within the Bayside, the largest watersheds are the San Francisquito Creek watershed of 24,320 acres, and the Colma Creek watershed of 10,240 acres.[10]

(2) Reservoirs and Lakes

There are 10 major reservoirs and lakes, each containing in excess of 100 acre feet of water. Table 1.2 summarizes the storage capacity of these major reservoirs and lakes. All of these reservoirs and lakes were originally natural lakes or depressions, and have been artificially expanded to increase their storage capacity. There are also many smaller man-made impoundments which store water throughout the County, especially on the Coastside. Marine and tidal waters consist of the Pacific Ocean and San Francisco Bay.

(3) Wetlands and Springs

Wetlands are lands that are permanently or intermittently covered with water, including mudflats, tidelands, marshes and sag ponds. Wetlands occur adjacent to other surface water bodies such as streams, lakes and reservoirs, and marine and tidal waters. The map of water resources locates the major wetlands.

Springs are another source of water. Springs are found throughout the County and are generally small water sources, except for the larger springs at the headwaters of Purisima and Butano Creeks.

b. Factors Affecting Surface Runoff and Stream Flow

(1) Weather

The climate of San Mateo County is of the semi-arid Mediterranean type, characterized by dry, mild summers and moderately moist, cool winters. Most of the rainfall replenishing water resources occurs between November and April. It is during this time when over 90% of the annual surface runoff also occurs. This seasonal variation is also reflected in the monthly stream flows which often run dry by the middle or late summer.[11]

TABLE 1.2

CAPACITY OF MAJOR RESERVOIRS AND LAKES[1]
UNINCORPORATED SAN MATEO COUNTY

RESERVOIR/LAKE	STORAGE CAPACITY (acre feet)
Crystal Springs Reservoir	69,295
San Andreas Lake	18,996
Pilarcitos Lake	3,100
Bean Hollow Lakes	1,361
Searsville Lake	813
Lake Lucerne	455
Green Oaks	287
Pomponio	256
Lake Elizabeth	113
Coastways Ranch	112

Note: [1]Reservoirs and lakes with storage capacity greater than 100 acre feet.

Sources: San Francisco Water Department, May 1982. Capacity of Crystal Springs Reservoir, San Andreas Lake, Pilarcitos Lake.

Stanford University, June 1982. Capacity of Searsville Lake.

California Department of Water Resources, Coastal San Mateo County Investigation, Bulletin 138, March 1965.

Jon Hudson, Coastways Ranch, July 1983.

(2) Topography

Average annual rainfall varies between 15 to 25 inches on the Bayside, 20 to 30 inches on the Coastside, and 45 to 50 inches in the Santa Cruz Mountains.[12] The Santa Cruz Mountain Range causes this variation and serves as a barrier to storm fronts and coastal fog approaching from the west. Thus, areas east of the Santa Cruz Mountains are in a rain shadow and the majority of rainfall occurs on the Coastside and in the Santa Cruz Mountains.

(3) Soil, Vegetation and Urbanization

The infiltration capacity of the soil and the presence of vegetation (which reduces runoff) determines the amount of rainfall which runs off into streams and the amount that percolates down into groundwater basins. Infiltration is reduced and surface runoff increases in highly urbanized areas. This is due to the large amount of impervious surfaces (roads, buildings, etc.) present in such areas.

c. Water Quality

(1) Salt Water Bodies

The water quality in San Francisco Bay has improved since the 1960's due to improvements in the treatment of wastewater discharged into the Bay. There are still problems, however, of water contamination with toxic trace metals and organic compounds which affect fish and other life in the Bay.[13] The water quality of the Pacific Ocean off the Coast is generally very good for plant and animal habitats, fishing, and other recreational uses; however, wastewater discharges into the ocean have created local problems. For example, clams at Pillar Point Harbor have been quarantined in the past due to high coliform bacteria contents.[14]

(2) Freshwater Bodies

The County's freshwater resources often provide drinking water. A detailed assessment of the water quality of County freshwater bodies is included in the Water Supply Chapter.

d. Groundwater Basins and Recharge Areas

A groundwater basin is an underground area composed of alluvial or porous material infiltrated by water.[15] This area contains aquifers which store, transmit, and yield significant quantities of water to wells and springs.[16] Groundwater is derived from precipitation which penetrates the soil directly to the aquifer or enters surface streams and percolates from these channels to the aquifer.

(1) Location

The map of water resources identifies known groundwater basins. All of these aquifers are composed of water-bearing younger alluvium deposits. The major basin in the County, the San Mateo Basin, is part of the Santa Clara Valley Basin, a large, 580 square mile basin located in four counties in the San Francisco Bay area. The San Mateo County portion of the basin stretches from Daly City to Menlo Park, includes most of the Bayside cities and is drained by Redwood and San Francisquito Creeks. Major Coastside basins in the County are the San Pedro Valley Basin, drained by San Pedro Creek; the Half Moon Bay Terrace Basin, drained by Pilarcitos Creek; the San Gregorio Valley Basin, drained by San Gregorio Creek; the Pescadero Valley Basin, drained by Pescadero Creek; and the Ano Nuevo Area Basin drained by Cascade Creek.[17]

Groundwater recharge areas are generally located within stream flood plains where porous gravelly soils facilitate percolation of water from streams. Some percolation also occurs directly from precipitation in stream valleys, especially during periods of heavy rainfall.[18] Recharge areas, however, have not been identified.

(2) Depth and Yield of Basins

Determining the depth and yield of County groundwater basins requires an extensive investigation of groundwater resources. Such an investigation has been conducted on the entire Santa Clara Valley Basin; however, specific data on the San Mateo County portion of the basin (the San Mateo Basin) is not available,[19] nor have studies been conducted to determine the depth and yield of the other known County groundwater basins.

Estimates based on the underlying rock composition and an analysis of existing and test wells[20] have determined the probable maximum well yield from water-bearing rocks. These studies indicate that Coastside groundwater basins and wells in the Skyline-Santa Cruz Mountains Study Area are probably adequate only for domestic use; whereas the San Mateo Basin can support light industrial and some agricultural, municipal, and heavy industrial use. Groundwater levels similar to surface water supply fluctuate according to seasonal variations in precipitation.[21]

(3) Water Quality

The mineral, chemical and physical constituents found in groundwater generally fall below the California Domestic Water Quality maximum contaminant levels. Coastside groundwater is generally hard, with a high sodium content, and Bayside groundwater is generally very hard.[22] Further discussion of groundwater quality is included in the Water Supply Chapter.

2. Value of Water Resources

a. Ecological

Water resources provide important habitats for fish, wildlife and vegetation. The fish, wildlife, and vegetative habitats dependent upon the water resources include: (a) the open waters, mudflats, tidelands, and salt ponds in San Francisco Bay; (b) the Coastside water habitats such as reefs, channels and tidepools which extend seaward from the intertidal zone to the County's 3-mile oceanic limit; (c) freshwater streams located primarily on the Coastside; and (d) freshwater reservoirs, lakes, and ponds.

b. Scenic, Recreational, and Transportation

Water bodies are used for boating and harbors, fishing, recreational and aesthetic enjoyment. Pillar Point Harbor, located on the Coastside, is the only harbor in an unincorporated area. Used by both commercial and recreational boaters, the harbor facilities include two breakwaters, a public pier, and a boat landing area. Construction is currently underway to develop the harbor into a full-scale, small-craft harbor, including 440 boat slips to be divided equally between commercial and recreational boaters.[23]

c. Consumptive

Direct and indirect consumption of water is essential to human survival. In addition, the consumption of water resources for domestic, municipal, agricultural and industrial developments provides important economic benefits in San Mateo County. (The Water Supply Chapter of the General Plan for further discussion of the consumptive use of water resources.)

C. FISH AND WILDLIFE RESOURCES

1. Inventory of Fish and Wildlife Resources

a. Fish and Wildlife Species

Fish and wildlife resources are numerous and diverse due to the wide variety of habitats contained in the County. A list of the fish and wildlife species found in San Mateo County according to their vegetative and water habitats is available from the Planning Department.

b. Rare and Unique Fish and Wildlife

At least 48 fish and wildlife species may be considered rare or unique. Appendix D identifies these species, their associated habitats, and details those that are: (1) determined to be endangered, rare, threatened, or protected by federal or state law; (2) listed as special animals by the California Natural Diversity Data Base (a division of the California Department of Fish and Game); or (3) unique to San Mateo County.

2. Value of Fish and Wildlife Resources

a. Ecological

Fish and wildlife resources help to maintain the delicate ecological balance in the environment. The growth of each species depends on and is controlled by other species. Thus, an abundance and diversity of fish and wildlife species is important to preserve the ecological balance which, if upset, could result in the proliferation of certain species in harmful numbers. In addition, the presence and health of fish and wildlife species are important indicators of the overall health of the environment.

b. Scenic, Recreational and Educational

The presence of fish and wildlife also enhances human activities. The many miles of shoreline, numerous park and open space areas and biological reserves afford many opportunities for the recreational, educational and aesthetic enjoyment of local fish and wildlife species.

c. Consumptive

Consumptive uses of fish and wildlife include commercial and sport fishing, hunting, and aquaculture. These uses provide important economic benefits as well as providing food and recreational activities for humans. For example, the total commercial fish landings at Pillar Point Harbor in 1981 was valued at $1.5 million.

(1) Commercial Fishing

Commercial fishing has historically included shrimp and shellfish operations on the Bayside and open sea fishing on the Coastside. These activities have declined since 1930 due to the development of commercial fisheries in other parts of California and water pollution problems which eliminated the shellfish industry in San Francisco Bay.[24] Over the last 25 years, commercial fishing in the County has been concentrated at Pillar Point Harbor.[25]

Table 1.3 summarizes the amount and value of commercial fish landings at Pillar Point Harbor from 1978 to 1981. Chinook (King) salmon, Dungeness crab, and red abalone are the most important commercial fish stocks in the County.

The commercial salmon fishery extends along the Pacific Ocean coast from Alaska to central California and is concentrated in the San Francisco Bay area. Dungeness crabs are trapped offshore along the northern coast of the County. Red abalone inhabit most rocky areas along the coast.

TABLE 1.3

COMMERCIAL FISH LANDINGS
PILLAR POINT HARBOR, SAN MATEO COUNTY
1978-1981

SPECIES	1978		1979		1980		1981	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Salmon, chinook	118,550	$215,303	71,770	$193,740			321,030	$858,205
Crab, Dungeness	182,380	168,932	127,097	142,550			102,521	132,691
Abalone, red	83,985	121,538	45,019	78,089			52,670	124,138
Halibut, California	19,890	18,400	21,142	24,835	11,257	-	75,956	81,113
Sole, English	27,645	7,377	33,010	9,994	128,458	-	133,475	41,180
Salmon	280	776	13	34			14,448	39,496
Sole, Petrale	30,236	11,135	18,939	8,592	55,255	-	101,180	37,817
Rockfish, unspecified	383,392	93,802	63,258	20,871	250,860	-	102,185	34,922
Tuna, albacore	63,677	38,317	18,940	12,530			36,842	32,473
Sanddab	13,358	3,756	36,930	10,378	97,591	-	68,229	23,267
Sole, sand	19,519	6,199	21,227	7,947			43,351	19,121
Sole, Dover	843,692	169,787	138,512	29,307	65,258	-	55,540	12,605
Sole, Rex	6,560	1,817	13,331	4,491	49,138	-	27,921	9,503
Ling cod	26,313	5,660			46,720	-	24,538	6,773
Urchin, sea	29,003	7,026	13,209	2,757			20,645	5,845
Sablefish	340,647	103,714	24,885	3,975	37,409	-	28,939	4,669
Croaker, white	6,943	2,957	2,059	804			10,779	3,829
Crab, rock	107	26	1,145	463	22,237	-	7,978	3,251
Shark, unspecified	4,134	1,084	616	243			9,299	2,765
Flounder, unspecified	27,791	5,712	10,745	2,427	5,679	-	9,861	2,763
Fish, unspecified	656	188	714	184	32,975	-	7,236	1,961
Sole, rock			1,045	473			4,799	1,874
Salmon, coho	1,525	2,120	731	1,697			666	1,261
Octopus, unspecified	914	379	764	344			2,330	1,205
Cabezon	3,654	828	3,981	728			4,478	900
Skate, unspecified	13,598	3,254					3,272	725
Shark, soupfin	28,736	7,642	4,084	1,336			1,302	672
Abalone, Pink	8	13	839	1,335				
Thornyhead	166,001	31,825	29,212	5,936			2,478	610

TABLE 1.3 (Continued)

COMMERCIAL FISH LANDINGS
PILLAR POINT HARBOR, SAN MATEO COUNTY
1978-1981

SPECIES	1978		1979		1980		1981	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Turbot	2,410	772	6,296	2,195			1,325	609
Shark, leopard	6,227	748	494	115			2,300	547
Smelt, true	963	318					1,072	436
Shark, common thresher	30	12					411	340
Mussel			150	80			347	212
Smelt, surf	31	11	84	33			476	207
Abalone, black	27	66					106	153
Smelt, whitebait	349	82	3,104	787			290	123
Butterfish, Pacific			40	18			172	115
Hake, Pacific			5	2			189	93
Snail, sea			73	7			90	61
Shrimp, Pacific Ocean	2,629	2,730					32	40
Shark, blue			86	21			90	36
Sole, unspecified			14	4	51,801		54	24
Mackerel, unspecified	224	20					51	20
Surfperch, unspecified	293	128	537	403			18	15
Snails, moon			46	6			70	14
Wolf-eel			20	5			20	5
Eel			87	8			21	2
All other	397	514	42,375	24,823			9,878	11,882
TOTAL	$2,456,774	$1,034,968	750,628	$594,567	854,638[1]		1,290,960	$1,500,568

Footnote: [1]Total commercial fish landing data unavailable for 1980. Figures listed are the commercial trawler landings at Pillar Point Harbor which constitute about 95% of the bottomfish catch. No values are available.

Source: Preliminary reports from the California Department of Fish and Game, Region III, Marine Research Branch.

(2) Sport Fishing

A variety of sport fishing activities are popular both on the Coast and in the Bay. The diversity of fishing sites and species present adds to the enjoyment of this activity. Fishing activities include rock and surf fishing from shorelines, piers and boats, skin diving, poke poling, and surf netting.

(a) Coastal and Bay Fishing

Major sport fishing activities along the coast are inventoried in Table 1.4. Popular coastal activities involve picking red abalone from shore and by skin diving. Dungeness, red, and rock crabs, and littleneck and gaper clams are also available and caught in and around Pillar Point Harbor.[26]

Sport fishing within San Francisco Bay involves a variety of species. The major fish catches are perch, striped bass, Jacksmelt, sturgeon, salmon, and flounder. Clamming is also popular, primarily for Japanese littleneck clams.[27]

(b) Inland Fisheries

Currently, only portions of three County streams are open to fishing on a restricted schedule between November and February.[28] The principal anadromous steelhead trout and silver salmon streams are Pescadero, San Gregorio Creek, and Butano. Pescadero Creek, the most productive, supports a steelhead run of between 1,200 to 1,500 adult fish each year. San Gregorio Creek is estimated to support an annual run of 1,000 steelhead trout,[29] and Butano Creek has an annual steelhead run of less than 500.[30] Table 1.4 summarizes the fishing activity within these streams. Silver salmon are also caught although the salmon run is less abundant and difficult to anticipate. Other, less common sport species include Pacific lamprey, sculpin, stickleback, rainbow and brown trout.

(3) Hunting

Hunting, allowed only as a recreational activity on private property, is not a major activity and usually occurs on large, private ranches on the Coastside. The only significant big game found are blacktailed deer. The number of deer taken varies annually depending on the weather but has markedly declined since the early 1960's due to urban expansion. During 1980, a good hunting year, 55 deer were taken in the County.[31]

Other game species include valley quail, doves, band-tailed pigeons, rabbits and squirrels. In addition, some waterfowl hunting occurs in San Francisco Bay. Hunting clubs have also imported game birds such as chukar and pheasant for release on their

TABLE 1.4

SPORT FISHING
UNINCORPORATED SAN MATEO COUNTY
1982

FISHING SITE	SITE USAGE	COMMON SPECIES CAUGHT
Shoreline		
Pedro Point	L	Surfperch, Striped Bass
Montara State Beach	L	Surfperch, Striped Bass
Moss Beach	L	Surfperch, Striped Bass
Fitzgerald Marine Reserve	L	Rockfish, Lingcod, Cabezon, Surfperch
Pillar Point-Harbor-West Jetty	L	Surfperch, Cabezon, Rockfish, Lingcod, Greenlings
Martin's Beach	M	Surfperch, Surf Smelt (Day and Night Smelt)
San Gregorio State Beach	L	Surfperch
Pomponio State Beach	L	Surfperch
Pescadero State Beach	H	Surfperch, Lingcod, Cabezon, Greenlings
Pescadero Point	H	Rockfish, Lingcod, Cabezon, Greenlings, Surfperch
Pigeon Point	L	Rockfish, Lingcod, Cabezon, Surfperch
Pier		
Pillar Point Harbor-East Jetty	H	Surfperch, Cabezon, White Croaker, Flatfish
Pillar Point Harbor-Johnson's Pier	H	Surfperch, (Rubberlip and Shiner Perch), Jacksmelt
Launch Ramp		
Pillar Point Harbor Launch Ramp	H	Bottomfish, Salmon
Party Boats		
Pillar Point Harbor Party Boats	H[1]	Bottomfish (Rockfish, Lingcod), Pacific Mackerel, Founder, Cabezon, Salmon
Inland Fisheries		
Pescadero Creek	H	Steelhead Trout
Butano Creek	H	Steelhead Trout
San Gregorio Creek	M	Steelhead Trout

Site Usage: L = Light Use (occasional use);
M = Medium Use (5-15 anglers/day, intermittent use);
H = Heavy Use (15-40 anglers/day, constant use)

TABLE 1.4 (Continued)

SPORT FISHING - 1982

Note: [1]Party boat fishing varies according to season from 0-6 boats with 10-60 anglers per boat.

Sources:

1. Gail Roper, Fishery Technician Supervisor, Pacific Marine Fisheries Commission. Sport fishing surveys in conjunction with the California Department of Fish and Game.

2. Walter Dahlstrom, Gary Combes, Paul Gregory and Eric Wong, California Department of Fish and Game, Region III, Marine Research Branch.

lands; however, these birds are not native and do not breed well in the County.

(4) Aquaculture

Aquaculture, the raising of animals in an aquatic medium, occurs only at the Pigeon Point Shellfish Hatchery. This operation raises oyster larvae for sale to nurseries for final development and marketing. The growing demand for food may result in more aquaculture industries along the coast and in the Bay to produce oysters, clams, abalones, salmon, and other commercial animal species.

D. SENSITIVE HABITATS

1. Inventory of Sensitive Habitats

The concept of sensitive habitats was developed as a means of protecting vegetative, water, fish and wildlife resources through the designation and protection of certain plant and animal habitats. Sensitive habitats are areas where the vegetative, water, or fish and wildlife resources provide particularly valuable plant and animal habitats. They can be easily disturbed or degraded by human activities and developments. Sensitive habitats include: (1) habitats containing or supporting rare or unique vegetation, fish, or wildlife; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; and (6) wildlife refuges, reserves, and scientific study areas. The map of sensitive habitats illustrates identified sensitive habitats. While there are other areas that qualify as sensitive habitats, they either have not yet been mapped or cannot be depicted on a map of this scale.

a. Habitats of Rare and Unique Species

Rare or unique plants and animals, their general habitats and known occurrences are described in Appendices B and D. The general location of the known occurrences of these species is depicted on the Map of Sensitive Habitats.

b. Riparian Corridors

Riparian corridors include the vegetative, fish and wildlife habitats adjacent to and within all perennial and intermittent streams, their tributaries, and other freshwater bodies, such as lakes, ponds, and reservoirs. These corridors are characterized by the presence of riparian vegetation (vegetation normally found near streams, lakes, and other freshwater bodies). The map of sensitive habitats illustrates the location of the major riparian corridors (major streams and tributaries, and the larger reservoirs and lakes).

c. Marine and Estuarine Habitats

Marine and estuarine habitats are located in Pacific coastal waters

and within the San Francisco Bay. These habitats include offshore reefs, kelp beds, tidepools, sea caves, islets and rock outcroppings. Other important marine habitats include the Fitzgerald Marine Reserve, San Gregorio Estuary, Pescadero Marsh, Pigeon Point, Franklin Point, Ano Nuevo Point, and Ano Nuevo Island Reserve (see the Map of Sensitive Habitats).

d. Wetlands

Wetlands are lands where water saturation (fresh or salt) is the dominant factor determining the nature of the soil and the types of plant and animal communities living in the soil and on its surface.[32] Wetlands include mudflats, tidelands, marshes, and sag ponds (see Map of Sensitive Habitats). Significant wetlands are Pescadero Marsh and Pillar Point Marsh on the Coastside, the salt marsh on the Bayside near Redwood City, and the freshwater marshes on San Bruno Mountain and adjacent to Crystal Springs Reservoir.

e. Sand Dunes

Sand dunes are structurally fragile habitats initially formed approximately 4,000 years ago.[33] Significant sand dunes are located at Pescadero State Beach, Franklin Point, and Ano Nuevo Point (see the Map of Sensitive Habitats).

f. Wildlife Refuges, Reserves, and Scientific Study Areas

The wildlife refuges and reserves protected by State law[34] are the James V. Fitzgerald Marine Reserve, the Ano Nuevo State Reserve, and the San Francisco State Fish and Game Refuge. The Fitzgerald Marine Reserve and Ano Nuevo State Reserve are also designated as Areas of Special Biological Significance by the State Water Resources Control Board for their biological value and fragility.[35] The Jasper Ridge Biological Preserve, owned and operated by Stanford University, is also an important scientific study area (see the Map of Sensitive Habitats).

2. Ecological Value of Sensitive Habitats

Sensitive habitat areas are essential to the existence of many plants and animals, including rare and unique species. These areas provide breeding, nesting, feeding, resting, and wintering grounds for fish and wildlife. They are also important for maintaining the variety, health, and productivity of vegetation, fish and wildlife. Sensitive habitats also provide valuable information on natural biological and environmental processes.

The following examples demonstrate the ecological value of sensitive habitats:

a. Many freshwater County streams provide habitats for unique anadromous fish which live in the ocean but migrate to spawn in the shallow upper stream reaches where there is loose gravel to lay their eggs and the water is cool, clear, and well-aerated for the young fish;

SAN MATEO COUNTY GENERAL PLAN

SENSITIVE HABITATS

WILDLIFE REFUGES, RESERVES & SCIENTIFIC STUDY AREAS
RIPARIAN CORRIDORS
WETLANDS
SALT PONDS
SAND DUNES
MARINE & ESTUARINE HABITATS
LAKES & RESERVOIRS

RARE, ENDANGERED OR UNIQUE SPECIES
PLANTS
INVERTEBRATES
BIRDS
REPTILES & AMPHIBIANS
FISH
MAMMALS

0 4000 8000 16000 32,000 FEET

99 320 ac

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

SAN FRANCISCO BAY
SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE
REDWOOD SHORES ECOLOGICAL RESERVE
SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE
SAN FRANCISCO STATE FISH & GAME REFUGE
CRYSTAL SPRINGS RESERVOIR
JASPER RIDGE BIOLOGICAL RESERVE
PESCADERO MARSH
LAKE LUCERNE
BEAN HOLLOW LAKES
ANO NUEVO STATE RESERVE
ANO NUEVO ISLAND
FITZGERALD MARINE RESERVE
EEL ROCK
SEAL ROCK
MUSSEL ROCK
PILLAR POINT
MONTARA POINT
MORI POINT
POINT SAN PEDRO
PACIFIC OCEAN
SAN FRANCISCO BAY
SANTA CLARA COUNTY
SANTA CRUZ COUNTY

b. The San Francisco Bay estuary and wetlands provide habitats for over 100 species of birds, mammals, fish, worms, arthropods, and crustaceans;[36]

c. The Fitzgerald Marine Reserve is one of the most important and diverse intertidal regions in the State;[37]

d. Wetlands are the most productive of all fish and wildlife habitats due to the unique combination of land and water organisms, nutrients, and minerals, and the dynamic tides and mix of fresh and saltwaters;[38] and

e. Pescadero Marsh, the largest coastal freshwater wetland in the State, supports 160 species of birds, 50 species of mammals, and 33 species of reptiles and amphibians, many of which are considered to be rare.[39]

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

There are numerous management agencies, programs, and legislation that directly or indirectly manage the use of vegetative, water, fish and wildlife resources. This section focuses on those regulations and programs that directly manage these resources.

A. FEDERAL, STATE, REGIONAL, AND COUNTY AGENCIES AND PROGRAMS

Table 1.5 summarizes the important federal, State, regional, and County agency programs and activities managing vegetative, water, fish and wildlife resources. Table 1.6 describes the major federal and State legislation which direct these agency programs and activities.

B. COUNTY

1. General Plan Policies

a. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the San Mateo County General Plan was adopted to preserve and enhance environmental quality, encourage agriculture as a key to open space management and preservation, and preserve natural resources for current and future generations. The Element contains general management policies which protect vegetative, water, fish and wildlife resources and additional management policies which protect resources in Primary Value Areas.

b. Area Plans

The following area plan policies protect and regulate the use of vegetative, water, fish and wildlife resources within area plan boundaries.

TABLE 1.5

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
FEDERAL			
Army Corps of Engineers	Regulatory	Water	Enforces the Rivers and Harbors Act of 1899 (Section 10) and the Clean Water Act Amendments (Section 404). Requires a permit for all projects that alter or obstruct navigable waterways (including dredging, diking, or filling of wetlands).
Coast Guard	Regulatory, Technical Assistance	Water	Enforces maritime law and federal fishing restrictions and, under the Federal Water Pollution Control Act of 1972, regulates oil discharges into the water and provides technical assistance in preventing and cleaning up oil spills.
Council on Environmental Quality	Advisory	Vegetative, Water, Fish and Wildlife	Conducts research, reviews federal programs, and recommends federal policies to protect environmental resources. Establishes guidelines for the preparation of Environmental Impact Statements.
Environmental Protection Agency	Regulatory	Water	Enforces the Federal Water Pollution Control Act Amendments of 1972; the Safe Drinking Water Act of 1974; the Toxic Substances Control Act of 1976; the Resource Conservation and Recovery Act of 1976; the Clean Water Act of 1977; and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Establishes environmental protection standards, provides funding for water quality improvement programs, and regulates wastewater treatment, discharges of pollutants, and hazardous waste disposal.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
Fish and Wildlife Service	Regulatory	Vegetative, Fish and Wildlife	Enforces federal legislation protecting plants and animals, including the Endangered Species Act of 1973, the Migratory Bird Act of 1918, the Lacey Act Amendments of 1981, and all of the implementing legislation.
Geological Survey	Advisory	Water	Conducts research and makes recommendations to the Department of the Interior for the protection of water quality and quantity.
National Marine Fisheries Service	Regulatory	Fish and Wildlife	Enforces the Fish and Wildlife Coordination Act, the Fishery Conservation and Management Act, the Marine Protection and Sanctuary Act of 1972, and the Marine Mammal Protection Act of 1972 which protect fish and their habitats. Establishes marine sanctuaries, and regulates and manages fisheries 3 miles from shore and beyond.
Soil Conservation Service	Advisory, Technical and Financial Assistance	Vegetative, Water	Provides technical and financial assistance for soil and water conservation, erosion control, and crop and rangeland management.
STATE			
Coastal Commission	Regulatory, Advisory	Vegetative, Water, Fish and Wildlife	Administers the Coastal Act of 1976, exercises permit authority for development in the Coastal Zone, and provides assistance and certifies local coastal plans. The Coastal Commission approved the San Mateo County Local Coastal Plan in 1980, thus transferring permit authority to the County. The Commission retains authority over appeals and must certify any amendments to the LCP.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
Conservation Corps	Technical Assistance	Vegetative, Water, Fish and Wildlife	Conducts governmental programs which protect natural resources, including developing parks, clearing streams, and planting trees.
Department of Fish and Game	Regulatory, Advisory, Acquisitional	Vegetative, Water, Fish and Wildlife	Enforces the Fish and Game Code, the California Species Preservation Act of 1970, the California Endangered Species Act of 1970, the California Native Plant Protection Act of 1977, the Ecological Reserve Act of 1968, and the Keene-Nejedly California Wetlands Preservation Act of 1976. Enforces fishing, hunting, and aquaculture laws; monitors, inventories and manages rare and endangered plants and animals and their habitats; exercises permit authority over development within streams; reviews projects within riparian corridors and wetlands; and acquires land and water bodies that are important habitats for ecological reserves.
Department of Forestry	Regulatory, Advisory, Technical Assistance	Vegetative	Enforces the Forest Practices Act of 1973 and, under Chapter 1561 of the California Statutes of 1982 (SB 856), regulates timber harvesting activities on all parcels larger than 3 acres. Conducts forest improvement, and brush and grassland management programs, and provides fire and emergency response services.
Department of Health	Regulatory	Water	Establishes and enforces water quality standards and monitoring programs for drinking and shell fish-growing waters.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
Department of Navigation and Ocean Development	Advisory, Technical and Financial Assistance	Water	Protects coastal shoreline by researching, planning, funding, and undertaking beach erosion control projects. Constructs and funds boating facilities, including breakwaters, launch ramps, and marinas.
Department of Parks and Recreation	Regulatory, Acquisitional	Vegetative, Water, Fish and Wildlife	Acquires and manages State parks and reserves. Prohibits taking or degrading vegetative, water, and fish and wildlife resources within State parks and reserves except for limited fishing activity.
Department of Water Resources	Regulatory, Advisory, Technical and Financial Assistance	Water	Researches long-range water demands, water quality and supply in California. Provides technical assistance and funds for water projects and undertakes State water projects under authority of the Water Code.
Fish and Game Commission	Regulatory	Vegetative, Water, Fish and Wildlife	Enacts the Fish and Game Code under authority of the California Species Preservation Act of 1970, the California Endangered Species Act of 1970, and the California Native Plant Protection Act of 1977.
State Coastal Conservancy	Advisory, Technical and Financial Assistance	Vegetative, Water, Fish and Wildlife	Provides technical and financial assistance to public and non-profit agencies for the acquisition and restoration of coastal environments.
State Department of Conservation	Regulatory, Technical Assistance	Water	Regulates oil and gas well operations, and provides assistance for soil management and conservation in agricultural practices to protect surface and groundwater bodies.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
State Lands Commission	Regulatory	Vegetative, Water, Fish and Wildlife	Regulates activities in State-owned lands and all navigable waterways up to the mean high tide line.
State Water Resources Control Board	Regulatory	Water	Provides policy direction to regional water quality control boards. Designates Areas of Special Biological Significance to protect marine life, prohibits point source discharges which alter water quality and requires control of non-point source discharges into these areas. Regulates stream diversions and water rights, including appropriative water rights, riparian rights, stockpond permits, and dams for reservoirs of 50 acre-feet and larger.
REGIONAL			
Association of Bay Area Governments	Advisory, Technical Assistance	Vegetative, Water, Fish and Wildlife	Prepares regional plans for the San Francisco Bay area with guidelines for the protection of natural resources, including programs to manage surface runoff water quality.
Midpeninsula Regional Open Space District	Acquisitional	Vegetative, Water, Fish and Wildlife	Acquires and manages land as open space for the protection of vegetation and fish and wildlife. Management policies require minimizing disturbance of natural resources and restricting access to vital plant and wildlife habitats.
San Francisco Bay Conservation and Development Commission	Regulatory	Vegetative, Water, Fish and Wildlife	Regulates dredging, filling, or any other development within the baylands from San Francisco Bay to 100 feet inland of the mean high tide line.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
San Francisco Bay Regional Water Quality Control Board	Regulatory	Water	Implements State Water Resources Control Board policy by preparing basin plans for water quality control and regulating dredging, dumping, point source discharges, or other activities affecting water quality.
COUNTY			
Agricultural Commissioner	Regulatory, Technical Assistance	Vegetative, Water, Fish and Wildlife	Enforces the California Food and Agricultural Code (Section 403). Has discretionary authority to implement programs to prevent the introduction and/or spread of injurious insect or animal pests, plant diseases, and noxious weeds (as defined by the State Department of Food and Agriculture). Provides predator control and trapping services by contract with the U.S. Fish and Wildlife Service. Regulates the use of restricted materials, including pesticides.
Division of Environmental Health	Regulatory	Water	Reviews subdivisions and building permits to insure an adequate and potable water supply and proper method of sewage disposal. Manages County sewer and water districts.
Division of Parks and Recreation	Regulatory	Vegetative, Water, Fish and Wildlife	Manages County parks under the Natural Resources Management Plan (adopted by the Parks and Recreation Commission in 1979) which specifies appropriate management techniques to protect and enhance natural resources. Protects sensitive habitats in San Bruno Mountain Regional Park according to the 1982 San Bruno Mountain Area Habitat Conservation Plan, and in Edgewood County Park according to the 1982 Master Plan for Edgewood Park.

TABLE 1.5 (continued)

PROGRAMS AND ACTIVITIES OF AGENCIES MANAGING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

AGENCY	TYPE OF AGENCY	RESOURCES MANAGED	SUMMARY OF PROGRAMS AND ACTIVITIES
Local Agency Formation Commission	Regulatory	Vegetative, Water, Fish and Wildlife	Regulates the formation of new districts, and the incorporations and annexations of cities to minimize the environmental impacts of such activities.
Resource Conservation District	Advisory, Technical Assistance	Water	Provides information and assistance on proper agricultural practices to control surface runoff and erosion, and conserve water resources.

TABLE 1.6

MAJOR LEGISLATION GOVERNING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

LEGISLATION	ADMINISTRATIVE AGENCY	RESOURCES GOVERNED	SUMMARY OF LEGISLATION
FEDERAL			
Endangered Species Act of 1973 (and implementing legislation)	U. S. Fish & Wildlife Service	Vegetative, Water, Fish & Wildlife	Defines and designates endangered and threatened wildlife and plants, and prohibits taking of these species except by permit. Prohibits federal funding for projects harmful to these species and their habitats, and provides for federal grant-in-aid funds to states for protection and restoration of these species.
Lacey Act Amendments	U. S. Fish & Wildlife Service	Vegetative, Fish & Wildlife	Prohibits taking any animals or plants in violation of any federal, state or tribal Indian law.
Marine Mammal Protection Act of 1972	National Marine Fisheries Service	Fish & Wildlife	Prohibits taking of any marine mammals except by permit.
Migratory Bird Treaty Act of 1918 (and implementing legislation)	U.S. Fish & Wildlife Service	Fish & Wildlife	Prohibits taking of all migratory birds (including raptors) and their parts, eggs, or nest by treaty with Great Britain, Mexico, Canada, and Japan.
National Environmental Policy Act of 1969	All Federal Agencies	Vegetative, Water, Fish and Wildlife	Establishes the Environmental Protection Agency and the Council on Environmental Quality. Requires all federal agencies to analyze the environmental impacts of major federal actions, consider alternatives to mitigate these impacts, and make public this and other information to protect, maintain, and enhance environmental quality.

TABLE 1.6 (Continued)

MAJOR LEGISLATION GOVERNING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

LEGISLATION	ADMINISTRATIVE AGENCY	RESOURCES GOVERNED	SUMMARY OF LEGISLATION
STATE			
California Administrative Code, Title 14:			
Section 29.05	Department of Fish & Game	Fish and Wildlife	Restricts taking of specified invertebrate marine life in Ano Nuevo State Reserve during certain seasons to protect elephant seals.
Section 40.00	Department of Fish & Game	Fish and Wildlife	Designates fully protected reptiles and amphibians and prohibits taking of these species except by permit.
Section 671	Department of Fish & Game	Fish and Wildlife	Prohibits taking of all falconiforms (falcons, eagles, hawks, vultures, etc.) and owls except by permit.
California Coastal Act of 1976	Coastal Commission	Vegetative, Water, Fish and Wildlife	Protects vegetative, water, and fish and wildlife resources in sensitive habitats within the Coastal Zone. Places priority on sensitive habitat protection, permits only resource-dependent development within sensitive habitats, and requires the mitigation of adverse impacts, the maintenance and, where feasible, restoration of the biological productivity of these habitats. Required the County to adopt a Local Coastal Plan consistent with the provisions of the Act.

TABLE 1.6 (Continued)

MAJOR LEGISLATION GOVERNING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

LEGISLATION	ADMINISTRATIVE AGENCY	RESOURCES GOVERNED	SUMMARY OF LEGISLATION
California Endangered Species Act of 1970 (and implementing legislation)	Department of Fish and Game	Fish & Wildlife	Authorizes the Department of Fish and Game to designate rare and endangered wildlife and prohibits the taking of these animals or any part thereof except as permitted by the Fish and Game Commission.
California Environmental Quality Act of 1970, as amended	All Public Agencies	Vegetative, Fish & Wildlife	Requires all public agencies to consider the environmental impacts of all proposed actions over which they have discretionary authority. Requires the preparation of an Environmental Impact Report, if impacts are found to be significant, which considers alternatives and specifies mitigation measures.
California Fish and Game Code:			
Section 2000	Department of Fish and Game	Fish and Wildlife	Prohibits taking of all fish and wildlife except certain species designated by the Fish and Game Commission.
Section 3800	Department of Fish and Game	Fish and Wildlife	Prohibits taking of all otherwise not protected non-game birds except for certain birds found to be injurious to crops and livestock or by permit.
Section 10500	Department of Fish and Game	Vegetative, Water, Fish and Wildlife	Authorizes the Fish and Game Commission to acquire and manage refuges. Prohibits taking of animals in fish and game refuges or invertebrates and marine plants in marine life refuges except by permit. Permits taking of specified fish and molluscs in the James V. Fitzgerald Marine Reserve under approved license.

TABLE 1.6 (Continued)

MAJOR LEGISLATION GOVERNING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

LEGISLATION	ADMINISTRATIVE AGENCY	RESOURCES GOVERNED	SUMMARY OF LEGISLATION
Forest Practices Act of 1973 (and implementing legislation)	Department of Forestry, San Mateo County	Vegetative	Requires a timber harvest plan for the commercial harvest of forest products which includes forest practices that promote and protect the sustained productivity of forests. Establishes forest practice committees to formulate forest practice rules. Permits the County to adopt stricter forest practice rules locally. (These regulations have been modified by Chapter 1561 of the California Statutes of 1982.)
Forest Practices Rules	Department of Forestry, San Mateo County	Vegetative	Establishes performance standards to promote and protect environmental and consumptive uses of forest resources, including the regulation of stocking, cutting and transporting trees; the protection of water quality and streamside buffer zones; and fire protection measures.
Forest Taxation Reform Act of 1976	Department of Forestry, San Mateo County	Vegetative	Requires the establishment of timberland preserves which restrict timberland uses to timber production (including Christmas trees) and compatible uses. Restricts subdivision of timberlands to parcels 160 acres or larger in order to promote timber production. (This Act has been modified by Chapter 1489 of the California Statues of 1982.)
State Penal Code, Section 384(a)	Department of Transportation	Vegetative	Prohibits taking or harming vegetation on State or County right-of-ways except by permit.

TABLE 1.6 (Continued)

MAJOR LEGISLATION GOVERNING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

LEGISLATION	ADMINISTRATIVE AGENCY	RESOURCES GOVERNED	SUMMARY OF LEGISLATION
California Native Plant Protection Act of 1977 (and implementing legislation)	Department of Fish and Game	Vegetative	Requires the Department of Fish and Game to inventory rare and endangered native plants, and authorizes the Fish and Game Commission to designate and protect these plants or any part thereof.
California Statutes of 1982:			
Chapter 1489 (AB 2770)	Department of Forestry, San Mateo County	Vegetative	Amends Forest Taxation Reform Act of 1976. Strengthens protection of timber harvesting by changing the name of "Timberland Preserve Zone" to "Timberland Production Zone," and providing that timber operations conducted pursuant to the Forest Practices Act of 1973 shall not constitute a public or private nuisance. Establishes a procedure for the issuance of a stop order to halt timber operations in violation of the Act.
Chapter 1561 (SB 856)	Department of Forestry, San Mateo County	Vegetative	Amends the Forest Practices Act of 1973 by requiring that the growing and harvesting of timber on all parcels larger than 3 acres be regulated solely pursuant to State statutes and regulations. Permits the County to recommend additional rules and regulations to account for local needs and permits the County to request a public hearing on any timber harvesting plan submitted for lands within the County.

(1) Local Coastal Program (1980)

The Land Use Plan of the Local Coastal Program was adopted to meet the requirements of the California Coastal Act of 1976. The policies in this plan are divided into 12 different components and apply to activities and development within the Coastal Zone.

(a) Sensitive Habitats Component

Vegetative, water, fish and wildlife resources are primarily protected by the policies in the Sensitive Habitats Component. These policies: (1) define and designate sensitive habitats and their buffer zones; (2) protect these areas by prohibiting any land use and/or development which would have significant adverse impacts on the habitats; (3) permit only resource-dependent and compatible uses in these areas; and (4) establish performance standards and require mitigation measures to minimize the impacts of development. Other policies encourage the control and removal of certain undesirable plants on private land and require their removal on public lands.

(b) Other Components

Other components in the Local Coastal Program which protect and regulate the use of vegetative, water, fish and wildlife resources include policies which protect:

1) vegetative, water, fish and wildlife resources from the adverse impacts of consumptive uses, as detailed in the Locating and Planning New Development, Public Works, Agriculture, and Aquaculture Components;

2) protect vegetative, water, fish and wildlife resources within sensitive habitats from the adverse impacts of development as detailed in the Public Works, Energy, Agriculture, Shoreline Access, Recreation/Visitor Serving Facilities, and Commercial Fishing/Recreational Boating Components;

3) individual vegetative, water, fish and wildlife resources as detailed in the Energy, and Visual Resources Components; and

4) the consumptive use of vegetative, water, fish and wildlife resources as detailed in the Aquaculture and Commercial Fishing/Recreational Boating components.

(2) Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan includes policies to reduce development to the level appropriate for the natural holding capacity of the land, prohibit disturbance of natural drainage channels, preserve existing vegetation, and limit grading to minimize erosion and surface water run-off.

(3) San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment requires Specific Plans to include provisions for the management of natural vegetation, water quality, and wildlife; the retention of the Saddle Area wetlands; and the reduction of potential invasions of non-native plants and domestic animals into the Regional Park. The policies also protect and preserve water quality and natural vegetation within the planning area, and sensitive habitats in Owl and Buckey Canyons and in the Saddle Area, especially the "Saddle Bog" and wetland and headwaters of Colma Creek.

2. Other County Policies and Programs

a. CEQA Implementing Procedures (1983)

All public agencies are required to implement the California Environmental Quality Act of 1970 (CEQA). The County has adopted objectives, criteria and procedures for the evaluation of projects and the preparation of environmental documents, pursuant to the CEQA mandate. County CEQA review procedures evaluate the impacts on the environment that may accompany a public or private activity. If the initial evaluation shows impacts which cannot feasibly be mitigated, an environmental impact report, which considers alternatives and specifies mitigation measures, must be prepared.

b. Policy for Off Road Recreation Vehicles (ORRV) Park (1975)

This policy applies to applications for use permits to develop and operate ORRV facilities. The policy requires that approved measures be employed to minimize soil erosion, thereby protecting vegetative and water resources.

c. San Bruno Mountain Area Habitat Conservation Plan (1982)

The San Bruno Mountain Habitat Conservation Plan, developed by the State, the County, and the Cities of Brisbane, Daly City, and South San Francisco, protects rare and endangered species found on San Bruno Mountain. The plan includes specific conditions for protecting, conserving, and enhancing the plant and animal habitats on San Bruno Mountain. The plan also requires landowners and developers to dedicate to the County designated parcels of land or portions thereof for habitat conservation, and sets up a permanent fund for conservation activities such as habitat monitoring and enhancement.

As specific planning areas of San Bruno Mountain are annexed to the surrounding cities, the City will share responsibility with the County for enforcing the Habitat Conservation Plan. The County will retain jurisdiction over the County park lands, including those dedicated as part of the agreement made by all the parties in the Habitat Conservation Plan.

d. Master Plan for Edgewood County Park (1982)

The Master Plan for Edgewood County Park, adopted in 1982, designates sensitive habitats in Edgewood County Park as natural preserves. These areas are to be preserved in their present state for the enjoyment, education, and well-being of the public while the rest of the land is used as a golf course. Recommended County management measures include: (1) fencing natural preserves prior to grading or construction activities; (2) establishing a program to relocate the Fragrant Fritillary and Marin Dwarf Flax plants; (3) regulating pedestrian and equestrian uses to minimize the impacts of foot traffic; (4) prohibiting golf ball retrieval in natural preserve areas; (5) developing and implementing a management program for the Checkerspot butterfly habitat; and (6) establishing an environmental education program which includes interpretive exhibits that explain the significance of sensitive habitats and permits visitors in these areas only within scheduled tours.

3. County Ordinances

a. Zoning Ordinances

(1) Resource Management (RM) District Ordinance (1974) and Resource Management/Coastal Zone (RM/CZ) District Ordinance (1980)

These ordinances implement the policies of the 1973 Conservation and Open Space Element by establishing Resource Management Districts. All developments within these districts require a Development Review Permit subject to the Development Review Criteria summarized in Appendix G. For development on parcels larger than 200 acres, a Preliminary Concept Plan must be submitted which includes a description of the policies and actions to be followed to protect water resources.

(2) Timberland Production Zone (TPZ) Ordinance (1977) and Timberland Production Zone/Coastal Zone (TPZ/CZ) Ordinance (1980)

These ordinances establish Timberland Preserves in compliance with the State Forest Taxation Reform Act of 1976. The Act protects timberland within these preserves from conversion to other land uses by establishing timber harvesting as the highest and best use of these lands. The ordinances define the compatible uses, densities, and land divisions allowed within

the districts. All development within these districts requires a Timber Management Plan and is subject to Development Design Criteria similar to the Development Review Criteria in the RM and RM/CZ districts (see Appendix F). In addition, Forest Resources Design Criteria require that development within Primary Resource Areas (designated or defined in the 1973 Conservation and Open Space Element) minimizes the use of Site I, II, or III soils for any use other than growing and harvesting timber. As of April 1982, approximately 32,438 acres have been designated and zoned as Timberland Preserves.[40] These lands are privately owned and represent most of the privately owned commercial forest land in the County.

(3) Coastside Development (CD) District Ordinance (1980)

The CD ordinance implements the Local Coastal Program policies by requiring a Coastal Development Permit for any development within the Coastal Zone, subject to review for compliance with all applicable policies of the Local Coastal Program (including the policies in the Sensitive Habitats Component and all other components previously discussed).

(4) Coastside Commercial Recreation (CCR) District Ordinance (1980)

The CCR ordinance requires all new development in lands zoned CCR within the Coastal Zone to meet development standards which include the maximum feasible protection of natural resources and compliance with all policies in the Sensitive Habitats Component of the Local Coastal Program.

b. Other Ordinances

(1) Heritage Tree Ordinance

This ordinance requires a permit for the removal, destruction, or trimming of any Heritage Tree, defined as: (a) Class 1 - trees designated by the Board of Supervisors; and (b) Class 2 - any one of 17 designated species of trees, healthy and generally free from disease, with diameter equal to or greater than a specified size.

(2) Significant Tree Ordinance (1977)

This ordinance requires a permit for the removal or destruction of any Significant Tree within Design Review Districts or Scenic Corridors. A Significant Tree is any tree over 38 inches in circumference measured at 4-1/2 feet above the ground or immediately below the lowest branch.

(3) Timber Harvest Ordinance (1980)

This ordinance requires a timber harvest permit for the commercial harvest of forest products, and establishes performance standards which promote sustained yield logging practices to protect the ecological, scenic, recreational, and future consumptive uses of forest resources. Permit conditions include the regulation of: (a) log haul routes and schedules; (b) the percentage, size, and age of trees to be cut; (c) frequency of cutting; (d) erosion control standards (including posting of a cash deposit or bond); and (e) fire reduction measures. The Ordinance prohibits activities, truck roads and trails within streams and streamside buffer zones to protect water resources and sensitive habitats, consistent with the Local Coastal Program.

(4) Oil and Gas Well Regulations (1980)

This ordinance requires permits for exploratory or production wells. Applications for these permits must include plans to eliminate or substantially mitigate adverse impacts on habitat areas, streams, and air and water quality. Performance requirements for these activities prohibit construction on prime agricultural soil and in sensitive habitats, and prohibit disposal of polluted water where it may penetrate into sensitive habitat areas or agricultural or domestic water supplies.

(5) Surface Mining and Reclamation Ordinance (1982)

This ordinance requires a Surface Mining Permit for surface mining operations. Applications for this permit must include plans for eliminating or mitigating adverse impacts on sensitive habitat areas and proposals to minimize water use and protect water quality. Development standards require minimizing vegetation removal, replanting within specified time limits, water quality control measures, and protection of fish and wildlife habitats.

(6) Excavating, Grading, Filling, and Clearing Ordinance (1982)

This ordinance requires a land clearing permit for vegetation removal when: (a) the land area to be cleared exceeds 5,000 square feet within any two year period or, within Scenic Corridors, if vegetation removal exceeds 1,000 square feet; (b) the existing slopes are greater than 20 percent; and (c) the land area to be cleared is in a sensitive habitat or buffer zone identified in the County General Plan.

Applications for this permit must include plans for erosion control, the removal and disposal of vegetation, and a statement of the purpose for the removal of vegetation. Performance standards require erosion control and grading standards in con-

formance with the Grading Permit Performance Standards Handbook. Approval of the permit is subject to the finding that the granting of the permit will not have a significant adverse effect on the environment.

Exemptions to the land clearing permit requirement are allowed if the vegetative removal is to occur outside of natural drainage channels and is for the purposes of: (a) fire protection; (b) forest improvement under the purview of the California Department of Forestry; (c) routine agricultural activities; (d) brush clearing, erosion control, soil conservation, or other resource management programs under the purview of the Resource Conservation District; (e) home gardening; (f) agricultural water impoundments; or (g) in conjunction with approved timber harvesting activities.

VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES ISSUES

I. IMPORTANCE OF THE RESOURCES

A. ENVIRONMENTAL USES

Vegetative, Water, Fish and Wildlife Resources in their natural setting provide many benefits. They play a vital role in maintaining the stability and balance of ecological systems, a requisite to human survival, and they also provide opportunities for recreational, scientific and educational pursuits.

B. CONSUMPTIVE USES

The consumptive use of vegetative, water, fish and wildlife resources provides food, water, and important economic benefits. For example, in 1981, the total commercial value of the timber, Christmas trees and fish harvested in the County exceeded $4.5 million.[41] In addition, the County received $36,000 of tax revenue for timber harvested during the same fiscal year.[42] These consumptive uses, however, can have significant adverse impacts on the resources themselves, the environmental use of the resources, and the long-term consumptive use of the resources.

II. OPPORTUNITIES AND CONSTRAINTS OF PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

A. IMPACT OF DEVELOPMENT ON HABITATS

Urban and rural development can result in the degradation and loss of vegetative, water, fish and wildlife resources. Appendix G provides examples of activities associated with development that can adversely affect these resources and their consumptive uses.

1. Urban Areas

San Mateo County's peninsular location affords an abundance of unique sensitive habitats, especially along the Bay and Ocean margins (see Map of Sensitive Habitats). These areas, however, are extremely vulnerable to development-induced changes in the environment, and the proximity of sensitive habitats to major urban areas poses a significant constraint to protecting these important sensitive resources. Extensive urban development on the Bayside has resulted in the substantial removal of vegetation, diking and filling of wetlands, and the removal and degradation of many fish and wildlife habitats. The increase in impermeable paved surfaces in developed areas has dramatically increased the amount of water running off the land into streams, lagoons, marshes and other important wetlands. This runoff often carries oil, lead, debris, silt and bacteria into the receiving

water, resulting in poor water quality and impaired vegetative, fish and wildlife habitats.[43] These paved surfaces also greatly reduce the amount of water available to filter into the ground to replenish groundwater supplies.

2. Rural Areas

On the Coastside, development near stream corridors, along with the diversion of water for consumption, has increased soil erosion and sedimentation of coastal streams while reducing the ability of these streams to flush sediment out into the ocean. This is a concern in many coastal watersheds, especially in the Pescadero Creek Watershed where increased sedimentation may eventually convert Pescadero Marsh into a dry area. The construction of Highway 1 and a bridge across the mouth of Pescadero Creek has added to this problem by reducing the tidal flushing of the marsh.[44] In addition, septic tank leachate from improper sewage disposal in Pescadero is contributing to the high nitrate concentrations in the groundwater.[45]

Generally, rural land uses such as agriculture and recreation act to preserve open spaces that vegetative, water, fish and wildlife resources need to thrive. Often, agricultural and recreational activities only minimally disturb resources and wildlife habitats. Although agriculture can be one of the uses most compatible with vegetative, water, fish and wildlife resources, and sensitive habitats,[46] some agricultural activities can be detrimental to the protection of resources. Agricultural development in San Mateo County has involved the removal or conversion of vegetation, the loss of habitats and the increased incidence of soil erosion and the sedimentation of streams.

San Mateo County's rural areas also host numerous recreation areas. The availability of large land areas coupled with the scenic character of San Mateo County's rural areas make them desirable sites for recreational activities. Both recreational development and users, however, have adversely affected the County's vegetative, water, fish and wildlife resources. Examples of resource damage include the removal of vegetation by motorcycles and off-road vehicles and the degradation of resources, especially sensitive habitats, from trampling, dumping and specimen collecting by hikers and campers. (For additional discussion, see the Parks and Recreation Resources Chapter.) In a local example, the presently endangered San Francisco garter snake is considered to be a "collector's item" because of its unusual and attractive coloring.[47]

3. Land Use Mitigation and Control

While many types of development can have adverse impacts on vegetative, water, fish and wildlife resources and their consumptive uses, these impacts can often be mitigated through the application of development standards and performance criteria. These mitigation measures are more easily applied and are more effective at lower

density, less intense land uses. Higher density land uses such as industrial uses often have impacts which are difficult to mitigate. It is often the case in urban areas, however, that a higher density land use may be the only suitable use in a particular location and mitigation measures must be used although to less satisfactory results.

B. CONSUMPTIVE USES

1. Vegetative Resources

Forested lands in timber production provide both open space and economic opportunity for the residents of rural San Mateo County. The mismanagement of forest resources, however, can have a deleterious effect on water, fish and wildlife resources. Much of San Mateo County's forested land is traversed by streams that foster important riparian habitats. These riparian areas are particularly susceptible to degradation caused by poor timber harvest practices. Erosion caused by logging roads and the removal of vegetation increases the sediment load of the stream, while the loss of streamside vegetative cover dramatically alters the microclimate of the stream. Resident fish and wildlife species often cannot adapt to these major changes in the stream environment.

The conversion of natural mixed forest vegetation to single species stands of commercial trees also significantly affects the resources, particularly wildlife. Typically, slow growing hardwood trees are removed and replaced by the faster growing conifers, thus irreversibly altering the mixed evergreen forest wildlife habitats.

Proper management of timber harvesting activities can substantially reduce damage to surrounding vegetative, water, fish and wildlife resources. Techniques such as selective cutting, maintaining stream vegetative cover and planting grasses, shrubs and trees on uncovered land can help protect streams from sedimentation and provide food and cover for wildlife.

2. Water Resources

Watersheds and reservoirs that are managed for domestic water supply can provide habitats for vegetative, fish and wildlife resources. There are many water supply and storage reservoirs that function as watering and resting places for wildlife, particularly waterfowl. The Crystal Springs Reservoir, which supplies the vast majority of the County's drinking water, harbors a number of unique and endangered plant and animal habitats.

The consumptive use of water resources is basic to the survival of plant and animal life. However, disregard for water systems and processes can deplete or pollute the resource, thereby removing its productive potential. For example, overdrafting groundwater resources can deplete water supplies and, in coastal areas, cause salt water intrusion into the water table.

The diversion of surface water for consumptive use can be detrimental to vegetative, fish and wildlife resources. Water-dependent habitats, especially marshes and riparian corridors, are fragile environments that are of great importance to the production and maintenance of many fish and wildlife species. Excessive stream water diversions alter and degrade these sensitive habitats.

3. Fish and Wildlife Resources

The consumptive use of certain fish and wildlife resources can threaten species with depletion, especially those that are already experiencing habitat reduction due to human interference. Concern over the potential depletion of fish resources at Fitzgerald Marine Reserve has resulted in a proposal to close a portion of the Reserve to all fishing activities.[48]

C. INCOMPATIBLE VEGETATIVE, FISH AND WILDLIFE RESOURCES

Under some conditions, certain concentrations of vegetative, fish and wildlife species are considered to be detrimental to the surrounding natural resources or harmful to public health, safety or welfare. Plants that can be considered incompatible include (a) dense brush which restricts forest productivity and increases wildfire hazards; (b) plant species which are invasive, spread quickly, destroy natural and agricultural vegetation and are of little habitat value; (c) dead trees which create a public hazard; and (d) trees which obscure public views.

Examples of animals that can be considered incompatible in certain concentrations are disease carrying and destructive insects such as mosquitoes, gypsy moths and Mediterranean fruit flies. For example, Gypsy moths, which are considered to be one of the greatest threats to California flora, have recently been discovered in San Mateo County. These insects feed on more than 70 plant species which are unique to California and, in large numbers, can decimate the County's forests.[49] The Mediterranean fruit fly can also cause extensive damage to plants, including the destruction of agricultural crops. Some mammals, such as raccoons, skunks and deer also proliferate to harmful proportions due to the lack of predatory species. In these conditions, it is appropriate and often necessary to control or remove these incompatible species.

Programs to control or remove incompatible plants and animals provide a further constraint to protecting resources. Eradication programs which employ non-biological, non-selective methods such as aerial and ground application of pesticides, can cause environmental degradation and may even increase pest problems. Since many pests can develop immunities to chemical pesticides. In addition, the use of non-selective pesticides can eradicate those compatible species that prey upon incompatible pests.

To a lesser degree, fire suppression programs have also disrupted local environmental processes. In forested areas with old growth redwoods, fire was a natural element that helped to maintain an ecological balance.

Today, with the exclusion of fire from the forest, brush and debris accumulating on the forest floor has been allowed to amass to dangerous levels.[50] This is of primary concern in forested areas such as Pescadero Creek County Park, where a combination of fire suppression and past logging practices have accelerated the growth of brush and accumulation of debris on the forest floor, creating the potential for wildfires. (For additional discussion, see Natural Hazards Chapter.)

D. RESOURCE MANAGEMENT COORDINATION

Vegetative, water, fish and wildlife resources are dynamic resources which cannot be confined within political boundaries. An assortment of activities, especially developmental activities, throughout San Mateo County can affect resources within the unincorporated areas and vice versa. Likewise, the resource management activities of public agencies for resources within their jurisdiction can affect resources in other areas. There is, however, no coordinated Countywide management of vegetative, water, and fish wildlife resources or the activities that affect them.

The lack of coordinated management of resources creates problems as exemplified by the management problems in the Pescadero watershed. Pescadero Marsh, an important sensitive habitat, is owned and operated by the State Department of Parks and Recreation for both environmental preservation and recreational use. However, the marsh has been degraded by a range of activities that are regulated by several public agencies; namely, upstream agricultural and residential developments which are regulated by three public agencies, i.e., the County, the California Department of Fish and Game, and the Regional Water Quality Control Board; the construction of Highway 1, adjacent to the marsh, by the California Department of Transportation; and finally, recreational development and activities within the marsh itself permitted by the Department of Parks and Recreation. In addition, local residents are concerned that future expansion of Pescadero Creek State Park could result in further degradation of the sensitive habitat.

E. FISCAL

One of the most successful long-term protection techniques for sensitive habitats has been habitat acquisition by a public or semi-public agency (i.e. Peninsula Open Space Trust), for the specific purpose of protecting or restoring the habitat. However, rising public concern over government spending, has caused Federal, State and local revenues to diminish. Local governments may respond by relying more on the regulation of development or increasing user charges and permit fees to protect sensitive habitats. As government coffers shrink, new sources of revenue and alternatives to public acquisition need to be pursued.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

Presently, San Mateo County has a number of policies and regulations designed to implement the area plans and General Plan elements that collectively comprise the existing General Plan. This section will assess the adequacy of these regulations and address the previously identified constraints to protecting vegetative, water, fish and wildlife resources and sensitive habitats.

A. DEVELOPMENT

The inherent conflict that exists between vegetative, water, fish and wildlife resources and development activities is well recognized by existing County plans, policies and regulations. Because the unincorporated area encompasses most of the County's undeveloped, natural areas, resource protection is a primary planning concern.

1. General Plan Policies

The 1973 Conservation and Open Space Element focused on issues regarding the consumptive use of vegetative, water, fish and wildlife resources and the impacts of development on these resources. A number of issues cited in the 1973 document are relevant and have been incorporated into this Chapter's discussion of the opportunities and constraints to resource protection posed by development and consumptive uses. The 1973 discussion of these issues has also been augmented with recent information to reflect the existing situation.

2. Rural Zoning Districts

Individual vegetative, water, fish and wildlife resources are protected in the Resource Management Districts and Timberland Production Zones by development review criteria which include general performance criteria for the protection of all vegetative and water resources in these zones, and additional criteria for the protection of resources in primary value fish and wildlife habitat, water resources and natural vegetative areas. These primary value areas, however, have only been generally located and this hinders the effectiveness of these zones in providing protection for important sensitive habitats.

The Local Coastal Program focuses on protection of sensitive habitats. The designation and protection of sensitive or important plant and animal habitats is an effective means of protecting the most critical vegetative, water, fish and wildlife resources in the County without requiring regulations protecting each individual resource. This approach is less effective, however, in protecting those individual resources of lesser habitat value, such as buffer vegetation outside of the designated sensitive habitat areas or groundwater resources. While these regulations have only been in effect for several years, they appear to be effective, primarily due to the explicit quantitative development standards included in the regulations. Quantitative standards are not as flexible as qualitative standards and therefore suffer less from inconsistent application. The effectiveness of the sensitive habitats approach is also dependent on maps which clearly designate sensitive

habitat areas; however, many sensitive habitat areas have not been clearly mapped.

3. Urban Zoning Districts

Sensitive habitats located in urban unincorporated areas are not protected by the urban zoning ordinances. Presently, the County must rely on the provisions of the California Environmental Quality Act (CEQA) to protect sensitive habitats in these areas although the County has discretionary authority over the issuance of building permits,[51] there is no formal procedure which directs the Planning Staff to consider applying CEQA when processing building permit applications. The protection of sensitive habitats in this manner is haphazard and may cause unnecessary hardship and costs for property owners.

4. Other County Ordinances

Many other County ordinances are aimed at protecting vegetative, water, fish and wildlife resources and sensitive habitats from other types of development activities. The Oil and Gas Well Regulations, the Surface Mining and Reclamation Ordinance, the Excavating, Grading, Filling and Clearing Regulations, and the Significant and Heritage Tree Ordinances all protect resources from impacts associated with these specific development activities. These ordinances are applicable throughout the unincorporated area.

Most County ordinances which protect vegetative, water, fish and wildlife resources from the negative impacts of development do so by requiring mitigation measures. These mitigation measures are not specified in the ordinances, however, and their preparation can result in additional staff work and delays in processing permits. In addition, the lack of a standard set of mitigation measures may result in an inconsistent application of these measures.

Although the variety of protective mechanisms in County ordinances are generally effective in protecting the individual resources and sensitive habitats, each zoning district employs different standards to protect the resources located within each area. As vegetative, water, fish and wildlife resources and sensitive habitats have constant needs regardless of their location, a single set of regulations to be applied Countywide would afford more consistent resource protection. In addition, a single set of regulations would be easier to implement, and this would further facilitate consistent results.

B. LACK OF LOCAL CONTROL OVER CONSUMPTIVE USES

Consumptive uses of vegetative, water, fish and wildlife resources are mainly regulated by State agencies, due to the widespread economic benefits of these uses. Under State legislation, Chapter 1561 of the California Statutes of 1982, timber harvesting on parcels larger than three acres is governed solely by State laws. The County retains authority over timber harvesting on parcels smaller than 3 acres; however, most

timber harvesting in the County occurs on larger parcels. In addition, the State Water Resources Board regulates water rights, and the Department of Fish and Game regulates fishing and hunting activities.

Chapter 1561 of the State statutes allows the County to recommend to the State Board of Forestry more restrictive forest practice rules that respond to local concerns. The State Board, however, is not required to adopt these recommendations. Likewise, the County can protest the State Water Resources Board actions on appropriative water rights, but the State Board has final discretion. And, as in the case of the Fitzgerald Marine Reserve, the County can support State legislation which amends fishing and hunting laws, but has no direct control over these activities.

C. INCOMPATIBLE VEGETATIVE, FISH AND WILDLIFE RESOURCES

While existing regulations are effective in controlling plants and animals determined to be incompatible, the public has little input on eradication programs. The decision to eradicate or control an incompatible species is made by the State Department of Food and Agriculture with input from the County Agricultural Commissioner and health experts. However, input from the general public is restricted to written comments after the decision to eradicate or control an incompatible species has been made. Public hearings, when requested, only provide information to affected individuals.

D. RESOURCE MANAGEMENT COORDINATION

The problem created by the involvement of many agencies in the management of San Mateo County's vegetative, water, fish and wildlife resources and sensitive habitats has not been fully acknowledged by previous County General Plans. Only the Local Coastal Program recognizes the need to coordinate resource management agencies. In the Sensitive Habitats Component, the Local Coastal Program assigns specific responsibilities to the agencies involved in the management of Pescadero and Pillar Point Marshes. Beyond this, there is no designation of responsibilities in promoting the protection of other resources, particularly sensitive habitats, on lands that have overlapping management jurisdictions.

E. FISCAL

In spite of the constrained availability of public funds for the acquisition of sensitive habitats in San Mateo County, many public and semi-public organizations have purchased several important natural areas. The San Mateo County Department of Parks and Recreation has been successful in pursuing Federal and State grant and loan monies to augment tax revenues. The Parks and Recreation Department has acquired important habitat land on San Bruno Mountain, along the coast and baylands, and in the Santa Cruz mountains. In addition, the Mid-Peninsula Regional Open Space District (MROSD), a special district covering southern San Mateo County and northern Santa Clara County, has purchased land in the Santa Cruz mountains and along the bay for passive recreational uses (such as

hiking, photography, picnicking) and the preservation of the land's natural character. MROSD is financed primarily through property taxes, although State and Federal grants and private donations of land are also utilized. Other groups that own or acquire land in San Mateo County for the preservation of its environmental quality include the Golden Gate National Recreation Area, Peninsula Open Space Trust and the Audubon Society.

Existing County General Plan policies and regulations do not fully address fiscal constraints. In the Coastal Zone, priorities for allocating scarce public funds that are intended for resource preservation or restoration have been established by the Local Coastal Program The LCP also encourages the involvement of other agencies and the private sector in the restoration of damaged resources.

Although limited, other funding sources are available and need to be pursued. The State Wildlife Conservation Board acquires lands for the preservation of wildlife habitats and administers funds for cooperative projects with local agencies. The State Coastal Conservancy also administers funds for the restoration of degraded natural areas.

F. SUMMARY OF PROBLEMS

The following is a summary listing of inadequacies noted in existing regulations:

1. Lack of consistent performance criteria and development standards for vegetative, water, fish and wildlife resources and sensitive habitats in all zoning districts.

2. Lack of clear identification of sensitive habitats.

3. Lack of protection of sensitive habitats in urban areas.

4. Lack of standard mitigation measures.

5. Need for increased coordination between the County and State agencies regulating consumptive uses.

6. Lack of citizen input into incompatible resource eradication programs.

7. Need to explore alternative pest management techniques.

8. Lack of coordinated management of resources.

9. Need to pursue additional revenue sources for habitat acquisition.

IV. ALTERNATIVES

The following section examines possible alternative actions that could be employed to address the inadequacies identified in the previous section.

A. DEVELOP CONSISTENT STANDARDS FOR THE PROTECTION OF VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RURAL AREAS

Recognizing that vegetation, water, fish and wildlife are dynamic resources that have set needs regardless of their location, improved resource protection in San Mateo County can be facilitated by developing consistent standards for protection in the rural zoning district ordinances. Developing consistent protective measures for these districts, where a majority of the valuable resources are found, would promote more effective resource protection.

B. DESIGNATE SENSITIVE HABITATS AND BUFFER ZONES

Formal identification of sensitive habitats is an instrumental first step to protecting these critical resources. San Mateo County presently maintains a set of maps identifying general habitat boundaries of rare and unique plants and animals. In the Coastal Zone, the sensitive habitat maps also include riparian habitats, marshes, marine habitats, wildlife preserves and sand dunes. These maps are presently used for permit processing, and are not in a form that can be distributed to the public. A complete sensitive habitat map can be developed for the entire unincorporated area which could be used for processing permits and public information. Public access to sensitive habitat maps could provide interested parties with advance knowledge that special circumstances will apply to the lands designated on the map.

C. DEVELOP CONSISTENT PERFORMANCE CRITERIA FOR AREAS WITH SENSITIVE HABITATS

At the present time, protection afforded sensitive habitats in San Mateo County varies dramatically by location. Improved protection of sensitive habitats can be achieved by developing more consistent performance criteria for areas with sensitive habitats. In rural areas, this can be affected by incorporation of Coastal Zone protections into existing rural ordinances. In urban areas it may not always be possible to protect sensitive habitats as effectively as in rural areas, however, some increase in protection is necessary.

D. CONSIDER OR ENCOURAGE ACQUISITION OF SENSITIVE HABITATS

Acquisition of land for the purposes of preserving its environmental integrity is another option. Land acquisition affords a great deal of protection to the resources, but it is a costly alternative. Given these considerations, it may be necessary to limit acquisitions to those lands that contain very valuable or threatened resources. Some acquisition techniques include:

1. Purchase by Other Agencies

San Mateo County is fortunate to have a host of public and semi-public agencies involved in preserving its valuable resources. The Federal, State, and County governments, Midpeninsula Regional Open Space District and the Peninsula Open Space Trust have all purchased

sensitive County areas for the purpose of preserving or restoring their environmental character. Due to limited local revenues, further purchases by these agencies should be encouraged.

2. Transfer of Development Rights

Transfer of Development Rights (TDR) allows land owners to sell their right to develop, thereby preserving the property in its existing state. Potential benefits of TDR's include compensation to owners of restricted properties and fewer costs incurred by local governments.

E. PREPARE RESOURCE MANAGEMENT PLANS

Another alternative to consider in protecting vegetative, water, fish and wildlife resources and sensitive habitats is the preparation of specific resource management plans for the County public lands. Resource management plans have the advantage of being tailored to the ecosystem of a particular area, thereby providing protection that is more effective than "blanket" protection measures. Resource management plans are especially beneficial for restoring damaged areas.

F. WORK MORE CLOSELY WITH THE STATE TO MONITOR THE CONSUMPTIVE USES OF VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

The lack of local jurisdiction in regulating the consumptive use of resources restricts the County to monitoring State actions, offering assistance and making recommendations to State agencies. A better effort could be made by the County to more closely monitor State actions impacting local resources. Increased County participation in the legislative and procedural processes of State agencies can result in regulation more responsive to local concerns.

In addition to legislative functions, the State Department of Forestry, Water Resources and Fish and Game also maintain considerable data on County resources. By establishing a stronger working relationship with these departments, an exchange and review of mutual information could be initiated, thus improving both data bases.

G. INCOMPATIBLE EXOTIC VEGETATION CONTROL

Some control of incompatible exotic vegetation (non-agricultural) can be achieved through landscape plan review. On private property, particularly in rural areas, projects requiring landscaping plans and revegetation should be reviewed for the presence of incompatible vegetative species. On public land, particularly highways (where incompatible species are often introduced), efforts could be made by responsible agencies (i.e., Caltrans or Department of Parks and Recreation) to contain or eradicate incompatible species. In rural areas, revegetation with native plants could be encouraged.

VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES FOOTNOTES

[1] Extirpated plants are those that have been locally eliminated.

[2] Oswald, Daniel, Forests and Timber Resources of California's Central Coast, Pacific Northwest Forest and Range Experiment Station, Resource Bulletin PNW-83, U.S. Department of Agriculture, Forest Service, May 1979.

Forest land is land that is or was formerly at least 10% stocked by trees and is not currently developed for non-forest use. Commercially productive forest land is capable of producing 20 cubic feet per acre per year of industrial wood. In San Mateo County, 43,000 acres of commercially productive forest land are in private ownership and the remaining 17,000 acres include 16,000 acres which have been withdrawn from timber utilization through a statute, ordinance, or administrative order.

[3] Dale Holderman, Big Creek Lumber Company; telephone conversation, April 1982.

[4] San Mateo County Farm Bureau, "San Mateo County Harvest Trails," 1981, and California Department of Food and Agriculture, Direct Marketing Program, "California Christmas Tree Farms 1980," and additional data from the University of California Cooperative Extension.

[5] Acreage from the Real Estate Atlas of San Mateo County, Eighteenth Edition, 1981 and from estimates by tree farm owners.

[6] Telephone conversation with Larry Costello, University of California Cooperative Extension, San Mateo County, April 1982.

[7] San Mateo County Department of Agriculture, "San Mateo County Agricultural Crop Report - 1982."

[8] See U.S. Geological Survey topographic maps.

[9] Wagner, Richard J.; and Nelson, Ralph E., Soil Survey: San Mateo Area, California, U.S. Department of Agriculture, Soil Conservation Service Series 1954, No. 13, May 1961.

[10] San Mateo County Planning Department, Conservation and Open Space Element of the General Plan, December 1973, p. 4-2.

[11] California Regional Water Quality Control Board, San Francisco Bay Basin Plan Hearing Draft, March 28, 1982.

[12] San Mateo County Planning Department, The Physical Setting of San Mateo County, May 1968, Plate II, p. 8.

[13]Luoma, S.N., and Cloern, J.E., "The Impact of Waste-Water Discharge on Biological Communities in San Francisco Bay," San Francisco Bay Use and Protection, 61st Annual Meeting of the Pacific Division/American Association for the Advancement of Science, 1982.

[14]Telephone conversation with Phil Swartzell, California Department of Fish and Game, Marine Research Branch, February 28, 1983.

[15]Telephone conversation with Lou Mitchell, California Department of Water Resources, Central District, Groundwater Section, June 28, 1982.

[16]California Department of Water Resources, California's Ground Water, Bulletin 118, September 1975, p.4.

[17]Ibid., pp. 35-41.

[18]Ibid., pp. 7-8.

[19]Ibid., p. 36. Depth of the Santa Clara Valley Basin ranges from 10-,010 feet, well yields average 425 gallons per minute with a maximum of 1,650 gpm, and storage capacity is 12,200,00 acre feet.

[20]Webster, D.A., Map Showing Ranges in Probable Maximum Well Yield from Water Bearing Rocks in the San Francisco Bay Region, California, U.S. Geological Survey Miscellaneous Field Studies Map MF-431, 1972.

[21]California Department of Water Resources, Coastal San Mateo County Investigation, Bulletin 138, March 1965.

[22]Based on Water Quality Reports from local water companies submitted in 1979-1981 to the California Department of Public Health.

[23]Telephone conversation with Bob McMahon, Pillar Point Harbormaster, June 24, 1982.

[24]San Mateo County Planning Department, Conservation and Open Space Element, December 1973.

[25]San Mateo County Planning and Development Division, Local Coastal Program Commercial Fishing and Recreational Boating Component, August 1980.

[26]California Department of Fish and Game, Atlas of California Coastal Marine Resources, December 1980.

[27]Gail Roper, Fishery Technician Supervisor, Pacific Marine Fisheries Commission, in conjunction with the California Department of Fish and Game. Sport fishing surveys, 1982.

[28]McAllister, Robert D., and Moore, Thomas O., Jr., San Francisco Bay Shellfish Program, California Department of Fish and Game for San Francisco Bay Regional Water Quality Control Board, January 1982.

[29]California Department of Fish and Game, "California Sport Fishing Regulations, A Summary," effective March 1, 1982.

[30]Steelhead trout run estimates for Pescadero and San Gregorio Creeks from Leeds, Hill, and Jewett, Inc., San Mateo County Comprehensive Water Resources Management Plan, January 1978.

[31]Eric Wong, Game Warden, California Department of Fish and Game, Region III; telephone conversation, June 14, 1982.

[32]Telephone conversation with Bill Thompson, Wildlife Management Division, California Department of Fish and Game, Region III, April 9, 1982.

[33]San Mateo County Planning and Development Division, Local Coastal Program: Sensitive Habitats Background Report, January 1979, p. 24.

[34]These refuges and reserves are designated and protected by the State of California Fish and Game Codes 1980, Division 7, Chapter 1, "Refuges."

[35]California Department of Fish and Game, "Areas of Special Biological Importance, San Francisco and San Mateo Counties," ASB1 Map 38, 41, August 1979.

[36]Broder, Bill. Coyote Point Museum Docents Text, February 18, 1981.

[37]McCosker, John E., et al., "The Need for Increased Wildlife Protection at James V. Fitzgerald Marine Reserve," February 11, 1982.

[38]Broder, Bill. Coyote Point Museum Docents Text, February 18, 1981.

[39]California Department of Fish and Game.

[40]San Mateo County Planning and Development Division; staff calculations based on TPZ and TPZ/CZ records.

[41]Approximately $1 million of timber, $2 million of Christmas trees, and $1.5 million of commercial fish were harvested in the County in 1981.

[42]Telephone conversation with Pat Bergman, San Mateo County Controller's Office, February 16, 1983. According to the State Board of Equalization, the County's share of tax revenue from Christmas tree sales is not significant nor is the tax revenue from commercial fish sales (assuming most fish are sold for human consumption and therefore not subject to sales tax).

[43]San Mateo County Planning and Development Division, San Mateo County Surface Runoff Management Plan.

[44]San Mateo County Planning and Development Division, Local Coastal Program August 1980, Sensitive Habitats Component, p. 7.11.

[45]San Mateo County Division of Environmental Health, August 1982.

[46]San Mateo County Planning and Development Division, Local Coastal Program August 1980, Sensitive Habitats Component.

[47]On March 1, 1983, the County Board of Supervisors passed a motion supporting a proposal for State legislation which would establish an ecological reserve (in which the removal of all marine life is prohibited) at a portion of the Fitzgerald Marine Reserve.

[48]Peninsula Times Tribune, "Scientists Urge Aerial Spraying on Peninsula," October 28, 1982, and "Those Disgusting Gypsy Moths," February 8, 1983.

[49]Western Ecological Services Company, Natural Resources Management Plan for Pescadero Creek County Park, June 1983, p. D-1.

[50]Chapter 28, San Mateo County Ordinance Code, gives the County discretionary action over the issuance of building permits for any building, structure, or improvement adjacent to any State highway, or primary or secondary highway, as designated by the County. This provision would apply to projects adjacent to most improved streets in the County.

VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES APPENDICES

APPENDIX A

VEGETATIVE COMMUNITIES
SAN MATEO COUNTY
1984

1. Coastal Shoreline Vegetation

   Coastal shoreline vegetation grows in loose sand above the high tide line and can be found on sandy beaches, dunes, and cliffs along the San Mateo County coastline (see Map of Vegetative Types). During much of the year strong winds make the sand unstable and high tides deposit salt on the plants and soil, making survival difficult. Representative plants are generally desert-type plants with water conserving roots. Many of these plants are low growing or prostrate, succulent in nature, and late flowering.

2. Coastal Marine Vegetation

   Coastal marine vegetation thrives within the shallow off-shore waters, intertidal, and subtidal areas. Living conditions in these areas are very favorable, with abundant light, nutrients, and plant habitats. The representative plants are mostly seaweeds, specifically adapted to the extremes of saltwater, sun, tidal fluctuations, and surging waves.

3. Salt Marsh Vegetation

   Salt marsh vegetation is found in the saltwater marshes along the tideland margin of San Francisco Bay and in Pescadero Marsh (see Map of Vegetative Types). The representative plant species thrive in water-saturated saline soils. These plants grow very rapidly and densely due to the abundance of nutrients in the water.

4. Freshwater Marsh Vegetation

   Freshwater marsh vegetation grows along the edges of reservoirs, lakes, ponds, and streams and in freshwater marshes. In San Mateo County, freshwater marshes are located at Pillar Point, near the mouths of the San Gregorio and Pescadero Creeks, and adjacent to Pilarcitos Lake, Crystal Springs Reservoir and other man-made reservoirs (see Map of Vegetative Types).

5. Coastal Scrub Vegetation

   a. Northern Coastal Scrub Vegetation

      Northern coastal scrub vegetation is generally found along the coastal area of the County, below 500 foot elevations between the coastal shoreline vegetation and the coniferous forests. It is especially prevalent near Devil's Slide (see Map of Vegetative Types). The representative plants grow rather densely up to six feet in height.

Coyote brush is the dominant plant, interspersed with extensive grass areas.

b. Coastal Sage Scrub Vegetation

Coastal sage scrub vegetation is found on the drier coastal bluffs and hills adjacent to chaparral vegetation, often where there is a high degree of wind exposure (see Map of Vegetative Types). The representative plants generally grow only one to five feet tall and form a somewhat more open community than chaparral. California sagebrush is the dominant plant.

6. Chaparral Vegetation

Chaparral vegetation is located primarily on the dry eastern slopes and ridges and steep, south-facing slopes in San Mateo County (see Map of Vegetative Types). Representative plants occupy soils that are often gravelly, sandy or shallow and have a low water-holding capacity. The plants are hardy and grow in dense miniature forests of trees and shrubs three to ten feet high. Representative plants have small, waxy or hairy evergreen leaves to reduce evaporation, and deep, elaborate and widespread root systems to obtain moisture in the dry climate.

7. Grassland Vegetation

Grassland vegetation in San Mateo County is found at elevations below 4,000 feet on the eastern side of the Santa Cruz Mountains, on the tops of some ridges, and often adjacent to chaparral vegetation. Grassland soils are generally rich in organic matter and thus favor agricultural uses. The representative plants are generally shallow-rooted, low-growing annual grasses that sprout in late winter and early spring when surface water is available.

8. Woodland-Savanna Vegetation

Woodland-savanna vegetation is found in San Mateo County in the eastern foothills and along valley borders from Crystal Springs Reservoir southward (see Map of Vegetative Types). Woodland-Savanna vegetation naturally occurs along forest and grassland boundaries where soil and microclimate allow an interspersion of vegetation. Such areas often harbor a greater variety and abundance of wildlife than either forest or grassland. Representative plants are dense or open groves of trees 15 to 70 feet in height (with oak trees dominant), interspersed with brush and grassland. The plants are generally drought resistant and tolerant of shade.

9. Mixed Evergreen Forest Vegetation

Mixed evergreen forest vegetation generally occurs along the drier inland margins of the coniferous forests and at higher elevations within the forests (see Map of Vegetative Types). Representative plants are mostly

trees that grow to 100 feet or higher, in fairly dense stands, with a brush understory and interspersed patches of grassland.

10. Coniferous Forest Vegetation

In San Mateo County, the coniferous forests are dense, with trees up to 350 feet tall, and occur predominantly on the wetter, seaward slopes of the Santa Cruz Mountains (see Map of Vegetative Types). Coniferous forest vegetation partially determines the character of the soil. The leaves and litter that fall from conifers slowly decay and form acid products which are carried into the soil by precipitation. Coast redwoods and Douglas fir dominate--Douglas fir on the drier slopes and ridges and coast redwoods on the wetter slopes and in stream valleys. The lack of light penetrating the dense forest canopy and the extensive underground tree roots limit the number of other plant species able to live in the forest.

11. Streambank Vegetation

While vegetation along small streams is usually representative of the vegetation found in the surrounding areas, vegetation along larger streams, especially near the lower stream courses, commonly consists of certain water-loving plants.

12. Serpentine Soil Vegetation

Vegetation that is indigenous to serpentine soil is unique in its ability to withstand the moderately toxic effects of this soil type. Serpentine soils occur infrequently in San Mateo County and undisturbed habitats are quite rare. These sites are located in three areas: The San Francisco Watershed property, Jasper Ridge, and Edgewood Park.

SOURCES

1. Broder, Bill, Coyote Point Museum Docent Text, February 18, 1981.

2. Munz, Philip A., and Keck, David D., A California Flora and Supplement, University of California Press, Berkeley, 1959 and 1968.

3. San Mateo County Parks and Recreation Division, Natural Resources OManagement Plan: San Mateo County Park System; Draft, January 1983.

4. San Mateo County Planning Department, Conservation and Open Space Element of the General Plan, December 1973.

APPENDIX B

RARE AND UNIQUE PLANTS - UNINCORPORATED SAN MATEO COUNTY - 1982
(See Appendix C for Sources)

SCIENTIFIC NAME	COMMON NAME	STATUS[1]					KNOWN OCCURRENCES
		USFWS	SI	CDFG	SMC	Found Only in SM Co.	
Acanthomintha obovata ssp. duttonii	San Mateo Thornmint	(E)	E[1]	E, L2	U	X	Edgewood County Park
Arabis Blepharophylla	Coast Rock Cress		T	L3			S.F. Fish & Game Refuge, San Bruno Mountain, Montara Mountain
Arctostaphylos imbricata	San Bruno Mountain Manzanita		E	E, L2	U	X	San Bruno Mountain
Arctostaphylos montaraensis	Montara Manzanita		T	L2	U	X	S.F. Fish and Game Refuge, San Bruno Mountain, Montara Mountain, San Pedro Co. Park
Arctostaphylos pacifica	Pacific Manzanita		E	E, L2	U	X	San Bruno Mountain
Arctostaphylos uva-ursi c.v. "miniature"	Prostrate Bearberry				(R)U	X	San Bruno Mountain
Blennosperma parum var. robustum	Pt. Reyes Blennosperma		E	R, L2			San Bruno Mountain
Chorizanthe robusta	Robust Spine Flower			L3			Coastal Sand Dunes
Cirsium andrewsii	Franciscan Thistle			L3			
Cirsium fontinale var. fontinale	Fountain Thistle		E	E, L2	U	X	S.F. Fish & Game Refuge
Clarkia rubicunda ssp. rubicunda	Ruddy Clarkia			L3			Jasper Ridge Biological Preserve, Edgewood County Park
Collinsia franciscana	San Francisco Collinsia			L3			Edgewood County Park

APPENDIX B (Continued)

RARE AND UNIQUE PLANTS - UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]					KNOWN OCCURRENCES
		USFWS	SI	CDFG	SMC	Found Only in SM Co.	
Cordylanthus maritimus ssp. palustris	Pt. Reyes Bird's Peak		T	L3			San Francisco Bay mud flats
Corylus polystichum[3]	Hazelnut--Western Sword Fern Community				U		San Pedro Mountain
Cupressus abramsiana	Santa Cruz Cypress	(E)	E	E, L2			Butano Ridge, Pescadero County Park
Cupressus macrocarpa	Monterey Cypress				U	X	Pescadero Road (National Champion Tree)
Eriophyllum latilobum	San Mateo Woolly Sunflower			L2	U	X	Crystal Springs Road near San Mateo Creek east of Skyline Blvd.; Pescadero Road west of Memorial Park
Erysimum franciscanum var. crassifolium	Course-Leaved Wallflower			(L2)			San Francisco Fish & Game Refuge
Erysimum franciscanum var. franciscanum	San Francisco Wallflower		E	L3			S.F. Fish & Game Refuge, San Bruno Mountain
Fragaria chiloensis	California Beach Strawberry				U		Coastal Sand Dunes
Fritillaria liliacea	Fragrant Fritillary			L2			S.F. Fish & Game Refuge; Edgewood County Park
Grindelia campourm var. parviflora	Great Valley Gum Plant			L3			Jasper Ridge
Grindelia humilis	Marsh Gum Plant			L3			San Francisco Bay Salt Marshes
Grindelia maritima	San Francisco Gum Plant			L2			Montara Mountain, San Bruno Mountain

APPENDIX B (Continued)

RARE AND UNIQUE PLANTS - UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]					KNOWN OCCURRENCES
		USFWS	SI	CDFG	SMC	Found Only in SM Co.	
Helianthella castanea	Mt. Diablo Helianthella			L2			San Bruno Mountain
Hesperolinon congestum	Marin Dwarf Flax		E	L2			S.F. Fish & Game Refuge, Edgewood County Park, Portola State Park, Farm Hill Road
Heteromeles arbutifolia	Toyon (Christmas Berry)				U	X	S.F. Fish & Game Refuge (Nat. Champion Tree)
Hystrix californica	California Bottlebrush Grass		T[1]	L2			San Francisco Fish & Game Refuge
Lessingia micradenia var. arachnoidea (syn = Lessingia hololeuca var. arachnoidea)	San Mateo Lessingia				(R)U	X	San Francisco Fish & Game Refuge
Lilium rubescens	Redwood Lily			L3			
Limnanthes douglasii var. sulphurea	Pt. Reyes Meadow Foam		T	L2			
Lupinus eximius	San Mateo Tree Lupine			L2	U	X	Montara Mountain, Montara State Beach
Lupinus latifolius var. dudleyi	Dudley's Lupine				(R)U	X	Montara Mountain
Malacothamnus arcuatus	Arcuate Malacothamnus			L3			Montara Mountain
Monardella undulata var. undulata	Curly-Leaved Monardella			L3			Coastal Sand Dunes
Orthocarpus floribundus	San Francisco Owl's Clover		T	L2			San Bruno Mountain
Pedicularis dudleyi	Dudley's Lousewort		E	R, L2			Portola State Park, Edgewood County Park

APPENDIX B (Continued)

RARE AND UNIQUE PLANTS - UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]					KNOWN OCCURRENCES
		USFWS	SI	CDFG	SMC	Found Only in SM Co.	
Pentachaeta bellidiflora (syn = Chaetopappa bellidiflora)	White-Rayed Pentachaeta		T[1]	L2			San Francisco Fish & Game Refuge, Edgewood County Park
Pinus radiata	Monterey Pine			L3	U		Ano Nuevo Point (Coastways Ranch Area) Apanolio Canyon
Pinus x attenuradiata	Monterey Knobcone Pine				U	X	Ano Nuevo Point (Coastways Ranch Area)
Piperia elongata ssp. michaelii	Purple-Flowered Piperia			L3			
Sequoia sempervirens	White Coast Redwood				U		
Sidalcea hickmanii ssp. viridis	Marin Checkermallow		T	L2			
Silene verecunda ssp. verecunda	San Francisco Campion			L2			San Bruno Mountain, Montara Mountain Edgewood County Park
Stylomecon heterophylla	Wind Poppy			(L3)			
Tanacetum camphoratum	Dune Tansy		T	L2			San Bruno Mountain, Montara State Beach
Umbellularia californica Tree)	California Bay Laurel				U	X	S.F. Fish & Game Refuge (National Champion
Vaccinium arbuscula	Huckleberry				U		San Bruno Mountain

Legend: E = Endangered R = Rare[2] T = Threatened[2] U = Unique ( ) = Proposed Status
L2 = CNPS' List 2--Rare and Endangered Plant L3 = CNPS' List 3--Rare, not Endangered Plant

APPENDIX B (Continued)

RARE AND UNIQUE PLANTS - UNINCORPORATED SAN MATEO COUNTY - 1982

FOOTNOTES

[1] Official Status Designated by the following agencies:

(1) USFWS = U.S. Fish & Wildlife Service under the Endangered Species Act of 1973.

(2) SI = Smithsonian Institute under the Endangered Species Act of 1973.

(3) CDFG = California Dept. of Fish & Game under the California Native Plant Protection Act of 1977, California Native Plant Society (CNPS lists are considered current Species-of-Concern by the CDFG).

(4) SMC = San Mateo County Planning and Development Division. Unique species are those that are locally uncommon, found only in San Mateo County, or have some special characteristic which merits attention.

[2] "Rare" and "Threatened" are equivalent terms used by different agencies.

[3] Designates a unique plant community.

APPENDIX C

SOURCES FOR APPENDIX B

[1] California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, Special Publication No. 1 (2nd Edition), April 1980; plus First Supplement, April 1981 and Second Supplement, February 1982.

[2] San Mateo County Planning and Development Department, Local Coastal Program: Background Report: Sensitive Habitats, January 1979.

[3] State of California, Department of Parks and Recreation, San Mateo Coast Area General Plan, June 1979.

[4] California Natural Diversity Data Base, Computer Search, March 1982.

[5] California Natural Areas Coordinating Council, Inventory of California Natural Areas, Vol. I, 1975; Updated January 1982.

[6] San Mateo County Planning Department, Conservation and Open Space Element of the General Plan, December 1973.

[7] San Mateo County Planning and Development Department, East Palo Alto Community Plan and EIR Hearing Draft, July 1981.

[8] Porter, Duncan M., "The Vascular Plants of the Jasper Ridge Biological Experimental Area of Stanford University," Department of Biological Sciences Research Paper No. 2, Stanford University, April 1962.

[9] Conversations with Roman Gankin, Development Review Manager, San Mateo County Planning and Development Department, February-May 1982.

[10] Thomas, John Hunter, Flora of the Santa Cruz Mountains, Stanford University Press, Stanford, CA, 1951.

[11] Abrams, Leroy, Illustrated Flora of the Pacific States, Stanford University Press, Stanford, CA 1951.

[12] Davis, Douglas F., and Holderman, Dale F., The White Redwoods: Ghosts of the Forest, Naturegraph Publishers, Inc., Happy Camp, CA, 1980.

[13] San Mateo County Planning Department, Forest Resources Study Committee, Forest Resources of San Mateo County, March 1971.

[14] Torrey and Torrey, Inc., Draft Environmental Impact Report Edgewood County Park Master Plan, June 1982.

APPENDIX D

RARE AND UNIQUE FISH AND WILDLIFE
UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]				HABITAT TYPE	KNOWN OCCURRENCES
		USFWS	CDFG	SMC	Only SM Co.		
MAMMALS							
Arctocephalus townsendi	Guadalupe Fur Seal	P	R,DBI	U		Coastal Waters	Ano Nuevo Island, Pacific Coast
Balaenoptera acutorostrata	Minke's Whale	P		U		Coastal Waters	Pacific Coast
Balaenoptera borealis	Sei Whale	E,P		U		Coastal Waters	Pacific Coast
Balaenoptera musculus	Blue Whale	E,P		U		Coastal Waters	Pacific Coast
Balaenoptera physalus	Finback Whale	E,P		U		Coastal Waters	Pacific Coast
Enhydra lutris nereis	Southern Sea Otter	T,P	DBI	U		Coastal Waters	Pacific Coast
Eschrichtius robustus	Gray Whale	E,P		U		Coastal Waters	Pacific Coast
Eubalaena glacialis	Northern Right Whale	P		U		Coastal Waters	Pacific Coast
Eumetopias jubata	Steller Sea Lion	P		U		Coastal Waters	Ano Nuevo Island, Pacific Coast, Pigeon Pt., Franklin Pt. San Pedro Pt.
Globicethala macrorhyncha	Pilot Whale	P		U		Coastal Waters	Pacific Coast
Megaptera novaeangliae	Humpback Whale	E,P		U		Coastal Waters	Pacific Coast
Mesoplodon densirostris	Dense Beaked Whale	P		U		Coastal Waters	Pacific Coast
Mesoplodon hubbi	Arch Beaked Whale	P		U		Coastal Waters	Pacific Coast
Mirounga angustirostris	Northern Elephant Seal	P	DB2	U		Coastal Waters	Ano Nuevo Point, Island, Pacific Coast
Orcinus orca	Killer Whale	P		U		Coastal Waters	Pacific Coast
Phoca vitulina	Harbor Seal	P		U		Coastal Waters, San Francisco Bay	Ano Nuevo Island, Pacific Coast, S.F. Bay, Pillar Pt., Pescadero Pt.
Physeter catodon	Sperm Whale	E,P		U		Coastal Waters	Pacific Coast
Pseudorea crassidens	False Killer Whale	P		U		Coastal Waters	Pacific Coast

APPENDIX D (Continued)

RARE AND UNIQUE FISH AND WILDLIFE
UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]				HABITAT TYPE	KNOWN OCCURRENCES
		USFWS	CDFG	SMC	Only SM Co.		
MAMMALS							
Reithrodontomys raviventris	Salt Marsh Harvest Mouse	E	E,DB1			Salt Marsh Vegetation	S.F. Bay Salt Marshes
Zalophus californicus	California Sea Lion	P		U		Coastal Waters	Ano Nuevo Island, Pacific Coast Pigeon Point, Pillar Point
BIRDS							
Ardea herodias	Great Blue Heron		DB2			Salt Marsh Vegetation	Pescadero Marsh, Searsville Lake Ano Nuevo Pt., S.F. Bay Salt Marshes
Asio flammeus	Short Eared Owl		DB2			Salt Marsh Vegetation	Pescadero Marsh, Ano Nuevo Point, S.F. Bay Salt Marshes
Circus cyaneus	Marsh Hawk	P	P,DB2			Salt Marsh Vegetation	Pescadero Marsh, Ano Nuevo Point, S.F. Bay Salt Marshes
Elanus leucurus	White-Tailed Kite	P	P,DB2			Salt Marsh Vegetation	Pescadero Marsh, Jasper Ridge Biological Preserve, S.F. Bay Salt Marshes
Geothlypis trichas sinuosa	Common (Salt Marsh) Yellowthroat		DB1			Salt Marsh Vegetation	Pescadero Marsh, Franklin Point, San Gregorio Creek, Searsville Lake, San Francisquito Creek, S.F. Bay Salt Marshes
Laterallus jamaicensis coturniculus	California Black Rail		R,P,DB1			Salt Marsh Vegetation	Pescadero Marsh, S.F. Bay Salt Marshes
Otus asio	Screech Owl		DB2			Grassland Vegetation	Ano Nuevo Point
Pelecanus occidentalis californicus	California Brown Pelican	E	E,P,DB1			Coastal Shoreline-Salt Marsh Vegetation	Pescadero Marsh, Ano Nuevo Point, S.F. Bay Salt Marshes
Rallus longivostris obsoletus	California Clapper Rail	E	E,P,DB1			Salt Marsh Vegetation	Pescadero Marsh, S.F. Bay Salt Marshes

APPENDIX D (Continued)

RARE AND UNIQUE FISH AND WILDLIFE
UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]				HABITAT TYPE	KNOWN OCCURRENCES
		USFWS	CDFG	SMC	Only SM Co.		
BIRDS							
Sterna albifrons browni	California Least Tern	E	E,P,DB1			Coastal Shoreline-Salt Marsh Vegetation	Pescadero Marsh, Ano Nuevo Point S.F.Bay Salt Marshes
REPTILES AND AMPHIBIANS							
Thamnophis sirtalis tetrataenia	San Francisco Garter Snake	E	E,P,DB1	U	X	Wetlands	Pillar Pt., Pescadero Marsh, S.F. Fish & Game Refuge, S.F. Bay Marshlands, Montara Mountain, Coastal Streams
Rana aurora	Red-legged Frog		P,DB1			Wetlands	S.F. Airport Marsh, Coastal Wetlands, Crystal Springs Watershed
FISH							
Cottus aleuticus	Coast Range Sculpin			U		Freshwater Streams	Coastal Streams
Cottus asper	Prickly Sculpin			U		Freshwater Streams	Coastal Streams
Entosphenus tridentatus	Pacific Lamprey			U		Freshwater Streams	Gazos, Pescadero, San Gregorio, and San Pedro Creeks
Gairdnerii gairdnerii	Rainbow Trout			U		Freshwater Streams	Butano, Denniston, Gazos, Lobitos, Pescadero, Pomponio, Purisima, San Gregorio, San Pedro, Tunitas Creeks
Gasterosteus aculeatus	Threespine Stickleback			U		Freshwater Streams	Butano, Denniston, Pescadero, Pilarcitos, Pomponio, Purisima, San Gregorio, and San Pedro Creeks
Oncorhynchus kisutch	Silver (Coho) Salmon			U		Freshwater Streams	Butano, Gazos, and Pescadero Creeks
Salmo gairdnerii gairdnerii	Steelhead Trout		DB2	U		Freshwater Streams	Most Coastal Streams, and San Francisquito Creek

APPENDIX D (Continued)

RARE AND UNIQUE FISH AND WILDLIFE
UNINCORPORATED SAN MATEO COUNTY - 1982

SCIENTIFIC NAME	COMMON NAME	STATUS[1]				HABITAT TYPE	KNOWN OCCURRENCES
		USFWS	CDFG	SMC	Only SM Co.		
INVERTEBRATES							
Tryonia imitator	California Brackishwater Snail		DB2			Salt Marsh Vegetation	Pescadero Marsh
Callophrys mossi bayensis	San Bruno Elfin Butterfly	E	DB1	U	X	Coastal Scrub Vegetation	San Bruno Mountain, Montara Mountain
Coelus globosus	Globose Dune Beetle		DB2			Coastal Sand Dunes	Pescadero State Beach
Euphydryas editha bayensis	Bay Checkerspot Butterfly	(E)		U	X	Grassland Vegetation	San Bruno Mountain, Edgewood County Park, Jasper Ridge
Grapholitha edwardsiana	San Francisco Tree Lupine Moth		DB2			Coastal Scrub Vegetation	San Bruno Mountain, Ano Nuevo and Pigeon Points
Plebejus (Icaricia) icarioides missionensis	Mission Blue Butterfly	E	DB1			Coastal Scrub Vegetation	San Bruno Mountain
Speyeria callippe callippe	Callippe Silverspot Butterfly		DB2			Grassland Vegetation	San Bruno Mountain

Legend: E = Endangered R = Rare[2] T = Threatened[2] P = Protected U = Unique ( ) = Proposed Status
DB1 = CNDDB[1] High Priority Animal DB2 = CNDDB[+] Special Animal

Notes: [1]Official Status Designated by the Following Agencies.

(See Appendix F for Sources)

APPENDIX E
SOURCES FOR APPENDIX D

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APPENDIX F

DEVELOPMENT REVIEW CRITERIA PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RESOURCE MANAGEMENT (RM AND RM/CZ) DISTRICT ORDINANCES UNINCORPORATED SAN MATEO COUNTY - 1982

DEVELOPMENT REVIEW CRITERIA	AREA APPLIES	SUMMARY OF REQUIREMENTS
GENERAL REVIEW CRITERIA		
Environmental Quality Criteria	All lands zoned RM or RM/CZ	Standards for emission of air pollutants must be met. Pesticides and chemicals used should have no significant or persistent adverse effects on the environment. If extensive change in vegetative cover is proposed, applicant must demonstrate that change will have minimal adverse impact on micro-climate conditions and provide similar protection from erosion as existing vegetation. No use or development shall have significant adverse environmental impact on primary wildlife or marine resources. Development shall demonstrate high degree of compatibility and with minimal adverse impact on wildlife habitat areas.
Site Design Criteria	All lands zoned RM or RM/CZ	No use, development, or alteration shall substantially change the natural characteristics of existing major water courses, established and mature trees and other woody vegetation, dominant vegetative communities or primary wildlife habitats. Replace vegetation removed during construction wherever possible. Vegetation for stabilization of graded areas or replacement of existing vegetation shall be compatible with surrounding vegetation.

APPENDIX F (Continued)

DEVELOPMENT REVIEW CRITERIA PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RESOURCE MANAGEMENT (RM AND RM/CZ) DISTRICT ORDINANCES UNINCORPORATED SAN MATEO COUNTY - 1982

DEVELOPMENT REVIEW CRITERIA	AREA APPLIES	SUMMARY OF REQUIREMENTS
Site Design Criteria (Contd.)		Prohibit the removal of living trees with trunk circumference greater than 55" measured 4-1/2 feet above the average surface of the ground, except as may be required for development permitted by this ordinance, by the Timber Harvest Ordinance, or for reasons of safety. Preserve sand dunes in their natural state.
Water Resources Criteria	All lands zoned RM or RM/CZ	Prohibit waste discharge and disposal that contaminates water resources or otherwise adversely affects marine, aquatic, or riparian environments. Grading and landscape alteration shall be minimized. Control site preparation and construction to reduce erosion. Maintain surface water runoff at or near existing levels. Prohibit development which might cause significant adverse impacts on the natural course or riparian habitat of any stream, except for agricultural uses and public works and public safety projects. Prohibit excessive interbasin transfers of water resources which may result in adverse impacts on water regimen stability and water quality.

APPENDIX F (Continued)

DEVELOPMENT REVIEW CRITERIA PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RESOURCE MANAGEMENT (RM AND RM/CZ) DISTRICT ORDINANCES UNINCORPORATED SAN MATEO COUNTY - 1982

DEVELOPMENT REVIEW CRITERIA	AREA APPLIES	SUMMARY OF REQUIREMENTS
Water Resources Criteria (continued)		Demonstrate methods to be employed for management of vegetative cover, surface water runoff, groundwater recharge, and erosion and sedimentation processes to assure stability of downstream aquatic environments.
SUPPLEMENTARY REVIEW CRITERIA FOR PRIMARY RESOURCES AREAS Primary Scenic Resources Areas Criteria	Lands within Scenic Corridors & Other Primary Scenic Resource Areas designated or defined in the 1973 Conservation & Open Space Element.	Prohibit clear cutting or removal of existing vegetation from rights-of-way, except as required for roads, safety reasons, or the enhancement of visual quality. Permit selective clearing of vegetation which allows the display of important public views.
Primary Fish & Wildlife Habitat Areas Criteria	Lands within Primary Fish & Wildlife Areas designated or defined in the 1973 Conservation and Open Space Element.	Prohibit significant reduction of primary habitat areas. Ecological characteristics of primary wildlife habitat areas shall not be changed in a manner that would have substantial adverse impact on the quantity or quality of marine or other wildlife. Avoid the direct removal of primary habitat areas by clustering uses. Prohibit development, including recreational, in spawning or nesting areas.

APPENDIX F (Continued)

DEVELOPMENT REVIEW CRITERIA PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RESOURCE MANAGEMENT (RM AND RM/CZ) DISTRICT ORDINANCES UNINCORPORATED SAN MATEO COUNTY - 1982

DEVELOPMENT REVIEW CRITERIA	AREA APPLIES	SUMMARY OF REQUIREMENTS
Primary Fish & Wildlife Habitat Areas Criteria - continued		Prohibit the filling or dredging of tidal marshes, estuarine or marine waters. Manage watersheds whose streams are used for fish spawning grounds and nurseries to maintain the necessary flow of fresh water. Control public access to primary wildlife habitat areas to allow compatible recreational use without disturbance to wildlife populations.
Primary Water Resources Area Criteria	Lands within Primary Water Resource Areas designated or defined in the 1973 Conservation & Open Space Element	Demonstrate that withdrawals from groundwater basins will not jeopardize continued water supply or result in salt water intrusion. Construction shall not significantly disrupt or diminish natural patterns of groundwater recharge. Manage watersheds whose streams are used for spawning grounds and fish nurseries to maintain the necessary flow of fresh water. Demonstrate that proposed use, development or alteration will not: interfere with existing capacity of water bodies; substantially increase erosion or silt, or chemical nutrient pollutants; or contribute to the deterioration of water quality.

APPENDIX F (Continued)

DEVELOPMENT REVIEW CRITERIA PROTECTING VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES IN RESOURCE MANAGEMENT (RM AND RM/CZ) DISTRICT ORDINANCES UNINCORPORATED SAN MATEO COUNTY - 1982

DEVELOPMENT REVIEW CRITERIA	AREA APPLIES	SUMMARY OF REQUIREMENTS
Primary Water Resources Area Criteria (contd.)		Prohibit development and associated access roads within 50 feet of the high water line of existing and future lakes and reservoirs whose maximum design water surface area exceeds 5 acres.
Ocean Shoreline Criteria	Lands along the ocean shoreline zoned RM or RM/CZ	Demonstrate that proposed development will not cause significant harm to the water quality of adjacent waters or public use of the adjacent waters or underlying lands.
Primary Mineral Resources Area Criteria	Lands within Primary Mineral Resource Areas designated or defined in the 1973 Conservation and Open Space Element.	Consider the potential impacts of mineral extraction on water resources and wildlife habitat areas. Consider any activity that would have significant adverse impacts on water resources or wildlife habitat areas incompatible with the maintenance of open space values.
Primary Natural Vegetative Areas Criteria	Lands within Primary Natural Vegetative Areas designated or defined in the 1973 Conservation and Open Space Element.	Prohibit significant reduction of vegetation. Avoid the direct removal of vegetation by clustering uses. Control public access to vegetative areas to allow compatible recreation without disturbance of vegetation.

APPENDIX G

EXAMPLES OF ACTIVITIES WHICH IMPACT VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES SAN MATEO COUNTY

ACTIVITY	VEGETATIVE RESOURCES	WATER RESOURCES	FISH AND WILDLIFE RESOURCES
URBAN DEVELOPMENT			
Clearing Land	Removal of Vegetation	Increased Erosion and Sedimentation of Streams	Degradation and Loss of Terrestrial and Aquatic Habitats
Paving and Constructing Buildings	Degradation and Loss of Vegetative Habitats	Increased Runoff, Reduced Groundwater Recharge	Degradation and Loss of Terrestrial Habitats
Domestic and Industrial Discharges	Degradation of Vegetative Habitats	Degradation of Water Quality	Degradation of Aquatic Habitats
Domestic and Industrial Water Use	Degradation and Loss of Vegetative Habitats	Diversion and Consumption of Water	Degradation and Loss of Aquatic Habitats
AGRICULTURAL DEVELOPMENT			
Clearing Land	Removal of Vegetation	Increased Erosion and Sedimentation of Streams	Degradation and Loss of Terrestrial and Aquatic Habitats
Use of Pesticides and Fertilizers	Degradation of Vegetative Habitats	Degradation of Water Quality	Degradation of Terrestrial and Aquatic Habitats
Agricultural Water Use	Degradation and Loss of Vegetative Habitats	Diversion and Consumption of Water	Degradation and Loss of Aquatic Habitats

APPENDIX G (Continued)

EXAMPLES OF ACTIVITIES WHICH IMPACT VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES
SAN MATEO COUNTY

ACTIVITY	VEGETATIVE RESOURCES	WATER RESOURCES	FISH AND WILDLIFE RESOURCES
RECREATIONAL DEVELOPMENT			
Clearing Land	Removal of Vegetation	Increased Erosion and Sedimentation of Streams	Degradation and Loss of Terrestrial and Aquatic Habitats
Paving and Construction of Buildings	Degradation and Loss of Vegetative Habitats	Increased Runoff, Reduced Groundwater Recharge	Degradation and Loss of Terrestrial Habitats
Public Access and Recreational Use	Removal of Vegetation, Degradation of Vegetative Habitats	Degradation of Water Quality	Removal of Fish and Wildlife, Degradation of Terrestrial and Aquatic Habitats

APPENDIX H

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on December 20, 1984, the following background data was added to the Vegetative, Water, Fish and Wildlife Resources Chapter.

1. Scope of the Chapter

   The Vegetative, Water, Fish and Wildlife Resources Chapter explores San Mateo County's natural environment and the issues surrounding the conversion, productive use and protection of the County's natural resources and sensitive habitats. When discussing agriculture, the County's natural resources are one of many factors which should be considered. A discussion of agriculture which considers natural resources, along with other factors such as farm labor, market dynamics and location, is included in the Rural Land Use Chapter. An analysis of the issues regarding the development and allocation of water resources for irrigation and domestic use is the basis of the Water Supply Chapter.

2. Value of Vegetative, Water, Fish and Wildlife Resources

   Table 1 considers the economic value of vegetative, water, fish and wildlife resources along with other values such as ecological value, scenic value, etc.

   See Table 1 - Value of Vegetative, Water, Fish and Wildlife Resources (attached)

3. Stream Channelization and the Management of Riparian Corridors for Flood Control in Urban and Rural Settings

   In their natural state, riparian corridors serve many functions; they convey water, provide wildlife habitat and are valuable scenic and recreational resources. Riparian corridors are also primary areas for groundwater recharge.

   a. Urban Areas

      With urbanization, riparian corridors are often altered to accommodate greater amounts of runoff and to facilitate flood control. Such alterations generally include the removal of riparian vegetation, widening, deepening and straightening of creek channels and concrete or masonry creek "lining". Most of these activities degrade riparian habitats and impede groundwater recharge. In addition, creek channels in urban areas are often sandwiched by residential backyards and become essentially alleys which attract litter, vandals and other disruptive activities. Many of these problems can be averted in early stages of development through site planning techniques which minimize the number of homes which abut creeks.

b. Rural Areas

In rural areas, particularly, along the lower reaches of San Gregorio and Pescadero Creeks, flooding hazards are aggravated when riparian vegetation and debris impede stream flow, placing structures and prime agricultural land in jeopardy.

The draft policies included in the Vegetative, Water, Fish and Wildlife Chapter seek to minimize adverse impacts on riparian corridors through site planning and design standards as well as land use controls. Necessary public service activities, such as emergency flood control measures, are specifically permitted. In addition, policies included in the natural hazards chapter support measures for the abatement of flood hazards, including debris clearance programs in riparian corridors.

4. Description in Text of Timber Harvesting

A local timber operator has suggested the Vegetative, Water, Fish and Wildlife Resources Chapter misrepresents timber harvesting in San Mateo County. In response, it should be emphasized that the chapter describes a range of possible impacts which should be considered when developing General Plan policy. To allay these concerns, revisions to the Vegetative, Water, Fish and Wildlife Resources Chapter submitted by the respondent are included as follows:

Vegetative Resources

Forested lands in timber production provide open space and economic opportunity for the residents of rural San Mateo County. The mismanagement of forest resources, however, can have a deleterious effect on vegetative, water, fish and wildlife resources. Much of San Mateo County's forested land is traversed by streams that foster important riparian habitats. These riparian areas are particularly susceptible to degradation caused by improper timber practices. Erosion can increase sediment loads of streams while the wholesale loss of streamside vegetation can dramatically alter the microclimate of the stream. Resident fish and wildlife species often cannot adapt to major changes in the stream environment. The conversion of natural mixed forest vegetation to a single species, if extended over a very large area, could adversely affect wildlife habitat.

Proper management of timber harvesting activities can prevent damage to surrounding vegetative, water, fish and wildlife resources. Techniques such as selective harvesting, maintaining stream vegetative cover and effective erosion control can protect streams from sedimentation while retaining food and cover for wildlife.

TABLE 1

VALUE OF VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES

	ECOLOGICAL VALUE	SCENIC VALUE	RECREATIONAL VALUE	PRODUCTIVE/ ECONOMIC VALUE	EDUCATIONAL/ SCIENTIFIC VALUE
VEGETATIVE RESOURCES					
· Forests	X	X	X	X	
· Grazing Land	X	X		X	
· Rare and Unique Species	X				X
· Other Vegetative Cover	X	X	X		
WATER RESOURCES					
· San Francisco Bay	X	X	X	X	X
· Pacific Ocean	X	X	X	X	X
· Reservoirs and Lakes	X	X		X	
· Springs	X			X	
· Groundwater	X			X	
FISH AND WILDLIFE RESOURCES					
· Commercial and Sport Fish Species	X		X	X	
· Rare and Unique Fish and Wildlife	X				X
· Other Fish and Wildlife Species	X	X			X
SENSITIVE HABITATS					
· Riparian Corridors	X	X	X	X	X
· Marine and Estuarine Habitats	X	X	X	X	X
· Wetlands	X	X	X		X
· Sand Dunes	X	X	X		X

Notes:

Ecological Value denotes a direct relationship between the resource and a biologic or environmental use.
Scenic Value denotes resources which are significant components of the natural scenery.
Recreational Value denotes resources which directly support recreational uses.
Productive/Economic Value denotes resources which directly support productive uses or produce income.
Educational/Scientific Value denotes resources which are of educational or scientific significance.

APPENDIX I

TOPIC FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

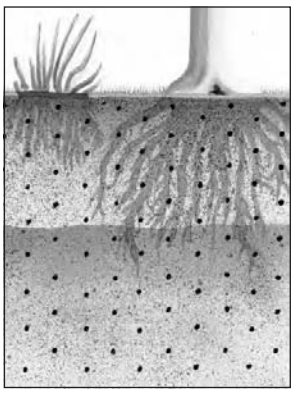
During Planning Commission hearings, the following topic was identified relating to the Vegetative, Water, Fish and Wildlife Resources Chapter which is most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

Explore the potential for water development in the Coastside (LCP).

2

Soil Resources

Background ▪ Issues



SOIL RESOURCES BACKGROUND

I. INTRODUCTION

Soil is one of the few most basic resources for sustenance of human, animal and plant communities. It is the very thin layer at the surface of the earth capable of supporting plant life and contributing to a hospitable environment. Soil is produced extremely slowly--2,000 years per inch under conditions normal for California[1]--but it can be lost very quickly due to accelerated erosion, nutrient depletion, and contamination from misguided human activities. Given proper management, some uses such as agriculture and forestry can productively renew and sustain the resource for continued use, while others such as urban development can eliminate the soil's productive potential and natural replenishment process. The County, as a major custodian of this resource, must continually assess appropriate means to assure its protection.

A. SCOPE AND ROLE

This chapter comprehensively discusses soil resources within the unincorporated area of San Mateo County. It inventories types and capabilities of soils and their major beneficial uses. The chapter also analyzes issues affecting the availability and quality of soil resources; discussing opportunities and constraints to protect the resource. Existing regulations, programs, and policies are assessed, culminating in a set of policies which respond to stated issues.

B. STATE PLANNING LAW

This chapter satisfies the requirements as related to soil resources of two of the nine General Plan Elements mandated by State law. The Conservation Element, required by California Government Code Section 65302(d), must provide for the "conservation, development, and utilization of natural resources." Soil is specifically included as a natural resource.

The Open Space Element, required by Government Code Sections 65302(e) and 65560 et seq., must provide for "the comprehensive and long-range preservation and conservation of open space land." As defined, open-space land includes "land or water which is essentially undeveloped and devoted to an open-space use." While the code specifies four types of open space uses, two are particularly relevant to soil resources: (1) "open space for preservation of natural resources," and (2) "open space for the managed production of resources."

"Rangeland, agricultural lands and areas of economic importance for the production of food and fiber" are specifically mentioned as important open space uses, all dependent upon soil resources.

This chapter satisfies Open Space Element requirements to the extent that long-range open space preservation is dependent upon the protection and use of soil resources.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. 1973 Conservation and Open Space Element

In 1973, the County adopted a comprehensive single document which incorporated both the Conservation and Open Space Elements. This chapter replaces those sections of the Conservation and Open Space Element concerning soil resources.

b. Area Plans

The Local Coastal Program (LCP) contains extensive background information, issue statements and policies relevant to soils and agriculture, particularly in the LCP Agricultural Component. The subject is also discussed in the Energy, Hazards and Sensitive Habitats Components. This chapter of the General Plan draws upon LCP issue statements and policies with the intent to support them in a comprehensive treatment of soil resources.

The County has also adopted other area plans which discuss soil protection. The plans for San Bruno Mountain, Emerald Lake Hills and Montara-Moss Beach-El Granada, and the Skyline Area General Plan Amendment each contain background information and policies relevant to soil resources. This chapter uses area plan data for background information and issue statements in discussion of the Countywide soil situation. The policies of this chapter are intended to be consistent and support rather than replace area plan policies.

2. Other Chapters of the Updated General Plan

While focusing on soil resources, this chapter discusses agriculture as a major beneficial use. A more extensive discussion of agriculture as a land use is included in the Rural Land Use Chapter. Other beneficial uses of soil resources, particularly timber, are treated in more detail in the Vegetative, Water, and Fish and Wildlife and Rural Land Use Chapters. Sand and gravel, although sometimes thought of as soil types, do not meet the definition used in this chapter and are discussed in the Mineral Resources Chapter. Soil erosion is discussed in this chapter insofar as it represents loss of soil resources. When erosion constitutes a threat to human life and property, it will be discussed in the Natural Hazards Chapter.

D. DEFINITIONS

The following are definitions of some of the soil resource terminology used in this report:

1. General

SOIL - the "mixture of mineral and organic matter that is capable of supporting plant life"; formed from weathered rock by the action of climate and living organisms over time.[2]

SOIL EROSION - the process by which soil is detached and moved by running water, wind, ice, and gravity. Include both naturally occurring and accelerated by human activity.

SOIL CONTAMINATION - the addition of chemical substances to soil such that it becomes toxic or injurious to plant or animal life.

CONSUMPTIVE USE OF SOIL - any activity or use which eliminates, degrades, or significantly alters the availability and capacity of the resource to support plant and animal life. Examples include structural development, roads, and quarry activities.

PROTECTIVE USE OF SOIL - any activity or use which preserves, renews, and sustains the ability of the resource to support plant and animal life. Examples include properly managed agriculture, forestry, and open space.

SOIL CONVERSION - the process of transforming soil from a protective to consumptive use.

2. Categorizing Soils

SOIL TYPE - categories which group soils of similar physical and chemical characteristics; includes soil associations, soil series and soil phases, which are used as mapping units for soil surveys.[3]

SOIL CAPABILITY - the relative suitability of a given soil type for a particular use; usually expressed as a capability ranking (as in several rankings published by the U.S. Soil Conservation Service).[4]

II. DESCRIPTION OF EXISTING SOIL RESOURCES

A. INVENTORY OF SOIL RESOURCES

1. Soil Formation and Distribution

a. Dynamic of Soils

Soil formation and distribution is a function of interacting natural processes including climate, vegetation, and geology. Over time, physical and chemical forces including rainfall, runoff, freeze and thaw, and wind have weathered, shaped and broken down the County's landforms into smaller rock fragments. Vegetation, animals, and micro-organisms then react with the broken rock material, reducing it further to organic residues and compounds which result in soil.

Soils are not simple structures nor are they static. They respond to environmental and topographic changes. Soil is composed of three layers, each with definable properties collectively known as the soil profile. The nature of the soil profile has a major influence on the plant community it supports just as plant life contributes to the soil forming process. The upper layer or topsoil, a zone of extensive biologic activity, consists of organic debris being transformed into humus and mixed with mineral matter. This is also a zone of leaching, where rainwater dissolves and transports soluble minerals downward. The middle layer or subsoil consists of obliterated rock material mixed with leached minerals, an area where clays tend to accumulate. The organic content of the subsoil is considerably less than that of the topsoil. The lowest soil layer interfaces with the bedrock and consists of broken parent material as yet little affected by the soil forming process.

b. Soil Types and Location

Soil types in San Mateo County have been classified according to eight major groups comprised of twenty-five association types as described in Table 2.1, and shown on the General Soil Types Map.[5] Soils within each association have similar properties and characteristics. Approximately 80% of the County is covered with sandy loam, clay loam and clay upland soils, generally on slopes of 30% or greater.[6] The deepest and best drained soils occur on small alluvial fans and low terraces, especially along major stream channels. Other well-drained soils, originally formed primarily from marine sediments, occur on the high terraces of the coastal plain. Together, the areas of well-drained soils comprise less than 20% of the County land area.

While this discussion on soil types and that presented in Table 2.1 are very generalized, more detailed soil mapping and description is available for most of the coastal area in the 1961 Soil Conservation Service Survey.[7]

TABLE 2.1

SOIL TYPES IN SAN MATEO COUNTY

GROUP	GENERAL CHARACTERISTICS	ASSOCIATION
1	Very deep, well and moderately well-drained loamy soils with little or no clay increase in the subsoils on nearly level to gently sloping fans and terraces.	Zamora-Pleasanton Zamora-Pleasanton-Danville, 2-9% slopes Tunitas-Lockwood, 0-5% slopes
2	Nearly level poorly drained low valley bottom clay soils.	Sunnyvale-Casto
3	Moderately and well-drained soils with loamy subsurfaces and very slowly to moderately permeable subsoils on gently sloping to moderately steep terraces.	Watsonville-Elkhorn, 2-9% slopes, eroded Elkhorn-Colma, 5-15% slopes Tierra-Colma, 9-15% slopes Tierra-Colma, 15-30% slopes
4	Well to excessively drained sandy loam to clay loam upland soils developed in sedimentary rock with some basic igneous rocks intrusions.	Lobitos-Gazos, 30-50% slopes, eroded Gaviota-Los Gatos-Gilroy, 15-30% slopes, eroded Los Gatos-Gilroy-Gaviota, 30-70% slopes, eroded Los Gatos-Hulls, 30-50% slopes, eroded Gaviota eroded rock, 30-70% slopes Lobitos-Gazos-Santa Lucia, 50-70% slopes, eroded Hugo-Butano-Josephine, 30-70% slopes Maymen-Los Gatos, 30-70% slopes, severely eroded
5	Well-drained and somewhat excessively drained moderately deep and shallow upland clay loam and clay soils on ultra basic igneous rock (predominantly serpentine).	Montara-Climara, 30-50% eroded
6	Somewhat excessively drained shallow to deep coarse sandy loam to clay upland soils on acid and basic igneous rocks.	Sweeney-Mindego, 30-70% slopes, eroded Miramar-Sheridan, 30-70% slopes, eroded Miramar severely eroded rock land, 30-79% slopes
7	Very poorly drained clay soils influenced by tidal waters.	Reyes-Alviso
8	Miscellaneous soils.	Tidal flats Made soils, over Bay muds Made soils Dune land

Source: U.S. Department of Agriculture, Soil Conservation Service, Report and General Soil Map; San Mateo County. Half Moon Bay, 1974.

SAN MATEO COUNTY GENERAL PLAN

GENERAL SOIL TYPES

GROUP	GENERAL CHARACTERISTICS
I	Very deep, well and moderately well-drained loamy soils with little or no clay increase in the subsoils on nearly level to gently sloping fans and terraces.
II	Nearly level poorly drained low valley bottom clay soils.
III	Moderately and well drained soils with loamy subsurfaces and, very slowly to moderately permeable subsoils on gently sloping to moderately steep terraces.
IV	Well to excessively drained sandy loam to clay loam upland soils developed in sedimentary rock with some basic igneous rock intrusions.
V	Well drained and somewhat excessively drained moderately deep and shallow upland clay loam and clay soils on ultra basic igneous rock (predominantly serpentine).
VI	Somewhat excessively drained shallow to deep coarse sandy loam to clay upland soils on acid and basic igneous rocks.
VII	Very poorly drained clay soils influenced by tidal waters.
VIII	Miscellaneous soils (tidal flats, dune land, made soils).

SOURCE: U.S. Department of Agriculture, Soil Conservation Service, Report and General Soil Map, San Mateo County, Half Moon Bay, 1974.

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99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

SAN FRANCISCO BAY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

c. Serpentine Soils

San Mateo County is also host to serpentine-based soils, a unique soil group due to the restricted range of plant species it supports. Serpentine soils occur infrequently and are sporadically distributed. Undisturbed habitats are quite rare, occurring primarily within the San Francisco Watershed, Jasper Ridge Biological Reserve, and Emerald Lake Hills area.[8] The soil produced from serpentine rock is generally unfavorable to plant growth, as it maintains a low nutrient level, high toxic mineral content and poor drainage characteristics. Those plant species indigenous to serpentine soils are unique in their ability to thrive in these seemingly inhospitable conditions while most are unable to exist outside of a serpentine environment.[9] Further discussion of the serpentine plant association is included in the Vegetative, Fish, and Wildlife Chapter.

2. Soil Use Capabilities and Limitations

Soil characteristics present both opportunities and limitations for various human uses. Detailed information on the physical and chemical characteristics of each soil type in the County, and their general suitability for major uses, is available from the Soil Conservation Service.[10] Soils capable of supporting agriculture and timber are shown on the Productive Soil Resources Map. The agricultural soils have been divided into four sub-groups based upon crop type or farm product, as shown on the Soils with Agricultural Capability Map. Important limitations of soil characteristics are listed in Table 2.2.

a. Vegetative Capability

Perhaps the most basic capability of soil is its ability to support vegetation. Vegetation stabilizes and consolidates the soil, protecting it from accelerated erosion and sedimentation. Vegetation may be planted for agriculture, landscaping, or erosion control. The relative ability of County soils to successfully support plants for these purposes is affected by soil depth, texture, moisture content, and salinity rating.[11]

b. Agricultural Capability

The ability of soils to support agriculture is best described by the Land Capability Classification System. This system, developed by the Soil Conservation Service, groups soils into eight classes (I-VIII) of suitability for agricultural use.[12] There are approximately 7,800 acres of quality agricultural soils (Class I, II, and III suitable for select specialty crops) within the unincorporated area of the San Mateo County evaluated by the USDA Soil Conservation Service.[13]

The County's primary agricultural soils are distributed in four major locations: the Bayside plain, the San Andreas rift zone, the Coastside stream valleys and the marine terraces fronting the Pacific Ocean. Although most of the Bayside plain has been inten-

TABLE 2.2

SOIL USE LIMITATIONS: SELECTED SOIL CONDITIONS

SOIL CONDITIONS	LIMITATIONS ON USE
Stones and Boulders in High Concentration	Increases excavation and general construction cost. Limits surface uses for agriculture, golf courses and intensive recreation sites.
Bedrock and Hardpan/Shallow Overlying Soil	Limits capacity to absorb water, constraining on-site sewage disposal systems. Limits capacity for water storage and root development, constraining proper plant growth. Increases erosion potential due to shallowness of topsoil. Increases landslide potential due to lubricating effect of groundwater interfacing the sloped bedrock. Increases cost of excavation for foundations and pipelines.
Poor Bearing Capacity	Limits support of heavy loads; soils are subject to slippage. Causes break up in roads and building foundations. Soil strength subject to change within moisture content.
Poor Soil Permeability	May preclude septic tank use. May cause excessive rainwater runoff and result in a flooding situation.

Source: Regional Planning Committee of San Mateo County, The Physical Setting of San Mateo County, 1968, page 43.

SAN MATEO COUNTY GENERAL PLAN

PRODUCTIVE SOIL RESOURCES

SOILS WITH AGRICULTURAL CAPABILITY

SOILS WITH TIMBER CAPABILITY

SOILS WITH AGRICULTURAL AND TIMBER CAPABILITY

SOURCE: Forest Resources Study Committee, Final Report, "Woodland Suitability Grouping" San Mateo County Planning Department, 1971
State Department of Conservation, Draft Important Farmlands Map of San Mateo County, 1983
San Mateo County Board of Supervisors, Additional Important Farmlands Recommended by the County, 1983

0 4000 8000 16000 32,000 FEET

99 320ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

BRISBANE
SIERRA POINT
OYSTER POINT
SOUTH SAN FRANCISCO
POINT SAN BRUNO
SAN FRANCISCO BAY
MUSSEL ROCK
PACIFICA
MORI POINT
POINT SAN PEDRO
COYOTE POINT
HILLSBOROUGH
FOSTER CITY
MONTARA POINT
PILLAR POINT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
MENLO PARK
WOODSIDE
EEL ROCK
SEAL ROCK
PORTOLA VALLEY
SANTA CLARA COUNTY
PACIFIC OCEAN
MUSSEL ROCK
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
AÑO NUEVO POINT
SANTA CRUZ COUNTY

SAN MATEO COUNTY GENERAL PLAN

PRODUCTIVE SOIL RESOURCES

SOILS WITH AGRICULTURAL CAPABILITY

AGRICULTURAL USES

I — IRRIGATED ROWCROPS AND SOIL DEPENDENT FLORICULTURE[1]
- ARTICHOKES
- BRUSSELS SPROUTS
- FIELD FLOWERS

D — DRYLAND FARMING[2]
- PEAS
- PUMPKINS
- CHRISTMAS TREES
- HAY
- OATS
- OTHER GRAINS

F — NON-SOIL DEPENDENT FLORICULTURE[2]
- POTTED PLANTS

G — GRAZING[3]
- LIVESTOCK

FOOTNOTES:
1. Soils which have a good combination of physical and chemical characteristics for producing agricultural products, and for which a dependable water is available. Area covered includes soils currently in agricultural production, or with potential for cultivation.
2. Soils which are currently agricultural production (1983).
3. Soils which support vegetation suitable for grazing and have been in grazing production within the last two years (1981–1983).

SOURCE: Adapted from State Department of Conservation, Draft Important Farmlands Map of San Mateo County, 1983, San Mateo County Board of Supervisors.
Additional Important Farmlands Recommended by the County, 1983

0 4000 8000 16000 32,000 FEET

99 320ac

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north

BRISBANE
SIERRA POINT
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SAN FRANCISCO
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POINT SAN PEDRO
COYOTE POINT
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HILLSBOROUGH
MONTARA POINT
PILLAR POINT
REDWOOD CITY
RAVENSWOOD POINT
MENLO PARK
EZL ROCK
SEAL ROCK
MUSSEL ROCK
PACIFIC OCEAN
SANTA CLARA VALLEY
SANTA CLARA COUNTY
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
ANO NUEVO POINT
SANTA CRUZ COUNTY

sively developed, there remain pockets of undeveloped agricultural soil, some in unincorporated areas. A narrow band of high quality soil parallels the San Andreas Fault, and includes portions of the San Francisco Watershed lands as well as partially developed areas in the Towns of Woodside and Portola Valley. On the Coastside, the highest quality soils occur in the stream valleys, while the marine terrace soils are generally more limited in capability. Some prime soils in the Mid-Coast area have been converted to urban uses, especially north of Half Moon Bay.

The Skyline-Santa Cruz Mountains area contains small isolated sections of high quality agricultural soils. However, the steep terrain and very narrow valleys preclude intensive farming as found in the Coastal Zone. The area is noted as the most productive grazing land in the County due to deep and heavily textured soils and limited brush encroachment.[14]

c. Forestry Capability

The ability of County soils to support timberland is best described in the Final Report of the San Mateo County Forest Resources Study Committee.[15] There are approximately 65,000 acres of land suitable for timber growth in the County. These areas are located primarily west of Skyline Boulevard in the south and southwestern mountains near La Honda and Pescadero. Major forest soils have been divided into six distinct subgroups, based upon several factors including varying capabilities for water retention and penetration.[16] These variables, plus soil depth, influence the productive capacity of the soil for timber operations.

d. Intensive Use Capability

Development to accommodate intense human uses also requires soil with certain characteristics and capabilities. Some soil groups are more amenable to development than others, however, most can accommodate improvements placed upon them with proper engineering techniques.[17] Soils requiring special attention are those which exhibit high shrink-swell behavior, low bearing capacity, or a high susceptibility to erosion or slope instability. To a large extent, these soil characteristics can be found in areas throughout the County, depending on local geologic composition, orientation and other factors.[18] The Soil Conservation Service has grouped the County soils into three generalized categories corresponding to relative conduciveness to development.[19] Additional factors affecting soil feasibility include soil permeability and corrosivity for subsurface improvements. According to Soil Conservation Service data, the majority of soils in the County have severe limitations for operation of septic system drainfields.[20] The corrosivity of some soils is extremely high and can require use of special types of pipe or other in-ground facilities.

3. Erosion Potential

Basic soil data can also be used to classify soils according to their inherent capacity to erode.[21] Much of the County is highly susceptible to soil erosion, due to steep slopes and unstable soils. In particular, the Purisima, Montara, and Mindego formations in the coastal region are generally considered unstable for intensive uses and tend to erode, contributing large sediment loads onto drainage-ways, roads, streams and reservoirs.[22] Soil erosion is also a problem, to varying degrees, within the Gazos, Butano, Pescadero, Tunitas, Lobitos, Purisima and Arroyo Leon Creek Watersheds.[23]

B. USE OF SOIL RESOURCES

Use of soil as a resource can be divided into consumptive and protective uses. While consumptive uses are generally confined to development, protective uses are broader and involve vegetation, timber and agriculture.

1. Consumptive Uses

Most types of development can be considered consumptive, because these activities place structures, roads and other facilities on the soil that are not easily removed and may permanently alter the soil beneath. Use of soil for building material (sand, gravel, road fill, etc.) or permanent removal of topsoil are also consumptive uses.

2. Protective Uses

a. Vegetative/Open Space Uses

Use of soils to support natural vegetation is generally a protective use as nutrients are naturally replenished with each growing cycle. As a beneficial use to man, vegetation binds and stabilizes the soil, protecting against unwanted erosion and sedimentation.

b. Forestry Uses

Timber harvesting is also considered a productive use of soil and the second most extensive resource dependent use within the County. Given proper management, including erosion and sedimentation control measures, timber harvesting can preserve soil availability and quality. The extent and value of forestry as a land use in San Mateo County is discussed in the Rural Land Use Chapter.

c. Agriculture Uses

Agriculture is the primary soil dependent land use in the County. Agriculture is both a productive use of the soil and one which, given proper management, sustains the resource for future use. Maintenance and expansion of agriculture can therefore act to protect soil resources. The history, extent, and value of agriculture as a land use is discussed in the Rural Land Use Chapter.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING SOIL RESOURCES

Soil and agriculture are integrally related. Although agriculture as a land use is evaluated in the Rural Land Use Chapter, many existing agriculturally protective regulations and policies have a direct implication on protecting soil resources, and therefore will be identified in this chapter.

A. FEDERAL, STATE AND REGIONAL

The use and misuse of soil resources are the legitimate concern of many levels of government. This Chapter focuses primarily on policies and regulations within the County's jurisdiction. However, County efforts must be coordinated with the actions of other relevant public agencies. The major Federal, State, and regional agencies with responsibilities for soil resources and their use are listed in Table 2.3. Major Federal and State legislation concerning these subjects is listed in Table 2.4.

B. COUNTY

1. County General Plan Policies

a. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element establishes findings, goals and objectives, and management policies for soil resources and agriculture which seek to protect the resource, maintain and stimulate agriculture, and prevent soil erosion.[24]

b. Area Plans

(1) San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment includes several policies aimed at minimizing topsoil and vegetation loss during construction activities. These include specific recommendations on grading, cutting and filling.

(2) Montara-Moss Beach-El Granada Community Plan (1977)

The Montara, Moss Beach and El Granada Community Plan includes several policies to preserve and enhance agricultural uses, which have been incorporated into the Local Coastal Program.

(3) Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan seeks to minimize soil erosion by a policy limiting grading associated with residential development.

TABLE 2.3

AGENCIES EXERCISING AUTHORITY OVER SOIL RESOURCES IN SAN MATEO COUNTY

AGENCY	FUNCTIONAL CAPACITY	SUMMARY OF PROGRAMS AND ACTIVITIES
FEDERAL:		
U.S. Department of Agriculture	Advisory, Regulatory, Technical and Financial Assistance	Oversees and provides funding for the Soil Conservation Service. Oversees programs for the control of soil erosion and water pollution as per Title 33, Chapter 26, U.S. Code. Administers the Farmland Protection Policy Act of 1981 as per Title 7, Chapter 73, U.S. Code.
Farmers Home Administration	Financial Assistance	Administers loans to rural associations and public agencies for soil conservation and watershed management improvement projects approved by the Soil Conservation Service.
Agricultural Stabilization and Conservation Service	Advisory, Technical and Financial Assistance	Administers the Agricultural Conservation Program, a cost-sharing program designed to encourage farmers and ranchers to install soil and water conservation measures.
U.S. Department of Interior - Geological Survey	Advisory, Technical Assistance	Monitors sedimentation in streams and waterways. Conducts research on soil characteristics and soil movements. Publishes technical and scientific reports and maps.
U.S. Department of Agriculture - Soil Conservation Service	Advisory, Regulatory, Technical and Financial Assistance	Administers the Soil Conservation Act of 1935, the Watershed Protection and Flood Prevention Act of 1954, and Title 33, Chapter 26, U.S. Code. Provides technical and financial assistance for soil and water conservation and watershed management to Resource Conservation Districts, State and local governments, as well as other public agencies.

TABLE 2.3 (continued)

AGENCIES EXERCISING AUTHORITY OVER SOIL RESOURCES IN SAN MATEO COUNTY

AGENCY	FUNCTIONAL CAPACITY	SUMMARY OF PROGRAMS AND ACTIVITIES
FEDERAL:		
Fish and Wildlife Service	Advisory, Regulatory, Technical and Financial Assistance	Develops and enforces standards concerning soil erosion as it affects streams and waterways. Funds, supervises, coordinates or conducts work on erosion control. Monitors levels of pesticide pollution in land and water environments.
STATE:		
Department of Conservation	Regulatory, Advisory, Technical Assistance	Promotes the protection, conservation, and responsible development of State soil resources. Promotes the conservation of agricultural and open space lands. Promotes the incorporation of soil resource values into land use policies and decisions in an advisory capacity to other agencies. Responsible for the Farmland Mapping and Monitoring Program authorized by AB 966.
Department of Forestry	Regulatory, Advisory, Technical Assistance	Develops and enforces standards concerning soil erosion resulting from logging activities, including review of timber harvest plans. Funds, supervises, coordinates or conducts work on erosion control.
Department of Fish and Game	Advisory, Technical Assistance	Promotes the preservation of wildlife resources through the monitoring of sedimentation and pesticide pollution levels in natural habitats.

TABLE 2.3 (continued)

AGENCIES EXERCISING AUTHORITY OVER SOIL RESOURCES IN SAN MATEO COUNTY

AGENCY	FUNCTIONAL CAPACITY	SUMMARY OF PROGRAMS AND ACTIVITIES
REGIONAL:		
Regional Water Quality Control Board	Regulatory	Exercises control over major sources of water pollution and sedimentation in streams resulting from erosion.
San Mateo County Resource Conservation District	Advisory, Technical Assistance	Conducts surveys related to resource conservation, control measures, and improvements. May construct, operate, and maintain improvement works to prevent soil erosion, or conserve and distribute water, or provide landowners with materials and/or technical assistance for these purposes. May prepare comprehensive district plans which identify community watersheds and measures for erosion control.
OTHERS:		
University of California Agricultural Co-Op Extension Service	Advisory, Technical Assistance	Advises farmers on a wide range of agricultural matters, including problems relating to soil depletion. Promotes the improvement of agricultural production through research and outreach education.

TABLE 2.4

MAJOR LEGISLATION AND STATUTES GOVERNING SOIL RESOURCES IN SAN MATEO COUNTY

LEGISLATION (STATUTES)	ADMINISTRATIVE AGENCY	SUMMARY OF LEGISLATION
FEDERAL:		
Soil Conservation Act of 1935 (Title 16, U.S. Code, Chapter 3B, Section 590)	Department of Agriculture	Establishes the Soil Conservation Service. Authorizes the Secretary of Agriculture to conduct research related to the prevention of soil erosion and to provide technical and financial assistance to State and local agencies.
Watershed Protection and Flood Prevention Act of 1954 (Title 16, U.S. Code, Chapter 18)	Department of Agriculture	Directs the Secretary of Agriculture to provide technical and financial assistance for soil and water conservation and for flood control to State and local agencies.
STATE:		
Public Resources Code (Chapter 1, Article 1, Section 9001)	State Department of Food and Agriculture	Authorizes the creation of resource conservation districts for the purpose of soil and water conservation.
California Statutes of 1982, Chapter 13 (AB 966)	State Department of Conservation	Authorizes Important Farmlands Program and defines categories of agricultural land to be used for preparation of Important Farmland Series Maps. The purpose of the program is to annually monitor changes in the supply of agricultural land. Review of Important Farmland Maps by local agencies required.

TABLE 2.4 (continued)

MAJOR LEGISLATION AND STATUTES GOVERNING SOIL RESOURCES IN SAN MATEO COUNTY

LEGISLATION (STATUTES)	ADMINISTRATIVE AGENCY	SUMMARY OF LEGISLATION
STATE:		
California Land Conservation (Williamson Act) Government Code Sections 51200-51295	All Public Agencies	Provides for the creation of agricultural preserves to protect agricultural lands. Includes procedures for preferential tax assessment in exchange for release of development during the life of the contract.

(4) Local Coastal Program (1980)

Of the 12 components of the Local Coastal Program (LCP) four address soil resource issues: the Agriculture Component, the Sensitive Habitats Component, the Hazards Component and Energy Component.

(a) Agriculture Component

The LCP Agriculture Component is the County's major policy document concerning agricultural resources, with the Coastal Zone including almost all of the undeveloped land suitable for agriculture.

This Component defines agricultural resources, including Prime Agricultural Lands and Lands Suitable for Agriculture, and establishes criteria for subdivision and conversion of land use. The policies attempt to: (1) maintain agricultural parcels as large as possible, (2) concentrate nonagricultural parcels uses on the least productive portion of the property, (3) assure that agricultural land is protected from conversion, and (4) protect the productivity of remaining agricultural lands. Agricultural parcel size is determined on a case-by-case basis according to a set criteria. Policies governing floricultural uses establish standards to protect the availability and quality of prime agricultural soils for agricultural use.

(b) Sensitive Habitats Component

The Sensitive Habitats Component includes policies which protect riparian areas from accelerated soil erosion and sedimentation from development activities.

(c) Hazards Component

The Hazards Component includes a policy requiring that coastal bluff development not contribute to soil erosion problems on- or off-site.

(d) Energy Component

The Energy Component includes policies which require that oil and gas wells not be located on prime soils, that erosion from drilling equipment be minimized and that disposal of wastewater from drilling operations damaging to soil be prohibited.

2. Other County Policies and Programs

a. Williamson Act Program

The California Land Conservation Act of 1965 (The Williamson Act) authorizes counties and cities to enter into ten-year contracts with landowners to establish agricultural preserves in exchange for preferential tax assessments. In 1977, the Board of Supervisors adopted a policy to establish agricultural preserves as a means to protect agricultural soil resources from conversion to development. Currently about 43,750 acres are under Williamson Act contracts and approximately 67% of these lands are located in the Coastal Zone. Most of the remaining land is in the Skyline Area with a few relatively small agricultural preserves located in unincorporated Bayside areas.

Very little of the County land in agricultural preserves contain high quality agricultural soils or high value, intensively cultivated cropland. In 1974, only 1,390 acres classified as "prime soils" were under Williamson Act contract.[25] The vast majority of the land included in agricultural preserves is woodland, dry pasture or other unirrigated farmland.

b. Surface Runoff Management Plan (1977)

As erosion and sedimentation were identified as major problems throughout the County, a Surface Runoff Management Plan was adopted in 1977. The Plan proposed a program to improve erosion and runoff controls in areas with existing or potential problems, particularly those resulting from land management practices (tillage, construction, grazing) and from increases in runoff volume or velocity associated with new urban development.[26] The Plan also recommended that the County develop and implement flexible road standards for sensitive areas in order to reduce resulting stormwater runoff, streambed erosion and disturbance of natural vegetation.[27]

c. County Agricultural Commissioner

The County Agricultural Commissioner, with offices in Redwood City, Half Moon Bay, and the San Bruno Produce Terminal, has responsibility for monitoring and administering agricultural fumigation and spraying, eradication of pests, and certification of agricultural products when necessary.[28] The Commissioner may also investigate the adaptation of agricultural products to County conditions, including soil and climate.

d. Agricultural Advisory Committee

The Agricultural Advisory Committee, established in 1979, advises the Planning Commission and the Board of Supervisors on matters relating to agriculture and actively assists in preservation of agriculture on the Coastside.[29] The Committee consists of 17

members appointed by the Board of Supervisors, including individual farmers, representatives of farming groups, relevant agency staff and members of the general public with interest in agriculture.

3. County Ordinances

a. Zoning Ordinances

(1) A-1 (Agricultural District), and A-3 (Floricultural District) Ordinance

The A-1, and A-3 Districts were established to provide for agricultural uses. Presently, a portion of the San Bruno Mountain area is zoned A-1 and an area of unincorporated Redwood City is zoned A-3, while the balance of the agricultural land in the County has been rezoned to other agriculturally protective zoning districts.

(2) Resource Management (RM) District Ordinance (1974) and Resource Management/Coastal Zone (RM/CZ) District Ordinance (1980)

The ordinances establishing the RM and RM/CZ districts have a number of provisions designed to protect against development induced soil erosion and contamination and to encourage preservation of agriculture in appropriate locations. Relevant provisions of the Development Review Criteria and density requirements protective of soil resources are summarized in Table 2.5 and Table 2.8, respectively.

(3) Timber Preserve Zone (TPZ) District Ordinance (1977) and Timber Preserve Zone/Coastal Zone (TPZ/CZ) District Ordinance (1980)

The ordinances establishing the Timber Preserve Zone and Timber Preserve Zone/Coastal Zone districts include generalized requirements to protect against development induced soil erosion and contamination. Relevant provisions of the Development Design Criteria and density requirements protective of soils resources are summarized in Table 2.6 and Table 2.8, respectively.

(4) Coastal Development (CD) District Ordinance (1980)

The CD District covers the entire Coastal Zone within unincorporated San Mateo County. Development in this District requires a Coastal Development Permit, applications for which are evaluated against the applicable policies of the Local Coastal Program. Development review criteria relevant to soil resources are included in the Agriculture, Hazards, Sensitive Habitats and other components of the Local Coastal Program and summarized in Table 2.7.

TABLE 2.5

REQUIREMENTS OF
RESOURCE MANAGEMENT (RM) AND RESOURCE MANAGEMENT/COASTAL ZONE (RM/CZ)

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
GENERAL REVIEW CRITERIA (Section 6324 - RM and Section 6912 - RM/CZ)	
Environmental Quality Criteria	Proposed changes in vegetative cover require demonstration that minimal adverse impact from erosion will result. Pesticides and other chemicals used should have no significant or persistent adverse effects upon the environment. Use and discharge of chemical agents, particularly pesticides and heavy metals which concentrate in the food chain and interrupt or destroy the primary biological network or threaten the survival of endangered species is prohibited.
Site Design Criteria	Vegetation removed during construction shall be replaced whenever possible. Vegetation for the stabilization of graded areas or for replacement of existing vegetation shall be selected and located to be compatible with surrounding vegetation, and shall recognize climatic, soil and ecological characteristics of the region.
Water Resources Criteria	Projects shall clearly demonstrate methods to be employed for management of vegetative cover, surface water runoff, and erosion and sedimentation processes to assure stability of downstream aquatic environments. Site preparation procedures and construction phasing shall be carefully controlled to reduce erosion and exposure of soils to the maximum extent possible.

TABLE 2.5 (continued)

REQUIREMENTS OF
RESOURCE MANAGEMENT (RM) AND RESOURCE MANAGEMENT/COASTAL ZONE (RM/CZ)

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
Water Resources Criteria	To ensure minimal impact on hydrological processes, grading and other landscape alteration shall be kept to a minimum.
SUPPLEMENTARY REVIEW CRITERIA FOR PRIMARY RESOURCE AREAS (Section 6325 - RM and Section 6913 - RM/CZ)	Applies to developments that fall within Primary Resource Areas as designated or defined in the Conservation and Open Space Element of the County General Plan.
Primary Agricultural Resources Area Criteria	Only agricultural and compatible uses shall be permitted. Compatible uses include all permitted uses in the RM District providing that agricultural potential is not reduced.
	Clustering of uses shall not be permitted unless the Planning Commission finds that such clustering would promote the use of the land for agricultural purposes.
	Where possible, structural uses shall be located away from prime agricultural soils.
Primary Water Resources Area Criteria	Development shall not substantially increase erosion, levels of silt or chemical nutrient pollution or disrupt or diminish natural patterns of groundwater recharge.

TABLE 2.6

REQUIREMENTS OF
TIMBER PRESERVE (TPZ) AND TIMBER PRESERVE/COASTAL ZONE (TPZ/CZ)

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
GENERAL DESIGN CRITERIA (Section 6761 - TPZ and Section 6974 - TPZ/CZ)	All development shall be designed to use only biocides having no significant adverse environmental effects. All development shall maintain soil stability on- and off-site, and minimize vegetation and tree removal.
Primary Resource Areas Design Criteria	Development shall be designed to minimize conversion of quality forest soils.

TABLE 2.7

REQUIREMENTS OF
COASTAL DEVELOPMENT (CD) DISTRICT

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
Agriculture Component (Section 6328.23)	The majority of policies which protect agricultural soil resources found in the LCP Agriculture Component have been identified when discussing the substantive criteria for the issuance of a Planned Agricultural Use Permit of the PAD Ordinance.
Definition of Floricultural Uses	Define "soil dependent" floricultural uses as those which require location on prime soil areas in order to obtain a growing medium. Define "nonsoil dependent" floricultural uses as floricultural uses, including greenhouses, which can be established on flat or gently sloping land and do not require locations on prime soils.
Location of Floricultural Uses	Allow soil-dependent floriculture to locate on prime soils provided that a soil management plan is prepared showing how prime soils will be preserved and how they will be returned to their original condition when operations cease. Restrict nonsoil dependent floriculture greenhouses to nonprime soil areas on parcels with level to gentle sloping ground (less than 20 percent slope).
Development Standards of Floricultural Uses	Require runoff containing fertilizers or pesticides be stored on site and not released to any perennial or intermittent stream, but disposed of according to standards established by the United States Environmental Protection Agency, and the State Regional Water Quality Control Board. Prohibit the use of herbicides or soil sterilants under any asphalt or concrete paving installed as part of a greenhouse development.

TABLE 2.7 (continued)

REQUIREMENTS OF
COASTAL DEVELOPMENT (CD) DISTRICT

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
Agricultural Management Practices	Encourage proper soil conservation techniques and proper grazing methods. Encourage the development of conservation plans on a watershed by watershed basis with the Soil Conservation Service.
Energy Component (Section 6328.22)	
Appropriate Locations	Prohibit wells on prime agricultural soils. When drilling sites are located adjacent to prime agricultural soils, require mitigation to the maximum extent possible.
Road and Drilling Pad Construction	Minimize grading to prevent erosion and sedimentation.
Erosion Control	Minimize erosion from oil and gas well development by: requiring a buffer strip between streams and roads, constructing water-breaks at appropriate intervals, constructing roadside berms to guide surface waterflow, and planting protective ground cover on slopes exceeding 5%.
Sensitive Habitats Component (Section 6328.25)	
Permitted Uses in Riparian Corridors	Permit agricultural uses provided no soil is allowed to enter stream channels.
Performance Standards in Riparian Corridors	Require development permitted in corridors to minimize erosion, sedimentation and runoff.
Performance Standards in Buffer Zones	Require uses permitted in buffer zones to minimize erosion potential by conforming to natural topography.

TABLE 2.7 (continued)

REQUIREMENTS OF
COASTAL DEVELOPMENT (CD) DISTRICT

DEVELOPMENT REVIEW CRITERIA	SUMMARY OF REQUIREMENTS
Hazards Component (Section 6328.27)	
Regulation of Development on Coastal Bluff Tops	Permit bluff and cliff top development only if it will neither create nor contribute significantly to erosion problems.

TABLE 2.8

EXISTING RURAL DENSITY REQUIREMENTS PROTECTIVE OF SOIL RESOURCES

ZONING DISTRICT	SUMMARY DENSITY REQUIREMENTS
RM (Resource Management)	Density is generated at a rate of one unit per 40 acres for land under agricultural preserve (Williamson Act) contract; and one unit per 10 acres for remaining land classified as prime agricultural soils. A density bonus is provided for clustering development.
TPZ (Timber Preserve)	Density is generated at a rate of one unit per 5-40 acres without specific consideration to soil type.
PAD (Planned Agricultural District), RM/CZ (Resource Management/Coastal Zone), and TPZ/CZ (Timber Preserve/Coastal Zone)	Density is generated at a rate of one unit per 160 acres, not to exceed one unit per parcel for land classified as prime agricultural soil, not to exceed one unit per parcel; and one unit per 60 acres for remaining land under Williamson Act contract. In the PAD, a density bonus is provided when combining contiguous parcels for master planning purposes.

(5) Planned Agricultural District (PAD) Ordinance (1980)

The PAD Ordinance is designed specifically to implement the Local Coastal Program policies concerning agriculture. Its purpose is to: (1) preserve and foster existing and potential agricultural operations in San Mateo County in order to keep the maximum amount of the County's highest quality agricultural soils, and all other lands suitable for agriculture, in agricultural production, and (2) minimize conflicts between agricultural and nonagricultural land uses. More specifically, the ordinance governs use, conversion, and subdivision of agricultural land within the Planned Agricultural District. The PAD covers a large portion of the unincorporated rural area, embracing the County's primary agricultural district, to comprehensively ensure that soil protection is considered during the development review process.

The PAD Ordinance requires a Planned Agricultural Permit for land division and conversion of agricultural land to permitted nonagricultural uses. An essential strategy incorporated in the PAD Ordinance is: (1) to restrict conversion of agricultural soils to locations least suitable for agricultural use and (2) to combine agricultural land into parcels as large as possible, rather than to allow subdivision into smaller parcels which are difficult or economic to farm.[30]

Allowable densities are the same as for the RM/CZ District (see Table 2.6). As a condition of approval for land divisions in the PAD, applicants are required to grant to the County an easement limiting the use of agricultural land to agricultural uses, farm labor housing and nonresidential development necessary to agriculture.[31] This measure is to further ensure protection of suitable agricultural soils.

b. Other Ordinances

(1) Topsoil Ordinance (1970)

The Topsoil Ordinance governs removal of topsoil and includes erosion and sedimentation control provisions which specifically require slope stabilization and surface drainage control measures.[32] Topsoil removal requests reviewed by the Planning Commission may be conditioned to require additional erosion control measures as deemed necessary.

(2) Excavating, Grading, Filling and Clearing Regulations Ordinance (1982)

The Excavating, Grading, Filling and Clearing Regulations Ordinance[33] establishes standards and requirements for grading activities, including water impoundment construction and land development. The Ordinance was developed in conjunction with

regional-wide planning efforts in erosion and sediment control, and implements the policies of the County Surface Runoff Management Plan. Permit applications are reviewed against standards contained in the Best Management Practices Handbook, a compilation of recommended erosion and sediment control measures adopted to conditions in San Mateo County.[34] A condensed version is available in the Grading Permit Performance Standards Handbook.

(3) Surface Mining and Reclamation Ordinance (1982)

The Surface Mining and Reclamation Ordinance[35] governs removal of earth and mineral deposits. The Ordinance was adopted to implement the State Surface Mining and Reclamation Act of 1975, and establishes comprehensive erosion and sedimentation control standards for mining operations. The Ordinance specifically requires preparation of a reclamation plan, ensuring restoration of mined lands in a manner which, among other things minimizes, soil erosion.

(4) Timber Harvesting Ordinance (1972)

The Timber Harvesting Ordinance[36] governs removal of forest products from sites 3 acres or smaller. The Ordinance contains an erosion control chapter establishing detailed requirements to avert soil erosion and maintain water quality.

In 1982, the State legislature adopted SB 856 which transferred regulatory authority for timber operations on sites in excess of 3 acres from the County to the California Department of Forestry. The State Forest Practices Rules govern local timber harvesting on such larger parcels and also require compliance with comprehensive erosion control measures.

(5) Oil and Gas Well Operations Ordinance (1980)

The Oil and Gas Well Operations Ordinance[37] establishes standards and requirements governing oil and gas well operations including measures which protect against accelerated soil erosion and sedimentation and soil contamination.

(6) Emerald Lake Hills (RH/S-18) Ordinance (1979)

As the implementing ordinance to the Emerald Lake Hills Community Plan, the RH/S-18 Ordinance[38] establishes a slope/density formula aimed at minimizing of water runoff and soil erosion, as well as other problems associated with hillside development.

(7) Ladera (SS-104) Ordinance (1979)

The SS-104 Ordinance[39] also establishes a slope/density formula to avert soil erosion and other problems resulting from hillside development within the unincorporated community of Ladera.

SOIL RESOURCES ISSUES

I. IMPORTANCE OF SOIL RESOURCES

Soil is a fragile natural resource whose availability, quality, and stabilization is of importance to the people of San Mateo County. Soil sustains plant life, allowing for productive agriculture and forestry. Soil also supports natural ground cover protecting the resource from accelerated erosion and providing a critical link in the ecosystem. Although soil is produced very slowly under natural conditions, it can be quickly lost when disturbed by human activities. Accelerated soil loss can usually be avoided through appropriate management practices. This section will, therefore, identify principal soil protection issues and recommend required measures to guarantee continued availability and productive use of the resource.

II. OPPORTUNITIES AND CONSTRAINTS AFFECTING SOIL RESOURCE PROTECTION

A. EROSION AND SEDIMENTATION

Erosion and sedimentation are natural processes which can become accelerated by human activities such as construction, forestry, agricultural and mining practices. In the usual case of accelerated erosion, vegetation binding the soil is reduced or removed, exposing disturbed soils to precipitation and surface runoff. The process often results in loss of fertile topsoil, creation of deep ruts and gullies, and sediment filled streams. Statewide information suggests that, on the average, between 6 and 6 1/2 tons of soil per acre are lost each year in California.[40] This rate is roughly equivalent to the loss of one inch of soil every twenty-five years, eighty times faster than the topsoil formation process under normal conditions.[41]

There is no reliable local estimate as to the total amount of soil lost annually to soil erosion in the County. The Surface Runoff Management Plan has identified a number of specific erosion and siltation problem areas, including the Denniston Creek and Pescadero Creek watersheds on the Coastside and the Brisbane watershed on the Bayside.[42] Other potentially critical areas, identified by the Soil Conservation Service, include: (1) agricultural lands west of San Gregorio, (2) cropland and hillsides near Moss Beach, (3) timberlands in the La Honda region and mountains between San Gregorio and Pescadero, (4) areas west of Skyline Boulevard between Highway 92 and La Honda, and (5) the Lake Lucerne and Whitehouse Creek watersheds.[43]

Erosion potential is determined by four principal factors: the characteristics of the soil, extent of vegetative cover, topography, and climate.[44] Soil texture and permeability determine the resistance of soil removal by falling or flowing water. Vegetative cover plays a critical role in controlling erosion through shielding and binding the soil. Slope influences rate of runoff and is directly correlated with

erosion potential. Finally, the intensity and duration of rainfall determines the extent and the capacity for flowing water to detach and transport soil particles. As the County has a lengthy mid-year dry period, erosion normally occurs during the November through March winter season.[45]

In most cases, the adverse results of man's activities can be reduced or eliminated through various erosion control measures properly employed at the appropriate time. The high cost of lost resources, resource replenishment, and post-damage repair and maintenance make both erosion control planning and preventive maintenance necessary.

1. Development Induced Erosion

Unmitigated construction activities contribute the largest single source of localized erosion and sedimentation in the Bay Area.[46] The erosion potential from development activities is approximately 10 times greater than land in cultivation, and 200 times greater than on pastureland.[47] Although areas under construction annually represent only 0.1% of the total land, they contribute between 2 to 14% of the sediment in regional lakes, streams and other water bodies.[48] Within the County, past grading activities accompanying urbanization of the Bayside foothills created extensive soil erosion and slope stability problems.[49]

Accelerated soil erosion and sedimentation from construction activities occurs from the removal of existing protective vegetative cover, compaction of exposed porous soils by heavy equipment, enlarged drainage areas caused by site grading, as well as increased impervious surfaces associated with construction of streets, buildings, sidewalks, and pavement. Erosion control methods to protect soil resources during construction may include vegetation planting to bind and shield the soil, water diversion and interception ditches to concentrate runoff, and avoidance of wet season activities.[50]

2. Forestry Induced Erosion

Soil erosion and sedimentation can substantially degrade timberlands, reducing site quality, lowering forest productivity, and deteriorating water quality. Early logging practices in the County involved clear cutting of giant forests and burning of slash, resulting in removal of topsoil and ongoing erosion.[51] In general, the County's timberland soils are highly erosive due primarily to high annual precipitation and rapid runoff. The soils near La Honda are particularly unstable and have resulted in occurrences of natural slope slippage and erosion. Logging activities in these areas present further erosion problems.[52]

Timber harvesting and construction of logging roads constitute a primary source for accelerated erosion and sedimentation in forested watersheds.[53] The operation of road and "yard and skidding" equipment can compact the soil, reroute and concentrate water runoff, and increase surface flow, thereby increasing erosion potential. As much as 90% of the sediment produced by erosion on timbered lands comes from logging

roads.[54] The steeper the terrain traversed and the larger the cuts and fills required, the greater the potential for erosion and sedimentation. In general, the extent to which effective erosion control measures are integrated into the design, construction, and maintenance of logging roads, influences the amount of erosion which occurs.

The timber harvesting practice selected also effects erosion potential. For many years "clear-cutting" was the accepted mode. This system removes all timber on a site, potentially exposing expansive areas of unprotected soils to erosive precipitation and surface water. Alternate cutting methods, e.g., selective cutting and seed-tree cutting, combined with replanting can mitigate impacts and protect the timberland from soil erosion.

3. Agriculturally Induced Erosion

Past farming and grazing activities have generally had a damaging effect on the County's soil resources.[55] Early agricultural practices ignored slope limitations, thus inducing erosion and loss of valuable topsoil. Overgrazing exposed bare soils to wind and water erosion, resulting in extensive gullying. Considerable erosion and loss of topsoil also occurred during World War II when flax was grown in unsuitable locations on the Coastside. Much of this land has not yet recovered.[56]

Agriculturally related erosion primarily results from improper land use practices coupled with improper timing. Disruptive practices include site planting without regard for slope and bare soil exposure from land clearing activities.[57] The erosion potential associated with each depends on seasonal characteristics and the extent of precipitation. Alternate methods to protect soil resources include plowing and tilling along contours, avoiding equipment moving vertically on slopes, and covering disrupted soil with sufficient plant residue, mulch, or planted grass so as to stabilize it during the wet season.[58] On hillsides, erosion control practices, such as construction of terraces, water diversions, or planting of "filter strips" can be implemented during critically erosive periods.[59]

Presently, overgrazing is not a significant problem within the County due to an abundance of native perennial vegetation with established root systems.[60] Grazing related erosion primarily results from animal compaction of the land and winter range activities.

According to the U.S. Soil Conservation Service, the incidence of agriculturally related erosion in the County is more extensive per acre than the statewide average, primarily for two reasons: (1) the proportionally higher occurrence of farming on sloped hillsides, and; (2) the higher concentration of winter rain and runoff over a shorter period of time. Due to these factors, the average County farmer tends to maintain a higher level of awareness of the erosion process and required erosion control measures.[61]

B. SOIL DEPLETION

Soil does not have to be washed away or paved over to lose its productivity. If it is agriculturally mismanaged, soil can lose many of the natural properties which directly contribute to plant growth or its capability to respond to agricultural practices.[62] The primary determinant of soil quality is organic matter content, i.e., the amount of decayed plant and animal remains which exist in an active state of decay.[63] Organic material is a transient component of soil that must be constantly renewed. Natural levels of organic matter usually drop when the soil is cultivated. For soil to continue as a renewable resource, it is incumbent upon farmers to stabilize organic matter decline through crop rotation and residue management. Crop rotation involves seasonally changing the crop mix to restore the soils nutrient composition. Organic material can be added to the soil in several ways including addition of composts comprised of various plant residues, municipal sewer sludge and refuse, as well as manure. Within the County, mushroom compost is frequently added to restore organic content.[64] The most important source of organic matter in cropland soils is the residue from crops grown the previous year which is returned to the soil following harvest.[65] California soils are often naturally deficient in the nutrients essential for healthy plant growth to maintain increased crop yields.[66] These nutrients may also be drained from the soils over time due to intensive agricultural or silvicultural practices. On the Coastside, prime agricultural soils supporting local specialty crops are primarily deficient in nitrogen.[67] The available nitrogen in soil can become rapidly exhausted when farmed, thus requiring annual replacement by fertilizers and planting of "nitrogen fixing" crops. Within the County, modern conservation oriented farm practices, such as crop rotation, are the general rule resulting in little threat to local agricultural soils from direct misuse.[68]

C. SOIL CONTAMINATION

Chemical contamination of soil resources is a potential issue facing County soil resources, particularly in Bayside industrial areas. Many chemicals which are toxic to plants and animals are not mobile in soils and tend to accumulate, with the potential to produce pollution in the long term if applied on a continuous basis.[69]

Specific incidents of soil contamination by industrial waste disposal and leaking storage tanks have been reported locally and are discussed in the Man-made Hazards Chapter. In particular, soil contamination resulting from heavy metal disposal has been identified at five Bayside locations.[70]

Modern agricultural operations utilize a substantial amount of chemical pesticides. Within the County, floricultural operations, both open field and greenhouse, are the major users. Soil contamination associated with pesticide use results from environmentally persistent chemicals which accumulate over time. This is not considered a potentially significant issue in the County as the chemicals used have a

relatively short active life, are quickly broken down by natural processes, and identified environmentally persistent pesticides, such as certain chlorinated hydrocarbons, are prohibited.[71]

A review of literature suggests that more research is necessary to determine the effects of persistent chemicals on soil ecology and productivity.[72] The State Department of Conservation reports that consequences of soil contamination from pesticide use are difficult to assess, as existing data is not sufficiently comprehensive to evaluate the relative impact of long-term use, accumulation in the soil, and the effect upon soil productivity.[73]

D. LAND USE IMPACTS

Given proper management, certain land uses such as agriculture, forestry, and open space present an opportunity to protect soil resources; while other land uses, particularly those requiring structural development, preclude this option. Protective land uses such as agriculture or open space can renew and sustain soil for continued use, preserving its availability, whereas development can eliminate the soils productive potential and natural replenishment process. Even low density development conventionally considered compatible with open space, e.g., parks or golf courses, may involve compaction or other alterations of natural soil conditions, and usually involve capital investments which are unlikely to be reversed.

The highest quality soil resources are those which are suitable for agricultural use. Conversion of agricultural soils to development is an important land use issue of national, state, and regional significance.[74] Within San Mateo County, virtually all previously farmed soil on the Bayside has been converted, and pressure for conversion of Coastside agricultural soils, especially in the Mid-Coast is strong.[75] Recent development requests on the Coastside document the demand to convert rural open land in a coastal setting to residential and recreational uses.[76]

Agricultural soils in San Mateo County are particularly vulnerable to the pressures for conversion for many reasons, including physical resource limitations. The remaining prime agricultural soils are found in isolated, scattered packets along the narrow coastal plain and adjacent valleys, limiting the scale of agricultural operations. In addition, more than one-half of the agricultural soils on the Coastside are covered with invasive coyote brush or subject to brush encroachment, further constraining productive use of the land.[77] Climatic conditions on the coast also limit the range of crops that can be grown. These factors contribute to placing County agricultural uses at an economic disadvantage when compared to many other agricultural areas in the State. However, the prospering greenhouse floricultural industry and continued demand for specialty crops especially suited to the local climate (e.g., artichokes and Brussels sprouts) or metropolitan market demands (e.g., pumpkins) partially offset this general disadvantage.

The availability of water and farm labor, as well as increasing production costs, including property taxes, are additional factors affecting the future of agriculture as a protective and beneficial use of soil within the County. Further, the placement of nonagricultural uses in an agricultural district often results in land use conflicts and ultimate conversion of agricultural soils. The Rural Land Use Chapter discusses the dynamics of these constraints, including an analysis of alternate means to facilitate agricultural use of County soils.

Within undeveloped urban Bayside areas, eventual conversion of agricultural soils to other land uses is generally considered inevitable and has been planned for accordingly.

E. COORDINATION ISSUES

The large number and diversity of public agencies which address soil resource issues (see Table 2.4) can create coordination problems. Lack of agency coordination negatively affects timely transfer of information, clarification of delegated responsibilities, and effective cooperation between agencies. This, however, has not been a major problem within the County agricultural district as the USDA Soil Conservation Service and State Department of Fish and Wildlife have local representatives which adequately coordinate with the Agricultural Advisory Committee and Resource Conservation District staff to solve rural soil erosion problems.

III. EVALUATION OF EXISTING PLANS, POLICIES, AND REGULATIONS AFFECTING SOIL RESOURCES

A. EROSION AND SEDIMENTATION

Given the high inherent erosion potential of County soils, soil erosion is a continuing problem, particularly during years of heavy rainfall. The County's: (1) Resource Management, (2) Timber Preserve, (3) Timber Harvesting, (4) Excavating, Grading, Filling and Clearing Regulations, (5) Oil and Gas Well, (6) Surface Mining, and (7) Topsoil Ordinances provide a comprehensive and adequate approach to controlling disturbances from varied sources which accelerate soil erosion. The San Mateo County Resource Conservation District is also effective in continuing efforts to improve soil management practices and through ongoing coordination with local, State and federal agencies, in efforts to repair damage from years of severe weather. At the regional level, Association of Bay Area Governments and the Regional Water Quality Control Board continue to effectively monitor erosion inducing activities, assisting local governments in developing public awareness programs and regulatory legislation.

B. SOIL DEPLETION

The Soil Conservation Service in concert with the University of California Cooperative Extension, both located in Half Moon Bay, are the primary agencies responsible for assisting local farmers in protecting

soil nutrient quality. The Soil Conservation Service will, upon request, analyze the organic content of soil and is effective in developing individual conservation plans, which recommend residue management and crop rotation techniques. The University of California Cooperative Extension effectively performs the complementary function of recommending crop mixes, and fertilizer selection based upon current agricultural research. The effectiveness of these agencies efforts is evidenced by recent observation that, in general, the average organic content of soils on the Coastside is increasing due to residue replenishment by local farmers. In addition, the LCP Agricultural Component is effective at preserving soil fertility in soil dependent floricultural operations by requiring preparation of a soil management plan which demonstrates how the productive capability of the soil will be maintained when operations cease, and by generally encouraging proper soil conservation techniques and preparation of conservation plans.

C. SOIL CONTAMINATION

Contamination of soil by industrial chemicals, particularly heavy metals, is a potential issue whose full extent is yet to be determined within the County. The problem has only recently begun to be studied by agencies such as Association of Bay Area Governments, Regional Water Quality Control Board, and State Department of Health Services. Until basic inventory work is more complete, it is difficult to determine the extent of the problem or the adequacy of existing programs to respond to it.

Agricultural use of pesticides and herbicides is carefully monitored by the County Agricultural Commissioner. Currently, most chemicals used have a relatively short active life and are not considered to present a soil contamination problem. The Resource Management District Development Review Criteria and LCP Agriculture and Energy Components include requirements for pesticide and oil well waste disposal to further assure against potential contamination.

D. LAND USE IMPACTS

The issue of land use impacts and soil conversion in rural areas is approached differently within and outside of the Coastal Zone. Within the Coastal Zone, the Local Coastal Program recognizes that development can have a detrimental effect on soil resources by establishing policies and implementing ordinances designed to regulate conversion and division of agricultural soils. The principal strategy of the LCP is to restrict conversion of agricultural soils to locations least suitable for agricultural use and to prohibit subdivision into parcels too small for economically feasible agriculture. The regulations apply to a large portion of the unincorporated rural area, including the County's principal agricultural district, to ensure that agricultural soil protection is considered during the development review process. While these regulations have only been in effect for several years, they appear to be effective, primarily due to low density requirements and explicit land division and conversion criteria. To measure effective-

ness, the County will begin monitoring conversion of agricultural soils through the State Important Farmlands Program, presently underway.

Outside of the Coastal Zone, agricultural soils are protected by both Williamson Act contracts (primarily Skyline Area grazing lands and several floricultural operations) and low density zoning (RM in Skyline, A-1 and A-3 in select Bayside agricultural areas). Timberland soils are similarly protected by the RM and TPZ Ordinances.

Rural zoning protective of agricultural soils outside of the Coastal Zone (RM and TPZ) differs from that within the Coastal Zone (PAD and CD) in terms of allowable density, number of permitted uses, and development standards. Among the distinctions: (1) density regulations outside the Coastal Zone are generally 4 to 8 times more permissive than within the Coastal Zone, (2) the list of allowable nonagricultural uses is more extensive, (3) residential clustering is only encouraged rather than required, and (4) conversion of agricultural soils is addressed in a generalized manner, with no explicit requirement regulating subdivision design to protect soil resources. As the County's best grazing land is situated outside of the Coastal Zone, it may be desirable to consider whether additional policies to protect agricultural soil resources from conversion are necessary in areas presently zoned RM and TPZ.

E. SUMMARY OF PROBLEMS

In summary, existing programs, regulations and policies adequately respond to the issues of soil erosion and sedimentation and soil depletion. With regard to soil contamination, until basic inventory work is more complete, it is difficult to determine the extent of the problem or adequacy of existing programs.

Land use impacts, particularly conversion of agricultural soils, are approached differently within the rural unincorporated area. Existing regulations are more protective of agricultural soils within the Coastal Zone and stronger policies could be adopted outside this area to attain Countywide parity.

IV. ALTERNATIVES TO PROTECT SOIL RESOURCES

A. INVESTIGATION OF SOIL CONTAMINATION

Since the problem of soil contamination from past industrial dumping has only recently begun to be appreciated, it may be desirable for the County to consider a more comprehensive investigation of the subject throughout its jurisdiction.

B. STRONGER PROTECTIONS AGAINST LAND USE IMPACTS OUTSIDE OF THE COASTAL ZONE

There are several alternative approaches the County may pursue to more adequately protect agricultural soils in rural areas outside of the Coastal Zone. Alternatives include: (1) incorporation of PAD regulations into existing open space ordinances so as to affect all lands with agriculturally potential soils, or (2) redesignation of such lands from Open Space to Agriculture, followed by rezoning to PAD. Each strategy has certain benefits, e.g., uniform protection of agricultural resources countywide and utilization of a well developed and presently adequate body of regulations; however, both present problems when considering appropriate density criteria. As this is principally a land use issue, the Rural Land Use Chapter presents a more detailed assessment of the various approaches.

SOIL RESOURCES FOOTNOTES

[1] California Department of Conservation, California Soils: An Assessment, April, 1979; p. I-8.

[2] Louis M. Thompson and Frederick R. Troeh, Soils and Soil Fertility. New York: Mc-Graw-Hill, 1978; p. 2.

[3] Ibid., Chapter 19.

[4] Ibid., Chapter 16.

[5] U.S. Department of Agriculture, Soil Conservation Service, Report and General Soil Map: San Mateo County. 1974. The Soil Conservation Service is presently updating soil surveys for several parts of San Mateo County, particularly on the Bayside, but results will not be publicly available for some years.

[6] Ibid.

[7] U.S. Soil Conservation Service, Soil Survey of the San Mateo Area.

[8] San Mateo County, Conservation and Open Space Element of the General Plan, 1973; p. 5-10.

[9] Robert Ornduff, Introduction to California Plant Life, University of California Press, 1974; p. 26-27.

[10] USDA Soil Conservation Service, A Supplement to Soil Survey, San Mateo Area, 1969.

[11] Ibid., p. 13.

[12] Map available for public review at County Planning Division.

[13] Soil Conservation Service, Soil Survey of the San Mateo Area, pages 40-42. Table 10 lists 9,438 acres in soil types rated as Class I, Class II or Class III known to be suitable for artichoke or Brussels sprouts production (Table 6, pages 30-35). Of this total, 1,669 acres are estimated to be within incorporated areas such as Half Moon Bay and Portola Valley; 9,438 -1,669 = 7,769 acres of prime soils in the unincorporated area included within the study.

[14] Conversation with R. H. Sciaroni, Farm Advisor, University of California Cooperative Extension, Half Moon Bay; November 14, 1983.

[15] Forest Resources Study Committee, Final Report, San Mateo County Planning Department, 1971; p. 27.

[16] Ibid., p. 26.

[17] Conversation with Al Neufeld, County Geologist; November 4, 1983.

[18] Ibid.

[19] USDA Soil Conservation Service, A Supplement to Soil Survey, San Mateo Area.

[20] Ibid.

[21] Soil Conservation Service, Soil Survey of the San Mateo Area; pp. 96-107.

[22] Regional Planning Committee of San Mateo County, The Physical Setting of San Mateo County, 1968; p. 42.

[23] Ibid.

[24] The soil protection related goals and objectives of the Conservation and Open Space Element include:

a. To protect agricultural and other valuable soils from abuse, misuse, or degradation.

b. To maintain a maximum number of options for the future use of soil resources.

c. To protect watershed quality and prevent stream siltation.

d. To encourage the continuance of agriculture for its open space value.

[25] The Williamson Act in San Mateo County, p. 74.

[26] San Mateo County Surface Runoff Management Plan, September, 1977; p. 54.

[27] Ibid., p. 59.

[28] San Mateo County Ordinance Code Sections 2200-2207.2.

[29] Ordinance No. 2614.

[30] Ordinance Code Section 6355.

[31] Ordinance Code Section 6361.

[32] Zoning Ordinance Section 6502/Ordinance Code Sections 7701.0-7701.8. Excavation in connection with a building permit and not exceeding 25 cubic yards of soil is excluded.

[33] Ordinance Code Sections 8600.0-8609.

[34] County standards were adapted from G. Kennedy and H. Shogren, Handbook of Best Management Practices: Surface Runoff Management Plan for the Nine Bay Area Counties. Berkeley: Association of Bay Area Governments, 1977. See San Mateo County Planning and Development Division Incorporation of Best Management Practices into the Development Review Process, March, 1980.

[35] Ordinance Code Sections 7702-7706.

[36] Ordinance Code Sections 10,000-10,807.

[37] Ordinance Code Sections 7710-7722.8.

[38] Ordinance Code Sections 6800-6815.

[39] Ordinance Code Section 6115, Sectional District Maps 30.1(3) and 30.2(5).

[40] State Department of Conservation, California Soils, 1979; p. 1-9.

[41] Ibid.

[42] San Mateo County Surface Runoff Plan, Progress Report; p. 30-32, 41.

[43] Ramlit Associates, Nonpoint Pollution Control Needs for Agricultural Lands in the San Francisco Bay Area (Preliminary Report Outline prepared for Bay Area Council of Resource Conservation Districts, 1980; p. 3.

[44] Association of Bay Area Governments (ABAG), Erosion and Sediment Control Handbook, 1981; p. 1-4.

[45] ABAG; p. 1-5.

[46] ABAG; p.1-1.

[47] State Regional Water Quality Control Board, Water Quality Control Plan for the San Francisco Bay Basin, 1982; pp. 4-32.

[48] ABAG; pp. 1-3.

[49] San Mateo County, Conservation and Open Space Element of the General Plan; p. 7-8.

[50] ABAG; p. 2-1.

[51] San Mateo County, Conservation and Open Space Element of the General Plan; p. 7-7.

[52] Ramlit; p. 5.

[53] State Department of Forestry, California Forest Resources - Preliminary Assessment, 1979; pp. 105-112; Forest Resources Study Committee, Final Report, San Mateo County Planning Department, 1971; pp. 28-30; Ramlit; p. 5.

[54] State Department of Forestry; pp. 105-112.

[55] San Mateo County, Conservation and Open Space Element of the General Plan; p. 7-7.

[56] San Mateo County, Conservation and Open Space Element of the General Plan; p. 7-15.

[57] Conversation with George Wooster, District Conservationist, USDA Soil Conservation Service; November 1, 1983.

[58] Ibid., USDA Soil Conservation Service, Soil Survey of the San Mateo Area, pp. 12-13; Dasman, Raymond F., Environmental Conservation, New York--John Wiley and Sons, 1976, pp. 115-118.

[59] Wooster.

[60] Ibid.

[61] Ibid.

[62] Sampson, R. Neil, Farmland Or Wasteland--A Time To Choose, 1981; p. 133.

[63] Sampson; p. 136.

[64] Wooster.

[65] Sampson; p. 139.

[66] State Department of Conservation, California Soils; p. 3-58.

[67] Wooster.

[68] San Mateo County, Conservation and Open Space Element; p. 7-14.

[69] State Department of Conservation, California Soils; p. III-62.

[70] San Mateo Times, October 19, 1983; p. IV-I.

[71] Conversation with George Ginello, County Agricultural Commissioner and R. H. Sciaroni, Farm Advisor, University of California Cooperative Extension, Half Moon Bay; January 26, 1983.

[72] Ramlit Associates; p. 8.

[73] State Department of Conservation, California Soils; p. III-66.

[74] W. Wendell Fletcher and Charles Little, The American Cropland Crisis. American Land Forum, 1982, Peter Detwillen and Steve Rikala, "A Question of Balance." Room to Grow Project Paper, Sacramento: Office of Planning and Research, July 1982, People for Open Space Farmlands Project, Endangered Harvest: The Future of Bay Area Farmland, November, 1982.

[75] MacDonald and Smart, Inc., Coastside Economic Study: San Mateo County, 1976; p. 1.

[76] See Cascade Ranch Major Subdivision (SMJ 82-1) and Cassanelli Park General Plan Amendment (GPA 83-1).

[77] USDA Soil Conservation Service, Soil Survey of the San Mateo Area; p. 13.

SOIL RESOURCES APPENDICES

APPENDIX A - SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX B - TOPICS FOR FUTURE CONSIDERATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on December 20, 1984, the following background data was added to the Soils Resources Chapter.

1. Description in Text of Timber Harvesting

   A local timber operator has suggested the Soil Resources Chapter misrepresents timber harvesting in San Mateo County. In response, it should be emphasized that the chapter describes a range of possible impacts from timber harvesting activities which should be considered when developing General Plan policy. To allay these concerns, revisions to the Soil Resources Chapter submitted by the respondent are included as follows.

2. Forestry and Erosion

   Soil erosion and sedimentation can substantially degrade timberlands, reducing site quality, lowering forest productivity, and deteriorating water quality. The County's timberland soils are generally classified as highly erosive due primarily to high annual precipitation and rapid runoff.

   Unrestrained timber harvesting and improper road construction can substantially increase the potential for accelerated erosion and sedimentation of forested watersheds. Compacted soil, rerouted and concentrated runoff, and increased surface flow increase erosion potential. As much as 90% of the sediment produced by erosion on timbered lands can come from logging roads. The steeper the terrain traversed and the larger the cuts and fills, the greater the potential for erosion and sedimentation. Effective erosion control measures integrated into the design, construction, and maintenance of logging roads can control erosion.

   The timber harvesting practices selected also affects erosion potential. Selective harvesting combined with effective erosion control can mitigate impacts and protect the timberland from soil erosion.

APPENDIX B

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Soil Resources Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

1. Reevaluate definition of Prime Agricultural Land and Other Land Suitable for Agriculture contained in the Local Coastal Program.

2. Accurately delineate distribution of Prime Agricultural Land. Provide a more permissive set of uses and increased development densities on Other Land Suitable for Agriculture.

3. Reevaluate necessity for agricultural easements to run "in perpetuity" as required by the Local Coastal Program. It should be noted that an LCP amendment relevant to this issue has been submitted for review by the Planning Commission.

4. Develop land division criteria which consider parcel size needs of floriculture operations, i.e., allowing smaller agricultural parcels without requirement for an agricultural easement.

5. Consider the implications of Local Coastal Program agricultural land division criteria on controlling soil erosion.

6. Consider timber related activities as within the definition of agricultural use. It should be noted that an LCP amendment relevant to this issue has been submitted for review by the Planning Commission.

3

Mineral Resources

Background ▪ Issues

MINERAL RESOURCES BACKGROUND

I. INTRODUCTION

Major mineral resources recovered in the Bay Area include: limestone and shells, salines, sand and gravel, crushed and broken stone and oil and gas. Significant amounts of mineral resources are needed for construction and industrial materials, and for energy. However, many mineral resources are not readily available in the United States in quantities adequate to meet future needs. Because mineral resources do not increase significantly with time, it is necessary to protect identified significant mineral resource areas for use as future mineral extraction sites. However, mineral resource extraction operations are often accompanied by negative environmental impacts that cannot be fully mitigated. In some cases significant mineral resource sites are located in urbanized areas where mineral extraction is incompatible with existing or planned development. Thus, mineral resource planning must address both developmental and environmental considerations.

A. SCOPE AND ROLE

This Chapter of the General Plan inventories mineral resources located in the unincorporated areas of the County and reviews their importance. Issues such as protecting these resources for future use and lessening the environmental impacts of utilizing them are explored. Finally, the Chapter provides policies that direct the future utilization of mineral resources in unincorporated areas.

B. STATE PLANNING LAW

1. General Plan Elements

Section 65302(d) of the California Government Code requires the County to adopt a Conservation Element for the conservation, development and utilization of natural resources, including minerals. The code requires such an Element to emphasize the conservation and management of economically productive natural resources. The Element may also inventory the location, quantity and quality of rock, sand and gravel resources. In addition, Section 65302(e) of the Government Code requires the County to adopt an Open Space Element which designates open space land for the preservation of natural resources and the managed production of resources.

2. Other General Plan Requirements

The Surface Mining and Reclamation Act of 1975 requires the State Geologist to classify mineral areas in the State, and the State Board of Mining and Geology to designate mineral deposits of regional or statewide significance. The purpose of the classification and designation process is to ensure that mineral deposits are available when needed.

Within 12 months of receiving the maps and report, the County must establish mineral resource management policies for incorporation into the General Plan which: (a) recognize the mineral classification information; (b) assist in the management of land use which affects mineral areas of statewide and regional significance; and (c) emphasize the conservation and development of identified mineral deposits.

Prior to adoption or subsequent amendment, the County must submit its proposed resource management policies to the State Board of Mining and Geology for review and comment. While the Surface Mining and Reclamation Act mandates the classification and designation of all mineral resources by State agencies, it is only the classification and designation of aggregate resources (which include stone, sand and gravel) that will be identified for San Mateo County in the near term. To date, the State Geologist (Division of Mines and Geology) has not finalized the maps for San Mateo County showing the classification of aggregate resource areas.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan contains a section on mineral resources which provides background data, issues and action programs for the conservation, development and utilization of mineral resources. In general, the background data presented is out of date because it was developed prior to the release of a major study on mineral resources in the Bay Region conducted in 1975. Few of the issues presented are still relevant and many of the action programs have been preempted by State law. Background information, issues and policies contained in the 1973 Conservation and Open Space Element which are still current have been incorporated into this chapter. This chapter, once adopted, will replace the discussion of mineral resources contained in the County's 1973 Conservation and Open Space Element.

2. Area Plans

The 1980 Local Coastal Program (LCP) is the only area plan which includes specific policies relative to mineral resources. The LCP contains a major component on coastal energy development. Major topics discussed include: (1) oil and gas wells (onshore), (2) onshore facilities for offshore oil, and (3) pipelines and transmission lines. This component provides current background information, issues and policies on energy development within the Coastal Zone. As a result, the discussion of coastal energy development within this chapter of the General Plan will draw directly on information contained in the LCP.

II. EXISTING MINERAL RESOURCES

A. INVENTORY OF MINERAL RESOURCES

1. Summary Inventory of Resources

Table 3.1 identifies 13 mineral resources found in San Mateo County and classifies these resources into four categories. Seven of these minerals: chromite, clay, expansible shale, mercury, sand and gravel, sands (specialty), and stone (dimension), are not likely to be used primarily because of limited quantities, urbanization or economic infeasibility.

The remaining mineral resources identified as occurring and having potential for utilization are: gemstones, oil and gas, mineral water, salines, stone (crushed and broken) and limestone and shells (see Map of Mineral Resources). Of these, gemstones and oil and gas are identified as small resources or resources usable only at a high price. Mineral water, salines and crushed stone are classified as significant resources being used. Limestone and shells similarly classified, are projected to be exhausted by 1995. No geothermal resources have been identified in San Mateo County.

2. Value of Mineral Resources

Mineral resources have beneficial uses as materials and as energy sources. Most mineral products have been used locally, fulfilling a need for low cost construction materials and a supply of energy. Generally, they do not have any intrinsic environmental value, however, the economic benefits are significant. Data indicates that with the urbanization of the Bay Area, which received its greatest impetus in the early 1940s, the dollar volume of Bay Area mineral production has doubled every decade. While part of this increase is attributable to inflation, most is a result of greater local requirements for the growing population, as well as increased per capita mineral requirements. Table 3.2 indicates the utilization of various mineral resources in the Bay Area. By 1970 the total value of mineral products extracted in the Bay Area exceeded two billion dollars and, in the early 1970s, annually exceeded 100 million dollars.[1]

B. DESCRIPTION OF USABLE MINERAL RESOURCES

The following is a description of the type, location, extent and quality of those mineral resources identified as having potential for utilization within San Mateo County.

1. Gemstones

a. Inventory of Resource

Semiprecious stones found in the Bay Area include nephrite, jade, petrified bone, opal and varieties of quartz. At Pescadero Beach,

TABLE 3.1

MINERAL RESOURCES OCCURRING IN SAN MATEO COUNTY
1975

MINERAL RESOURCE	OCCURRENCE, NOT LIKELY TO BE USED	SMALL RESOURCE, OR USABLE ONLY AT A HIGH PRICE	SIGNIFICANT RESOURCE BEING USED	SIGNIFICANT RESOURCE BEING USED, BUT LIKELY TO BE EXHAUSTED, SERIOUSLY DEPLETED, OR UNECONOMIC IN 20 YEARS
Chromite	X			
Clay	X			
Expansible Shale	X			
Gemstones		X		
Limestone and Shells				X
Mercury	X			
Mineral Water			X	
Oil and Gas		X		
Salines			X	
Sand and Gravel	X			
Sands, Specialty	X			
Stone, Crushed and Broken			X	
Stone, Dimension	X			

Source: Edgar H. Bailey and Deborah R. Harden, Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. (Washington: United States Department of Interior Geological Survey, Open-File Report 75-303, 1975), p. 5.

SAN MATEO COUNTY GENERAL PLAN

MINERAL RESOURCES

DEPOSITS
- CLAY
- GEMSTONE
- LIMESTONE
- LIMESTONE AREA
- SHELL AREA
- MERCURY
- SIGNIFICANT STONE (MRZ-2)

QUARRIES (ACTIVE)
- CRUSHED OR BROKEN STONE

OIL FIELDS & BASINS
- FIELDS
- OFFSHORE BASINS
- SALINIAN PROVINCE BOUNDARY

SALT EVAPORATING PONDS
- SALINES

PROCESSING PLANTS
- CEMENT
- MAGNESIUM COMPOUNDS

SPRINGS
- MINERAL WATER

MINERAL RESOURCE AREAS
- S SIGNIFICANT MINERAL RESOURCE AREA

0 4000 8000 16000 32,000 FEET

99 320 ac

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

SANTA CRUZ BASIN

SALINIAN PROVINCE BOUNDARY

SANTA CRUZ BASIN

SALINIAN PROVINCE BOUNDARY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

SAN FRANCISCO BAY

BRISBANE

SIERRA POINT

POINT SAN BRUNO

MUSSEL ROCK

MORI POINT

POINT SAN PEDRO

MONTARA POINT

PILLAR POINT

HILLSBOROUGH

REDWOOD CITY

MENLO PARK

PORTOLA VALLEY

MIRAMONTES RANCH

SEAL ROCK

GREGORIO RANCHO

PESCADERO POINT

BOLSA POINT

PIGEON POINT

FRANKLIN POINT

AÑO NUEVO POINT

TABLE 3.2

UTILIZATION OF MINERAL RESOURCES IN THE BAY AREA
1973

MINERAL RESOURCE	CUMULATIVE DOLLAR VALUE TO 1973 (Approximate)	TOTAL DOLLAR VALUE RECENT YEAR (Approximate)
Asbestos	600,000	0
Chromite	520,000	0
Clay	19,000,000	1,000,000
Coal	16,000,000	0
Copper	60,000	0
Diatomite	1,000,000	200,000
Expansible Shale	40,000,000	400,000
Gemstones	11,000	0
Geothermal Resources	5,000,000	1,500,000
Limestone and Shells	500,000,000	30,000,000
Magnesite	10,000,000	0
Manganese	620,000	0
Mercury	110,000,000	3,200,000
Mineral Water	5,000,000	0
Peat	1,000,000	100,000
Pumice	1,200,000	4,000
Pyrite	2,000,000	0
Salines	290,000,000	16,000,000
Sand and Gravel	370,000,000	22,500,000
Sand, Specialty	200,000	53,000
Silver and Gold	1,600,000	0
Stone, Crushed and Broken	273,000,000	18,700,000
Stone, Dimension	4,600,000	45,000
Stone, Ornamental	150,000	(?)
Oil and Gas	420,000,000	26,500,000
Sulfur, Byproduct	25,000,000	2,500,000

Source: Edgar H. Bailey and Deborah R. Harden, Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. (Washington: United States Department of the Interior Geological Survey, Open-File Report 75-303, 1975), p. 6.

chalcedony and agate pebbles are abundant. Occasionally, hollow chalcedony pebbles containing liquid, called hydrolites, are found. Petrified whalebone occurs in sedimentary rocks along beaches or tidal areas and has been identified at Ano Nuevo Beach. In addition, jasper has been found at Pigeon Point beaches.

b. Utilization of Resource

The total value of commercial production to date of gemstones in San Mateo County, as reported in 1975, was $1,585.[2] Most of the commercial production was chalcedony and agate from Pescadero Beach. Generally, gemstones are not mined commercially, but are avidly sought by amateur mineral collectors and rock polishers. While gemstones do not constitute a significant economic resource, they do provide recreation and educational opportunities for many people.

2. Oil and Gas

a. Inventory of Resource

(1) Offshore

The presence of oil was noted in the County as early as 1865.[3] In San Mateo County, oil deposits occur exclusively in an underground deposit known as the Salinian Province. Within the Salinian Province there are two basins: the Bodega Basin and the Outer Santa Cruz Basin. The Bodega Basin (180 km long and 25 km wide) runs offshore from Half Moon Bay north to Sonoma County and is bounded on the eastern edge by the San Andreas Fault. The Outer Santa Cruz Basin (100 km long by 25 km wide) is located generally northwest off the Santa Cruz and San Mateo County coasts.

The United States Geological Survey estimates the most probable amount of undiscovered recoverable oil and gas resources in the Santa Cruz Basin to be 119 million barrels of oil and 119 billion cubic feet of gas and in the Bodega Basin 9 million barrels of oil and 9 billion cubic feet of gas.[4] This is high enough to attract oil companies who foresee profitable operations if the reserves are proven. Both United States Geological Survey engineers and oil company engineers consider this a significant possible resource.

(2) Onshore

Oil and gas onshore occurs primarily in three underground fields: the Half Moon Bay Field, the La Honda Field and the Oil Creek Field. The State Division of Oil and Gas estimates that the unrecovered reserves in these three fields totals 119,000 barrels of oil and 70,000 cubic feet of gas.

b. Utilization of Resource

(1) Offshore

There are no functioning wells off the San Mateo County coast. In 1976, the Federal government leased some lands off the San Mateo coast (Ano Nuevo area) for oil and gas development. Subsequently two wells were drilled, however, the high cost to develop the wells precluded more development. To date, there has not been any utilization of offshore oil off the County coastline.

(2) Onshore

The first commercial production of onshore oil in the County was in 1886 in the Half Moon Bay area.[5] Subsequently, oil has been produced in the three onshore fields. The Map of Mineral Resources illustrates the location of these three oil fields. All three fields are small, with cumulative production by December 1983 of approximately 1.5 million barrels. In addition, small quantities of gas have been recovered along with the oil.[6] Total oil and gas production is illustrated in Table 3.3. Over the years, many oil wells have been developed and subsequently abandoned. Generally, the wells are single or clustered in groups of up to three or four and oil produced is trucked from onsite temporary oil storage tanks.

Exploration for new wells is continuing but not at the rate now occurring in more productive areas in California. The main portion of the oil extraction and exploration activity is concentrated in the three oil and gas fields.

3. Mineral Water

a. Inventory of Resource

The three mineral springs identified in San Mateo County are located in the rural area. Table 3.4 indicates their location and use.

b. Utilization of Resource

Records for the commercial production of mineral water between 1894 and 1946 indicate that there was no commercial production of mineral water in the County in this time frame.[7] Table 3.4 indicates that as of 1968, only one of the mineral springs was being used for domestic and stock purposes. Most springs are left unimproved.

TABLE 3.3

OIL AND GAS PRODUCTION AND RESERVES
1983

	NUMBER OF WELLS		ESTIMATED RESERVES		ACTUAL 1983 PRODUCTION		CUMULATIVE PRODUCTION	
FIELD	PRODUCING	POTENTIAL	OIL (Mbbl)	GAS (MMcf)	OIL (bbl)	GAS (Mcf)	OIL (Mbbl)	GAS (MMcf)
Half Moon Bay	3	7	8	5	421	--	45	20
La Honda	16	19	89	22	15,131	2,907	1,292	150
Oil Creek	5	8	22	8	5,918	350	181	76
TOTAL	24	34	119	35	21,470	3,257	1,518	246

Source: California Department of Conservation, Division of Oil and Gas, 69th Annual Report of the State Oil and Gas Supervisor, 1984.

TABLE 3.4

MINERAL SPRINGS OF SAN MATEO COUNTY

NAME OF SPRING	LOCATION	USE	REMARKS
1. Summit gallons/minute	Near summit of King Mountain Road, 3 miles west of Woodside	None (1968)	Elevation 1,960 ft. Flow 100
2. ____ chloride gallons/minute	3 miles southwest of Woodside	None (1968)	Calcium, sodium, bicarbonate, Flow 100 Elevation 1,900 ft.
3. John Machado Sodium	1 mile north of San Gregorio	Domestic and Stock (1968)	2 gallons/minute. chloride bicarbonate

Source: Edgar H. Bailey and Deborah R. Harden, Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. (Washington: United States Department of the Interior Geological Survey, Open-File Report 75-303, 1975), p. 97c.

4. Salines

a. Inventory of Resource

The saline waters of San Francisco's Bay are primarily ocean tides that enter the Golden Gate. This water and four key factors favor the manufacture of solar salt in the Bay Area: (1) the net evaporation rate during the summer and fall is high due to a combination of heat, wind, and low rainfall; (2) a large acreage of relatively low cost (formerly) marshland lies at or close to sea level where the need for pumping is minimized; (3) the marshlands are relatively impervious which prevents leakage, and (4) salt ponds and processing plants are located in proximity to a large marketing area with a large population and diverse industries.

b. Utilization of Resource

Salt has been recovered from the waters of the San Francisco Bay by solar evaporation since the 1850s.[8] Salt ponds are an economically important and productive use of the waters of the Bay. The salt is an important raw material for the Bay Area chemical industry and it is also used for domestic purposes. In addition to salt, magnesium compounds, bromine, gypsum and other minerals have been extracted from Bay water.

Production began in large salt-evaporating ponds in San Mateo County in 1901. Today, the main producer of saline products in the Bay Area is the Leslie Salt Company which operates five networks of evaporating ponds in the Bay Area, with a total of nearly 35,000 acres of evaporating surface, as well as a refinery in Newark.[9] According to the County Assessor's records, at present there are no salt production activities in unincorporated areas of the County.

5. Stone, Crushed and Broken

a. Inventory of Resource

Rock suitable for crushed and broken stone constitutes a major resource in the Bay Area. Since stone is quarried from ordinary rocks, the source material is numerous, widespread, and has a wide range of geologic ages and histories.

To date, the State Geologist has not prepared finalized maps showing the classification of various mineral areas for the County as mandated by the Surface Mining and Reclamation Act. However, a preliminary map showing Aggregate Resource Classification Zones indicates a number of significant stone deposits (MRZ-2) in the County.[10] For areas designated MRZ-2, information indicates that there is a high likelihood that significant mineral deposits are present. MRZ-2 areas are shown on the Mineral Resources Map.

Major portions of two of these identified significant stone deposits lie within unincorporated areas. An immense deposit of sandstone lies immediately south of the City of San Francisco on San Bruno Mountain. A second significant stone deposit is located approximately 2.5 miles northeast of Half Moon Bay and about one mile north of State Highway 92. This area is underlain by rocks that range from granite to quartz diorite.

b. Utilization of Resource

Stone fragments with no specified shape are referred to as crushed and broken stone. This resource is used mainly as aggregate, railroad ballast, riprap, furnace flux, refractory stone and agricultural stone. The greatest use is in highway and railroad construction. Between 1894 and 1971, the production of crushed and broken stone in the County is conservatively estimated to have been over 22,000,000 short tons with a value of over $30,000,000.[11]

At present, there are three active quarries in unincorporated areas. These include the: (1) Langley Hill Quarry located in the Santa Cruz Mountains, (2) Guadalupe Valley Quarry (Brisbane Quarry) located on San Bruno Mountain, and (3) Pilarcitos Quarry located in the Coastal Zone. Operative quarries are shown on the Mineral Resources Map and described in the following section.

(1) Langley Hill Quarry

The Langley Hill Quarry is located one mile west of Skyline Boulevard and five miles south of La Honda Road. The quarry operation, located on approximately 110 acres of leased land, has been in production for nearly fifty years. It supplies crushed rock for such items as drain rock, riprap, and road base rock. The output of the quarry is small, with an annual output of approximately 9,000 tons. By 1973, it was estimated that the quarry had depleted approximately 10% of its available resources.[12]

(2) Guadalupe Valley Quarry (Brisbane Quarry)

The Guadalupe Valley Quarry is located on the north slope of the main ridge of San Bruno Mountain and is approximately 3/4 of a mile west of the City of Brisbane. The site is bounded on the west, south and east sides by San Bruno Mountain County Park and on the north by the Crocker Industrial Park. The active quarry comprises approximately 145 acres, of which approximately 85 acres are devoted to the actual quarry operation. The existing floor of the quarry, used for rock processing and shipping operations, measures about 17 acres.

As of December 1981, it was estimated that extracting the remaining 20,800,000 tons of rock quantity would take 33 years. However, at a higher demand it was estimated that rock

quantities could be extracted in as little as 23 years.[13] All material from the site is being marketed. High quality graywacke sandstone is being processed and sold in various base rock and construction rock classifications; lower quality shale, slate and weathered rock is being sold as fill.

(3) Pilarcitos Quarry

The Pilarcitos Quarry is located approximately 2-1/2 miles northeast of the City of Half Moon Bay and about one mile north of Highway 92. The quarry, located on approximately 600 acres, has been in continuous operation since 1960, supplying granite stone for local construction projects. Available information indicates production in excess of 350,000 tons per year.[14] It has been projected that the quarry could continue to operate for an additional 40 to 65 years, subject to changing market conditions.[15]

6. Limestone and Shells

a. Inventory of Resource

As of 1971, 22 significant limestone and shell deposits have been identified in the San Francisco area. Of these, 8 are identified as occurring, at least in part, in San Mateo County, and are listed in Table 3.5. Both the Cahill Ridge and Skyline deposits are located in unincorporated areas near Skyline Boulevard and Crystal Springs Reservoir.

b. Utilization of Resource

Limestone and shells are used primarily for making cement, although they are also used for soil conditioner and livestock feed. While raw resources available in the Bay Area are sufficient to supply local needs for several decades, processing plant capacity as of 1975 was inadequate to meet near-future requirements.[16] Most deposits are too small and dispersed to justify the development of new plants. Although limestone has been quarried in many places in the Bay Area, the Rockaway Quarry in the City of Pacifica is the only one still in operation.

The dredging of oyster shells and mud from the Bay for cement manufacture ceased in late 1970, except for minor amounts used for livestock feed and soil conditioning. At present, there are no dredging operations within unincorporated areas. The dredging of shells from the Bay, now largely discontinued, creates no visual scars, although ecological effects are uncertain.

The encroachment of urbanization on present and potential limestone quarries tends to eliminate them as usable sources because of both economic and environmental factors. In addition, many deposits in the County lie within the Crystal Spring Reservoir watershed lands, where quarrying is restricted.

TABLE 3.5

LIMESTONE AND SHELL DEPOSITS IN SAN MATEO COUNTY

DEPOSIT NAME	LOCATION	DESCRIPTION AND DEVELOPMENT	[1]RESOURCE ESTIMATES (Tons)
San Francisco Bay shell deposits	San Francisco Bay	Shell deposits from young upper bay mud unit; shells and mud dredged for cement 1925-1970; surficial shells dredged and washed for cement, lime, livestock, feed and soil conditioner 1924-present; more than 30,000,000 tons of shells and associated mud produced.	Uncertain; probably 50,000,000+
Rockaway	Pacifica	Franciscan limestone and chert used for crushed rock purposes 1910-1919, 1942-present; 3,000,000 tons produced.	3,000,000 (1,000,000 to planned base level)
Picardo Ranch	Pacifica	Franciscan limestone and chert; minor production for road construction.	2,000,000
San Mateo Creek	Hillsborough	Franciscan limestone and chert; undeveloped.	1,000,000+
Spring Valley Ridge	Hillsborough	Franciscan limestone and chert; minor production for road construction.	4,000,000
Middle Fork	Hillsborough	Franciscan limestone and chert; undeveloped.	8,000,000
Cahill Ridge	Unincorporated	Franciscan limestone and chert; undeveloped and poorly exposed.	5,000,000+ (may be much larger)
Skyline	Unincorporated	Franciscan limestone and chert; about 3,000,000 tons used for aggregate and road construction, 1945-1962.	2,000,000+(?)

See next page for notes and sources.

Notes: 1. Includes deposits that: (1) were recently active (1967-1971); (2) have cumulative production in excess of 1,000,000 tons; or (3) contain estimated resources of at least 1,000,000 tons usable raw materials.

Source: Edgar H. Bailey and Deborah R. Harden, Ed., Basic Data Source For a Report on Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. (Washington: United States Department of the Interior Geological Survey, Open-File Report 75-303, 1975.)

E. W. Hart, "Limestone and Shells," Table 7, pp. 70-71.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING MINERAL RESOURCES

Because many mineral resources are considered to be of greater than local significance, they are regulated by a large number of Federal and State laws in addition to local policies and regulations. Table 3.6 summarizes the major Federal and State agencies that regulate mineral resources. The County policies and ordinances which protect and govern the use of mineral resources are described below:

A. COUNTY GENERAL PLAN AND AREA PLAN POLICIES

1. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan contains definitions, goals and objectives and policies for mineral resource management. The Element contains general policies which: (1) seek to identify and protect significant existing and potential mineral resource areas from encroachment by urban development; (2) plan for the rehabilitation and reuse of mineral extraction areas; (3) give general guidance for providing consistent extractive and land use controls which would minimize conflicts between mineral extraction activities and urbanization; and (4) seek to minimize the impact of mineral extraction activities on the surrounding natural environment.

2. Local Coastal Plan

The Energy Development Component of the Local Coastal Plan contains policies to regulate energy development in the Coastal Zone. For onshore oil and gas wells, policies provide locational criteria which establish where prospect drilling and production of oil and gas wells may occur and performance standards for protecting land and water resources, adjacent land uses, scenic quality, air quality and limiting noise.

Other policies relative to offshore oil are primarily concerned with regulating onshore facilities used to service offshore oil development. The LCP prohibits both onshore facilities for offshore oil and pipelines for the transmission of offshore oil and gas from locating in the Coastal Zone. A number of policies relative to onshore facilities for offshore oil (Policies 4.23(b) - Permit Requirement, 4.26 - Designation of Facility Sites and Policy 4.27 - Development Standards) are left open-ended, waiting for the completion of an Outer Continental Shelf (OCS) Siting Study, whose major focus is the review of siting options for onshore facilities for offshore oil. These LCP policies call for studying areas proposed for the siting of onshore facilities for off-shore oil and developing standards and specific criteria to protect coastal resources.

TABLE 3.6

AGENCIES MANAGING MINERAL RESOURCES

AGENCY	SUMMARY OF PROGRAMS AND ACTIVITIES
Federal	
U. S. Bureau of Mines	Prepares bulletins, reports, and surveys of the mining industry.
U.S. Geological Survey	Prepares publications, surveys and circulars on geological concerns. Responsible for approval and supervision of oil and gas exploration and development on the Outer Continental Shelf after the leases are in production. It also establishes maximum rate of production of wells.
U.S. Department of the Interior	Responsible for administering the mineral development of Outer Continental Shelf. The Outer Continental Shelf (OCS) Lands Act authorizes the Secretary of the Interior to lease areas extending beyond three miles from the coastline. The Secretary delegates this responsibility to two agencies within the Department of Interior: the Minerals Management Service (MMS) and the U.S. Geological Survey (USGS). MMS acts as leasing agent and property manager; USGS performs geologic studies and regulates the safety and performance of drilling operations.
Minerals Management Service	An agency of the Department of Interior, is responsible for implementation of the leasing objectives of the Outer Continental Shelf Lands Act. MMS coordinates Federal and State agencies.
U.S. Coast Guard	Responsible for regulation and the safety of offshore structures as it pertains to navigation.
Army Corps of Engineers	Regulates navigation and installation of facilities in the waters of the United States.

TABLE 3.6 (continued)

AGENCIES MANAGING MINERAL RESOURCES

AGENCY	SUMMARY OF PROGRAMS AND ACTIVITIES
State	
State Lands Commission	Has exclusive jurisdiction over all oil and gas development in the tidal and submerged lands of the State extending from the mean high tide line 3 nautical miles seaward to the limit of the State jurisdiction except for defense and international relations purposes.
State Coastal Commission	Reviews OCS exploration and development plans for consistency with the California Coastal Management Program approved under the Federal Coastal Zone Management Act.
California Division of Oil and Gas (State Department of Conservation)	Reports and maps oil fields and individual wells. It is the principal State agency responsible for regulating the drilling, operation, maintenance and abandonment of all oil, gas and geothermal wells in the State (onshore). The Division of Oil and Gas is responsible for the protection of below-ground resources, such as ensuring there is no leakage to aquifers. Section 30418 of the Act allows for this authority; "neither the (Coastal Commission, Regional (Coastal) Commission, local government, port governing body, or special district shall establish or impose such regulatory controls that duplicate or exceed controls established by the Division of oil and Gas pursuant to specific statutory requirements or authorization."
State Water Resources Control Board and the Regional Water Quality Control Board	Reviews operations that involve surface discharge of wastewater, including oil laden brines.

TABLE 3.6 (continued)

AGENCIES MANAGING MINERAL RESOURCES

AGENCY	SUMMARY OF PROGRAMS AND ACTIVITIES
State Air Resources Board and Bay Area Air Quality Management District	Responsible for establishment of ambient air quality and emission standards and air pollution control programs. "Permits to construct" are required for both exploration and production wells.
Governor's Office	Provides information to the Department of Interior as provided for in the consultation provisions of the Outer Continental Shelf (OCS) Lands Act.
California Division of Mines and Geology	Collects, develops and disseminates information on the geology and mineral resources of the State; inventories the mineral resources of the State; makes Countywide surveys of mineral resource potential; publishes annual mineral production statistics by counties and prepares annual reviews of the mineral industry; encourages the application of geologic information in making land use decisions and in management of the earth's terrain; and advises administrative branches of government on geologic and mineral problems. It is the State Geologist who is required by the Surface Mining and Reclamation Act to classify mineral areas of the State. Once completed, the State Geologist's report and maps are forwarded to the County for inclusion in the General Plan.
California Public Utilities Commission	Regulates rates and service of more than 1,500 privately owned utilities and transportation companies, and thereby influences decisions on the type and quantity of mineral energy which is converted to electrical power for the entire State.

B. COUNTY ORDINANCES

1. Surface Mining and Reclamation Ordinance (1982)

The Surface Mining and Reclamation Ordinance regulates all activities associated with the removal of soil, rock or mineral deposits and details the procedures and information required to obtain a surface mining permit. Many provisions of a previous Quarry Ordinance have been incorporated and expanded to include many environmental concerns previously unaddressed.

A major feature of the Ordinance is the requirement for a Reclamation Plan. Procedures for the intermittent closure, reopening, suspension and revocation of facilities are also included. Many of the Ordinance requirements are designed to prevent erosion and the blockage of siltation of natural drainage courses as well as to mitigate other negative environmental effects on water quality, fish and wildlife habitats and visual quality. Because of zoning restrictions limiting the location of quarries, the application of this Ordinance is presently restricted to the Resource Management (RM), Resource Management/Coastal Zone (RM/CZ), Timberland Preserve (TPZ), Timberland Preserve/Coastal Zone (TPZ/CZ), and Heavy Industrial (M-2) Zoning Districts.

2. Oil and Gas Well Regulations (1980)

Oil and Gas Well Regulations (Ordinance #02676) govern onshore petroleum facilities and operations, including but not limited to exploration, production, removal, storage and transportation of oil and gas and other incidental operations. This Ordinance supplements State regulations pertaining to oil and gas operations.

Oil and gas wells are also regulated by Chapter 6 of the County Ordinance Code Sections 7710 et seq. Oil and gas well drilling is permitted in the RM (Resource Management) zone, the RM/CZ (Resource Management/Coastal) zone, the M-2 (Heavy Industrial) zone, the TPZ (Timberland Preserve) zone, and the TPZ/CZ (Timberland Preserve/Coastal) zone. Oil and gas wells are prohibited on prime agricultural soils and in sensitive habitats. The Ordinance also controls environmental protection, primarily water quality. The Ordinance prohibits actions that would permit saltwater or water containing any other mineral or material to cause damage to soil, plant life, surface or subsurface water supply or allow its transference into any freshwater lagoon, river or stream. The Ordinance also regulates earth and storage reservoirs used for storing petroleum or petroleum by-products to insure that there is no contamination of water supply. Permits and inspections are required and when necessary, can be conditioned to promote aesthetic treatment of energy facilities by requiring setbacks from roadways, painting and landscaping.

C. COUNTY POLICY ON OFFSHORE OIL AND GAS

The Board of Supervisors has consistently cited environmental and economic reasons against any development of the Outer Continental Shelf (OCS) off its Coast. Development of the Santa Cruz Basin could have adverse impacts on the County's biological habitats, sports and commercial fishing activities, air quality, recreational resources, agricultural and visitor-serving land uses and economies, and visual resources. Not only are the sensitive environments along the San Mateo Coast important in their own right, but the preservation of the total environment is important to maintain such major local economies as the tourism and commercial fishing industries. It is the County's position that the risk to these economies is far too great, particularly in light of the relatively low resource potential of the Santa Cruz Basin, the high cost to develop the Outer Continental Shelf and the questionable economic values. The estimates of recoverable oil are not in the County's opinion worth the potential hazards.

MINERAL RESOURCES ISSUES

I. IMPORTANCE OF MINERAL RESOURCES

There is a continuing and expanding demand for mineral resources in the San Francisco Bay Region. Significant amounts of mineral commodities are needed for construction and industrial materials and for energy. As a result of the demand, there are economic benefits from recovering mineral resources. The value of mineral products extracted in the Bay Area exceeded two billion dollars by 1970 and subsequently has exceeded 100 million dollars annually.[17] Another advantage is the creation of jobs and more reasonably priced materials to local industry. Without localized sources, it is estimated that transporting sand, gravel or rock just ten to 15 miles might double their costs, and bringing them from just beyond the periphery of the Bay region into San Francisco could increase their cost three times or more.[18]

II. OPPORTUNITIES AND CONSTRAINTS ON UTILIZATION

While locally derived mineral resources provide reasonably priced materials to local industries, the high yield from mineral extraction is a one time result. Mineral resources are nonrenewable, in contrast to water, timber or agricultural resources which, with proper management, can give continuing yields. The extraction of most mineral products is usually accompanied by undesirable environmental impacts (see Table 3.7). Because of the negative environmental impacts mineral extraction has on surrounding lands, there is a need to consider the balance between economic and environmental factors. It is only after exploring major impacts of mineral extraction activities that the County can decide the type and intensity of mineral extraction activities that should be permitted in a given area.

The following discussion focuses on opportunities and constraints to: (1) mitigate the environmental impacts of using mineral resources; and (2) protect mineral resource sites from incompatible land uses.

A. ENVIRONMENTAL IMPACTS

Potential environmental problems differ according to the commodity involved, the site of extraction, the method of extraction, etc. Table 3.7 indicates the possible environmental disturbances to the land, water and air that might accompany the use of a particular mineral resource. Below is a synopsis of environmental impacts associated with the use of oil and gas, mineral water, crushed and broken stone, and limestone and shells.

TABLE 3.7

POTENTIAL ENVIRONMENTAL EFFECTS OF UTILIZING MINERAL RESOURCES IDENTIFIED AS OCCURRING IN SAN MATEO COUNTY

	POTENTIAL ENVIRONMENTAL EFFECTS			
COMMODITY	SURFACE DISTURBANCE	AIR POLLUTION	WATER POLLUTION	NOISE POLLUTION
Chromite	Yes	---	Yes	Yes
Clay	Yes	---	Yes	---
Expansible Shale	Yes	Yes	---	Yes
Gemstones	---	---	---	---
Limestone and Shells	Yes	Yes	---	Yes
Mercury	Yes	Yes	Yes	Yes
Mineral Water	---	---	---	---
Oil and Gas	Yes	Yes	Yes	---
Salines	Yes	---	---	---
Sand and Gravel	Yes	Yes	---	Yes
Sands, Specialty	Yes	---	---	---
Stone, Crushed and Broken	Yes	Yes	---	Yes
Stone, Dimension	Yes	---	---	Yes

Source: Edgar H. Bailey and Deborah R. Harden, Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. (Washington: United States Department of the Interior Geological Survey, Open-File Report 75-303, 1975), p. 5.

1. Oil and Gas

a. Onshore

Potential environmental effects from the onshore extraction of oil and gas include surface disturbance, water pollution, and air pollution. The drilling of any kind of deep well not only disrupts the surface of a site but also creates a potential for disruption or contamination of aquifers. These operations also require access roads, drill rigs, ponds for retention of drilling fluids, storage tanks and other structures. If the well is successful, other structures such as a pumping unit, pipelines and tanks are also necessary. The development of pipelines for the transmission of oil and gas causes surface disturbance and has visual impacts. Also, there is the risk of spills when transmitting oil and gas through pipelines, particularly in areas with geologic hazards.

b. Offshore

The potential impacts of developing offshore oil and gas are complex, far-reaching, and could alter the character of the coastal environment for a long period of time. Adverse impacts on the commercial fishing industry, coastal tourism, air and water quality, and sensitive biological species and habitats could occur. Oil spills can occur during exploration to determine the potential of oil-bearing formations and there is even a remote possibility of a blowout occurring in this phase. Cleanup measures can take weeks or even months. As an example, a blowout in the Dos Cuadras Offshore Field in 1969 resulted in approximately 150,000 barrels of oil lost into the Santa Barbara Channel over a ten day period. The oil, carried at random with the wind and current for miles along the shore, killed many seabirds and marine animals and cleanup was nearly impossible. Wave and wind conditions create severe limitations which often interfere with cleanup effectiveness.

During the transfer of oil to barges, there is also a potential for a spill. Additionally, during normal drilling operations, various waste materials (spent drilling muds, rock, diesel fuel, metallic compounds, and other chemicals) are discharged into the ocean. The cumulative impacts of these toxic discharges on the ocean environment including their effect on fisheries and marine mammals is not fully understood.

2. Mineral Water

With the exception of pipes to transport the water short distances, mineral springs have not been improved with buildings or machinery. Generally, environmental consequences from developing a site with buildings and machinery or installing major pipelines to divert and tap the water involve the potential of decreasing the water available to downstream agricultural users and the disruption of vegetative resources.

3. Stone, Crushed and Broken

Removal of crushed and broken stone is often accompanied by dirt, noise, earth vibrations, unsightly pits or contamination of water or air. Because crushed rock, suitable for commercial use is generally found on steeply sloped hillsides, quarries are dug literally into the sides of hills leaving unsightly scars on the landscape. While quarries can be partially screened from view through berms and landscaping, there is really no way to completely hide a rock quarry. Besides visual impacts, other environmental damage results from processing these bulk commodities. Settling ponds, designed to avoid clogging of groundwater intake areas, are necessary to remove sediments from discharge water; and rock crushers generate dust. Considerable noise also accompanies these operations, and the transport of these products generates heavy truck traffic. The unsightly scars on the landscape can remain long after quarrying has ceased, although reclamation of a quarry site, including landfill and revegetation can minimize these negative impacts.

4. Limestone and Shells

Limestone is extracted in the Bay Area by surface quarrying. The environmental impacts of quarrying for limestone are similar to those previously discussed for quarrying for crushed and broken stone.

The dredging of shells from the Bay, now largely discontinued, creates no visible scars although there are ecological effects. Shells are suction-dredged from the Bay bottom and washed prior to transfer to Petaluma for drying, crushing and sizing. The dredging and washing operation disturbs the ecology by causing siltation and turbidity. When the shells are used to make cement, a large amount of dust is created, resulting in air pollution.

B. LAND USE CONFLICTS

In addition to the environmental consequences of the mineral extraction operation itself, land use conflicts can make mineral resources unavailable or render their use undesirable. Major land use conflicts include: (1) environmental impacts on surrounding lands, (2) competing land uses and (3) the unsuitability of the land for mineral production.

1. Environmental Impacts of Mineral Extraction on Surrounding Lands

Surrounding land uses can be negatively affected by mineral extraction operations. In general, the removal of many mineral resources is accompanied by noise, dust, earth vibrations from hauling and blasting, visual blight, etc., which negatively impacts surrounding land uses. In these cases, surrounding land uses may need additional protection from mineral extraction activities, including requirements for buffer lands.

2. Competing Land Uses

The pressure to develop lands for a wide variety of uses conflicts with the potential recovery of mineral resources. Often, lands containing mineral resources can also accommodate residential, commercial, industrial and recreational uses. It is necessary to weigh the benefits of protecting sites for mineral extraction against the benefits of developing these sites for alternative land uses.

3. Lands Unsuitable for Mineral Production

Some lands may not be suitable for mineral extraction because they contain irreplaceable resources that will be damaged or destroyed. An example of lands that may be inappropriate for mineral extraction are those that contain sensitive habitats such as marshlands and watershed lands. Land use restrictions may also be necessary in other sensitive areas to protect valuable environmental resources.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING MINERAL RESOURCES

Generally, the adverse environmental impacts unique to certain mineral extraction activities are regulated through County ordinances. This includes the regulation of onshore oil development, surface mining (quarrying for crushed and broken stone or limestone) and the dredging for shells. In other cases, such as offshore oil development, regulation occurs through the Local Coastal Program. The most common protection tools used involve land use designations and zoning regulations. These ensure that significant mineral resource sites as well as sensitive lands unsuitable for mineral extraction can be protected from preclusive or incompatible land uses.

A. REGULATING OIL AND GAS EXTRACTION AND SURFACE MINING

1. Onshore Oil and Gas Development

The County's Oil and Gas Well Regulations provide measures adequate to ensure the protection of above-ground resources. Oil and gas well policies contained in the LCP reiterate regulations contained in the Ordinance Code.

2. Offshore Oil and Gas Development

County control over activity related to offshore oil development in State and Federal waters is limited to regulating onshore facilities used for drilling, processing, storage and the shipment of oil and gas, and enforcement of air quality standards for emissions from platforms and onshore facilities. Existing LCP policies prohibit onshore facilities for offshore oil and gas, including pipelines. This approach is consistent with the State Coastal Commission's present position that offshore oil and gas leasing should not occur in Northern California.

Other LCP policies pertaining to the siting of onshore facilities for offshore oil are left open ended awaiting the conclusion of a siting study. Completion of this study and incorporation of its findings into the LCP may be important if the County is given limited time to respond to changing State or Federal policies for offshore oil and gas development or specific leasing or development proposals. If the County wishes to help shape State and Federal offshore oil policies, it is important to continue to provide input to State and Federal agencies regarding the County's position on offshore oil and gas development.

3. Surface Mining and Dredging for Shells

The County's Surface Mining and Reclamation Ordinance regulates the quarrying for crushed and broken stone or limestone and the dredging for shells. In addition to meeting the requirements of State Law as contained in the Surface Mining and Reclamation Act, this Ordinance provides safeguards that adequately mitigate environmental impacts resulting from these mineral extraction activities, including requirements for the reclamation of mined lands once mining has ceased.

B. PROTECTING SIGNIFICANT MINERAL RESOURCE SITES

Existing County policy does not provide protection to significant known mineral resource sites to ensure the mineral resources will be available if needed. The existing zoning designations allow these sites to be developed with land uses other than mineral extraction. Often these permitted land uses are not compatible with mineral extraction, precluding this use in the future.

Until recently, the County had not developed a clear, detailed and comprehensive map identifying significant mineral resource areas in San Mateo County. As a result, the presence of a significant mineral resource may not have been known and considered when preparing land use plans and some uses may have been permitted which were incompatible with future mineral extraction.

C. PROTECTING SENSITIVE HABITATS

The extraction of mineral resources is generally only permitted in the Resource Management (RM and RM/CZ), Timberland Preserve (TPZ and TPZ/CZ) and Heavy Industrial (M-2) Zoning Districts. The RM, RM/CZ, TPZ AND TPZ/CZ district ordinances have extensive performance criteria which protect sensitive habitats from mineral extraction activities. In addition, through the requirement for use permits in these zoning districts, proposed uses are subject to environmental review under the California Environmental Quality Act (CEQA).

D. BUFFERING SURROUNDING USES FROM IMPACTS OF MINERAL EXTRACTION

Mineral extraction activities can have major environmental impacts on surrounding land uses. A shortcoming of existing land use plans is the lack of buffer lands to protect surrounding uses.

E. SUMMARY OF PROBLEMS

1. Known significant mineral resource sites may not be adequately protected from development that would preclude future mineral extraction.

2. Surrounding land uses may not be adequately buffered from mineral extraction activities.

IV. ALTERNATIVES

A. PERIODICALLY UPDATE THE COUNTY INVENTORY AND MAP OF MINERAL RESOURCES

The County may want to periodically update the map identifying significant mineral resource areas. Lands where minerals are currently being extracted and lands classified as Mineral Resource Zone 2 (MRZ-2) by the State Geologist and classified by the State Mining and Geology Board as containing mineral deposits of regional or statewide significance would be likely candidates. This would allow the presence of a significant mineral resource to be considered when processing development applications. Any local classification and mapping of mineral resources should be coordinated with ongoing efforts of the State Geologist and Geology Board.

B. PROTECT KNOWN SIGNIFICANT MINERAL RESOURCE SITES

Once the significant mineral resource sites are identified, the County could take a number of protective actions provided that resources are not located in sites where mineral extraction operations would conflict with existing urban uses or sensitive habitats.[19] The County could protect known significant mineral resource sites by zoning them exclusively for mineral extraction. In this way, all other uses would be prohibited. A major drawback of this approach is mineral extraction may not provide a viable economic use of the land.

Another alternative is to restrict land uses to those inherently compatible with mining. In this way there could be an interim use of the land until needed for mineral extraction. This would assure future availability of the site for resource extraction. Appropriate land uses would be those that require low public or private investment in structures and land improvements such as open space uses.

C. PROVIDE BUFFER ZONES ADJACENT TO MINERAL EXTRACTION OPERATIONS

Mineral extraction activities often negatively impact surrounding lands, indicating a need to provide a buffer to adjacent land uses. Adjacent areas need to be buffered from mineral extraction sites by open space and screening to protect residents from the noise, dust, congestion, etc. common to heavy industrial activity. Uses in this buffer zone area could be limited to those clearly compatible with surrounding development. This is not a problem unique to mineral extraction activities, but also relates to other heavy industrial uses. Requirements for buffer zones could be added to zoning districts which allow mineral extraction (RM, RM/CZ, TPZ, TPZ/CZ and M-2).

D. PROVIDE INPUT ON OFFSHORE OIL DEVELOPMENT

Through the local participating requirements built into the Coastal Act at both the State and national levels, the County has the opportunity to provide input to State and Federal agencies regarding the County's position on offshore oil development. The past availability of planning grants (CEIP Grant and Participation Grant) have enabled the County to actively participate in commenting on offshore oil and gas development to help shape State and Federal offshore oil policies. While funding of similar programs may be greatly limited in the future, it is important to continue to provide input to State and Federal agencies.

MINERAL RESOURCES FOOTNOTES

[1] Edgar H. Bailey and Deborah R. Harden, ed., Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future, 1975, p. 2.

[2] Ibid., Gemstones, by M. C. Stinson, p. 54.

[3] Ibid., Oil and Gas, by C. C. Bishop, p. 105.

[4] Department of the Interior, Final Environmental Impact Statement, Proposed 1981 Outer Continental Shelf Oil and Gas Lease Sale Offshore Central and Northern California, OCS Sale No. 53, September 1980, p. XII.

[5] "Oil and Gas," p. 105.

[6] California Department of Conservation, Division of Oil and Gas, 69th Annual Report of the State Oil and Gas Supervisor, 1984.

[7] "Mineral Resources of the San Francisco Bay Region," Mineral Water, by M. C. Stinson, p. 95.

[8] Ibid., Salt and Other Resources from the Bays, by E. W. Hart, p. 127.

[9] Ibid., p. 131.

[10] Melvin C. Stinson, Michael W. Manson and John J. Plappert, Classification of Aggregate Resource Areas South San Francisco Bay Production-Consumption Region. (California Department of Conservation Division of Mines and Geology, 1983).

[11] "Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future," Crushed and Broken Stone, by C. W. Chesterman, p. 163.

[12] San Mateo County Department of Environmental Management, Environmental Impact Report, Langley Hill Quarry, November 23, 1973, p. 5.

[13] San Mateo County Department of Environmental Management, Reclamation Plan for Quarry Products Incorporated, Guadalupe Valley Quarry, December, 1981, p. 7.

[14] Lone Star Industries, Inc., Letter to San Mateo County Planning Department, December 29, 1976.

[15] San Mateo County Department of Environmental Management, Environmental Impact Report, Pilarcitos Plan #138, Lone Star Industries, Inc., June 18, 1973, Introduction.

[16] "Mineral Resources of the San Francisco Bay Region," Limestone and Shells, by E. W. Hart, pp. 70-71a.

[17] "Mineral Resources of the San Francisco Bay Region," p. 2.

[18] Ibid., p. 9.

[19] San Bruno Mountain - The San Bruno Mountain mineral resource site is located within an urbanized area. As a result of conflicts from the continued urbanization of the San Bruno Mountain Area, the San Mateo County Planning Commission has established a ten-year termination date (December 31, 1991) for the Guadalupe Valley Quarry which is located on San Bruno Mountain.

It was found that surface mining would not be a compatible use with the future planned development of San Bruno Mountain Park and the Northeast Ridge. This latter development includes the planned development of 1,250 housing units across the Guadalupe Valley from the quarry site. There were additional concerns about the continued negative environmental impacts of quarrying on the habitat of the Mission Blue butterfly.

Pilarcitos Quarry - The Pilarcitos Quarry is located in the Resource Management Zone (RM/CZ) which allows quarrying with a use permit and limits land uses to those generally considered compatible with mining (e.g., low density residential, recreational, agricultural, etc.). The Pilarcitos Quarry is located in an area which is nonurbanized. As a result, the quarry is not presently threatened by incompatible land uses resulting from urbanization and the existing zoning designation provides protection from incompatible land uses. It is projected that this quarry will continue to operate for an additional 40 to 65 years, subject to changing market conditions. The continuation of protective zoning may be appropriate to protect this significant mineral resource site.

MINERAL RESOURCES APPENDICES

APPENDIX A - SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX B - TOPICS FOR FUTURE CONSIDERATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

A. In response to a request from the Department of Conservation, State Mining and Geology Board, in a letter dated November 8, 1984, the following additional background data was added to the Mineral Resources Chapter.

1. Value of Mineral Resources

The value of nonfuel mineral production in San Mateo County was $3,283,000 in 1980 and $4,157,000 in 1981. Values for the most recent reporting year, 1982, were withheld for proprietary reasons. Minerals produced in 1982 in the County by order of importance were salt, stone, and sand and gravel. (Source - California Geology article, "1983 Mining Review" by John L. Burnett, Geologist with California Department of Conservation, Division of Mines and Geology, October 1984, p. 216.)

2. Stone, Crushed and Broken

In August, 1984, a report classifying the construction aggregate of the San Francisco Bay Area, Special Report 146, Parts I and II, as prepared by the California Department of Conservation, Division of Mines and Geology, was accepted by the State Mining and Geology Board. This report provides valuable information on factors such as projected regional demand, existing per capita consumption rates, and the major sources of construction aggregate in the South San Francisco Bay Region. This report also provides additional information about the Brisbane (Sector X) and Pilarcitos (Sector HH) quarries and Resource Sector NN which covers the San Bruno Mountain County Park. The current version of this report, as well as the final report, once released, will be available for use by the public at the County's Planning Division offices.

3. California Division of Mines and Geology (State Department of Conservation)

The California Division of Mines and Geology collects, develops and disseminates information on the geology and mineral resources of the State; inventories the mineral resources of the State; makes County-wide surveys of mineral resource potential; publishes annual mineral production statistics by counties and prepares annual reviews of the

mineral industry; encourages the application of geologic information in making land use decisions and in management of the earth's terrain; and advises administrative branches of government on geologic and mineral problems. It is the State Geologist who is required by the Surface Mining and Reclamation Act to classify mineral areas of the State. Once a classification report is completed, the reports are submitted to the State Mining and Geology Board for their review and approval. Upon acceptance of a classification report to the Board, the report is transmitted to the appropriate lead agencies for inclusion in the General Plan.

B. As authorized by the Board of Supervisors on October 6, 1986, the following background data is amended:

1. The last sentence of paragraph 2 on page 3.2 is deleted because the classification process has been completed.

2. The second paragraph of Section 5.a on pages 3.11-3.12 is rewritten, as follows, to reflect recent action by the State Division of Mines and Geology:

   The State Geologist has finalized maps showing the classification of various mineral areas for the County as mandated by the Surface Mining and Reclamation Act.[10] The County's Mineral Resource Map identifies areas, countywide, where there is a high likelihood that significant mineral resources are present. Two significant stone deposits are located in unincorporated areas within the County. An immense deposit of sandstone lies immediately south of the City of San Francisco on San Bruno Mountain. A second significant stone deposit is located approximately 2.5 miles northeast of Half Moon Bay and about 1 mile north of State Highway 92. This area is underlain by rocks that range from granite to quartz diorite.

3. Footnote 19 is deleted from pages 3.28 and 3.31 as it is overly specific and it contains some inaccuracies.

APPENDIX B

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Mineral Resources Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

1. Consider amending the oil and gas well regulations as follows:

    a. Require removal of sumps after drilling phase.

    b. Reduce unnecessary costs.

    c. Examine the need to require a licensed surveyor in addition to a geotechnical engineer.

    d. Allow testing in an area for six months.

    e. Allow testing following drilling before requiring a production permit.

    f. Simplify processing. Develop a matrix of permits so the processing is understandable.

    g. Reduce processing time.

    h. Allow drilling bond to be released after the well is completed instead of waiting until the well is abandoned.

    i. Provide greater flexibility in the requirements, particularly for temporary drill sites for exploration (e.g., grading and engineering requirements).

    j. Involve local oil operators and Stanford University petroleum engineering staff members when revising regulations so that they are consistent with current technology and capabilities and so that the terminology is understandable to oil well operators.

2. Reconsider the issue of whether onshore oil and gas development is appropriate on prime agricultural soils (Class I, II, and III capable of supporting artichokes and Brussels sprouts) within the Coastal Zone (LCP).

4

Visual Quality

Background ▪ Issues

VISUAL QUALITY BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

Within San Mateo County, a unique variety of visual resources can be found. Vast expanses of vegetation, unusual topographic features, scenic wetlands and rustic communities are visible in the predominantly rural and unincorporated Coastside. The urbanized Bayside portion provides scenes of extensively developed communities and neighborhoods, the majority of which are incorporated areas. Often the visual quality of these urban areas is heightened by views of the San Francisco Bay or nearby hills and wooded areas. The visual resources found in both the urban and rural portions of the County combine to form a vital landscape that needs protection and preservation from the degrading effects incompatible development can cause.

This Chapter of the General Plan describes the visual character of San Mateo County's topography, natural vegetation, water bodies, developed areas, scenic roads and corridors; explains existing visual controls; analyzes relevant issues; and finally, provides statements of policy to guide decision-makers in managing the preservation and modification of these resources.

B. STATE PLANNING LAW

State planning law provides for the development of both mandated and optional elements of the General Plan which relate to visual resources. Section 65302(h) of the California Government Code requires the adoption of a Scenic Roads element as part of the general plan for the purposes of developing, establishing and protecting scenic highways. This provision is pursuant to Article 2.5 of Chapter 2 of Division 1 of the Streets and Highways Code.

Section 65303(k) of the Code allows the inclusion of additional elements which relate to the physical development of the County. This regulation permits this Chapter's discussion of visual quality and community design features.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan provided much of the background information, analysis, and policy direction included in this chapter. Information on protecting and

managing scenic natural resources has been expanded to include information on developed rural and urban areas. Issue and policy statements have been augmented by the inclusion of area plan issues relevant countywide. Once adopted, this Chapter will replace the Scenic Resources section of the Conservation and Open Space Element.

b. Scenic Roads Element (1975)

The 1975 Scenic Roads Element of the General Plan supplied much of the information contained in the Rural and Urban Roads section of this Chapter. Background information, goals, and policies have been incorporated and augmented where necessary to include issues and policies from current area plans which have relevance to the entire County. Once adopted, this Chapter will replace the 1975 Scenic Roads Element.

c. Area Plans

The following area plans, Emerald Lake Hills Community Plan, Local Coastal Program, Montara-Moss Beach-El Granada Community Plan, North Fair Oaks Community Plan and the Skyline Area General Plan Amendment, each contain particular visual quality policies applicable to the specific area. The policies of this Chapter are more generalized and apply to the entire unincorporated area.

2. Other Sections of the Updated General Plan

The Visual Quality Chapter of the General Plan provides analysis and policy direction to aid in the protection and management of visual quality. Though this Chapter identifies unique examples of landforms and vegetation and describes their visual character, it does not discuss their value as a resource (see the Fish, Water, Vegetative, Wildlife Chapter). Also, while this Chapter discusses the scenic attributes of roads, it does not consider them as infrastructure (see the Transportation Chapter).

II. EXISTING VISUAL QUALITY

A. INVENTORY OF RURAL VISUAL QUALITY

Visual resources are visible elements of the landscape; namely, landforms (hills and mountains), vegetative forms (trees and plant types), bodies of water (lakes, ocean, streams), and neighborhoods and communities (developed areas). Many of the visual resources observed are distinct and unique, such as San Bruno Mountain, while others, less distinct, impart a particular image and character like the communities of Montara-Moss Beach-El Granada. The following is a routed visual inventory of the landscape of the rural district observable by people driving or walking through these areas. It includes areas of outstanding visual quality as well as areas needing improvement. The inventory was developed from field observations and an analysis of existing documents.

1. General Landscape Description

The landscape character of the rural portion of the County is diverse and often quite dramatic. Lying south of the City of Pacifica between the Junipero Serra Highway and the Pacific Ocean, this predominantly rural area displays a variety of visual resources that combine with one another to form very exciting and scenic areas. Starting south from Pacifica, Highway 1 passes along the Coast offering views of some of the most beautiful scenery in California. The road passes through a steep section of bluffs known as Devil's Slide. This area is so named because of the dangerous rock slides caused by the waves undercutting the beach below. Here, one side of the highway provides magnificent views of the Ocean while the other side shows scenes of San Pedro Mountain.

Continuing southward, the Highway passes beside long stretches of sandy beaches, such as Montara State Beach, which outline and highlight the irregular formation of the coastline. Just before the Half Moon Bay Airport is the Fitzgerald Marine Reserve. Though not visible from the road, visitors to this unique area can see tidal pools, dramatic ocean views and geological formations. Next is the airport where small planes, radar towers and hangers can be seen. Visible across from the airport are agricultural operations of crops in production. Continuing south, Pillar Point Harbor appears. This attractive shelter for commercial and pleasure craft features an extensive breakwater system and commercial development. Across from the harbor in El Granada are dense stands of mature eucalyptus trees. Beyond the harbor, Highway 1 passes alongside more beach area before it swings inland slightly, bringing into view scenes of greenhouses, residential and commercial development in the City of Half Moon Bay.

Beyond Half Moon Bay, development disappears and views of broad, flat coastal terraces emerge. These terraces support agricultural operations, grazing lands, farmhouses and accessory buildings and small scattered reservoirs. Continuing south, Highway 1 passes scattered estuaries and marshes like those at San Gregorio and Pescadero. Here, varied waterfowl and vegetation can be seen. Continuing south, Highway 1 provides views of Pigeon Point Light Station. Visible beyond this, at Ano Nuevo Point, vegetation and geological formations appear. This area also serves as a breeding ground for elephant seals. Just offshore about a half mile from the Point is Ano Nuevo Island Reserve, the main breeding ground for the elephant seal. Beyond this point, San Mateo County ends.

Moving inland from the coast toward the Santa Cruz Mountains, two routes traverse the hilly terrain: Half Moon Bay Road (92) and Woodside Road (84). Both roads provide pleasant views of the natural landscape. Route 92 winds and twists its way through the coastal foothills, often passing alongside steeply sloped, almost vertical embankments. While a substantial amount of land remains in its natural state, Christmas tree farms, greenhouses, agricultural operations and livestock can be seen.

Also visible are individual light-colored bungalows, a cemetery and stands of mature trees. Often visible in the distance are panoramic views of ridgelines and canyons. The road continues its upward climb to the top of the Santa Cruz Mountains where it meets Skyline Boulevard. From this vantage point, magnificent panoramic views of the Ocean and the Bay can be seen.

As Route 92 begins to wind and curve down the eastern side of the mountains, the landscape remains largely undeveloped and in its natural state. Dense stands of trees and abundant natural vegetation continue. Streams and creeks appear here too and flow into lakes such as San Andreas and Pilarcitos. Continuing eastward, Route 92 passes between Upper and Lower Crystal Springs, offering magnificent views of this scenic reservoir. Beyond the Reservoir, the road meets the Junipero Serra Freeway, signaling an end of the rural area.

Route 84, the other highway providing access from the Coast to the eastern portion of the County, affords a less direct route; nevertheless, it still provides very dramatic views of the natural landscape, and rural settlements. Moving inland from the Coast, Route 84 passes San Gregorio and La Honda, rural service centers. Beyond these settlements, the road continues to wind and twist, almost in a serpentine fashion, through heavily wooded areas featuring 200-foot tall redwoods such as those preserved in nearby Sam McDonald Park. There are also many examples of fir, oak and other types of trees growing on nearby slopes. Several creeks, such as La Honda Creek, flow through these forested areas. The road also passes through open terrain with chaparral and grass-covered slopes also displaying random stands of trees.

Continuing on, Route 84 frequently passes almost vertical embankments on one side and sheer drop-offs on the other. Panoramic views of distant wooded canyons and grass-covered hillsides appear from several points along the road. Limited commercial development appears where Route 84 meets Skyline Boulevard. Winding down the eastern side of the mountain, Route 84 continues its twisted pattern. Still visible are stands of mature trees and ground cover along with panoramic views of distant hills and valleys.

Further on, as the road approaches the Town of Woodside, scenes of large-scale houses, horses and stables, come into view. While the area remains heavily wooded with extensive ground cover, the closer Route 84 gets to the Junipero Serra Freeway, the more urban the scenery becomes. Junipero Serra, the rough dividing line between the urban and rural portions of the County, provides some of the most magnificent views of the natural landscape available. Vast expanses of rolling hills, heavily wooded canyon areas and the Crystal Springs Reservoir can be seen.

2. Rural Structural Development

Throughout the rural area, development often appears as either rela

tively secluded dwellings, rural subdivisions or rural service centers. The character of the more isolated dwelling units involves a variety of architectural styles and exterior colors. The character of rural subdivisions and rural service centers is shaped by the interrelation between particular elements or features such as architectural details, building scale, construction materials and colors. The following section describes the appearance of individual structures, rural service centers and rural subdivisions.

a. Individual Structures

In the rural areas of the County, occasional dwellings, often visible atop hills or in open grassland or tucked within remote wooded areas, lend a rustic charm to the landscape. Those structures indigenous to the area include large farmhouses, barns and field fences. Small cabins and cottages also appear along with surprisingly modern and luxurious dwellings.

Farmhouses tend to be large, sometimes two stories, with pitched roofs, siding exteriors and painted white. Red or weather-beaten barns and occasional examples of livestock complete the picture. Small scale, one story cabins and cottages visible have flat roofs and exterior finishes of various materials colored in earth tones. The unexpectedly luxurious and large scale structures observed have two stories, pitched roofs and frequently display such features as decks, glass walls, two or three car garages and full driveways. Often, exterior finishes for these dwellings use natural wood siding although some stucco exteriors exist.

b. Rural Service Centers

Rural Service Centers may be described as those small communities established primarily to provide services to the residents of sparsely populated rural areas. The visual character of three such communities, San Gregorio, La Honda, and Pescadero, is described in the following section.

(1) San Gregorio

Located near the mouth of the San Gregorio Creek is the hamlet of San Gregorio. This tiny community is situated at the intersection of Stage and La Honda Roads. The terrain here is flat, but gently rolling wooded hills surround the area. Architecturally, the styles of the two main buildings, the General Store and the San Gregorio House, a hotel, are quite different. The General Store is a one-story, tile roofed, rectangular structure. The windows are arched and the stucco exterior is finished in white. The building style is reminiscent of Spanish Colonial. San Gregorio House is a two-story, pitched roof, wooden structure best described as Monterey Traditional. The main architectural feature is a balcony running the full length of the second

floor. Typical double hung windows appear on both levels. The wood siding exterior of the building is finished in earth tones.

(2) La Honda

Nestled deep within the heavily wooded southern portion of the rural area is the community of La Honda. Immediately visible upon entering the area via La Honda Road are several low rectangular structures which house commercial uses. The rustic character of these buildings derives from the consistent use of wooden exteriors and shingled roofs. Residential development occurs on the surrounding hillsides and reflects no one architectural style, but rather a mix of one-story bungalows and larger two-story structures. Roads serving these developments are winding with several dead ends. Also found here is Reflection Lake, a small pond which adds a pleasant, natural feature.

(3) Pescadero

Beginning as a resort community known for good fishing, the community of Pescadero has retained much of the architectural style developed during the prosperous 19th century. This architectural unity makes Pescadero different from other villages. The Greek Revival style appears with many variations throughout the community. Along Stage Road, the repeated use of scroll work, pierced columns, assorted fenestrations, tall towers, belfrys and white paint in the remaining residential, civic and religious structures contributes to a New England character. In the newer portions of town, a particular architectural character is not as discernible. Here, no one style predominates. Buildings continue to be low in height, however, exterior construction materials vary between masonry stucco and wood, and colors are not white but earth tones.

c. Rural Subdivisions

Rural subdivisions are those sparsely populated areas zoned for single family use and subdivided into small lots in the rural portions of the County. They are located in an area generally west of Skyline Boulevard. Historically, these districts were developed for use as vacation areas, however, as access routes improved, these areas were developed for year-round living. While several subdivided areas exist, the three described in the following section, Skylonda, Sky Ranch Estates and Redwood Park, represent the diversity found among these areas.

(1) Skylonda

This heavily wooded area just off Skyline Boulevard is developed

with residential structures not readily visible from Skyline Boulevard. Architecturally diverse, these structures are generally one-story, small, cottage-type dwellings randomly situated on sloped terrain amidst lush vegetation. Exteriors are generally of materials and colors which blend well with the landscape, such as natural wood or shingled walls, along with pitched roofs and earth tones. Many properties are enclosed with vine-covered fences. Vehicular access routes are narrow, winding, dirt roads. There are no sidewalks and heavy foliage provides some camouflage for utility wiring located overhead.

(2) Skyranch Estates

Skyranch Estates is a subdivided area unlike the other subdivided areas because of the scale and opulence of the dwellings and the width and level of road improvements. This compact area of dwellings, built as luxury year-round residences, are generally one story in height, although some two-story structures have also been developed. Architectural styles are diverse, e.g., rectangular ranch houses, a wood-shingled round house, etc., and all dwellings have full driveways, attached garages and sit on gently sloping terrain. Exterior colors and materials generally blend well with the rural surroundings. Landscaping, both natural and cultivated, is profuse and enhances the area. Morse Lane provides a wide, fully paved and bermed, curving vehicular access route. Sidewalks are developed and gravel covered. Utility wires are located underground.

(3) Redwood Park

Redwood Park is a heavily wooded subdivided area just off Skyline Boulevard north of Route 84. Here the dwellings are small, one-story cottages. Exterior colors and materials range from white to earth tones yet they co-exist well with the surrounding landscape. Fences enclose a number of properties. Access routes are narrow, curving, winding dirt roads. Situated in close proximity are a few commercial uses and a fire station.

3. Views from Rural Roads

Several roads and highways provide access to those visual resources found in the rural portion of the County. While wide-ranging and diverse types of views are available from Highway Routes 1, 35, and 280, other rural roads also provide views of interesting scenes. Table 4.1 provides a listing of various travel routes and a description of available scenes. The Map of Scenic Corridors on page 4.12 illustrates their location.

TABLE 4.1
VIEWS FROM RURAL ROADS*

ROAD NAME	DESCRIPTION OF VIEWS FROM RURAL ROADS
ALPINE ROAD	
(Between Junipero Serra Highway and Portola Road, 1.5 miles, and between Skyline Boulevard and Pescadero Road, 3.25 miles)	Two segments of Alpine Road provide scenic views. The first segment travels along rolling foothills in Portola Valley. The second segment constitutes a narrow, mountainous road which passes along open ridge tops and through dense redwood groves on its way from Skyline Boulevard to Pescadero Road. Loop access back to Skyline Boulevard is provided via Pescadero and La Honda Roads.
CABRILLO (COAST) HIGHWAY (STATE ROUTE NO. 1)	
(Extending along the coast from the San Francisco County line to the Santa Cruz County line -42 miles)	The Cabrillo Highway is along the ocean's edge, providing dramatic sea and coastal views to the traveler, as well as access to State and County beaches. A wide range of marine life, ecological systems, geological features, and historical and architectural landmarks are visible from the roadway. This is one of the most interesting roads in the County and is included in the State Master Plan for Scenic Highways.
CANADA ROAD	
(Between Half Moon Bay and Woodside Road in Woodside - 6.6 miles)	On the east side of the San Andreas Valley, Canada Road traverses the San Francisco Watershed property and Wildlife Preserve, and offers a quiet bypass for leisure driving, bicycling, and hiking. There are good views of the Santa Cruz Mountains, Upper Crystal Springs Reservoir, and the Pulgas Water Temple.
CLOVERDALE ROAD	
(Between Pescadero Road in Pescadero and Gazos Creek Road - 6.6 miles)	A rural Coastside road passing by farms, agricultural fields and grazing cattle in the wooded hills south of Pescadero. Access to Butano State Park is from this road.

*All road mileage figures are approximate.

TABLE 4.1 (Continued)
VIEWS FROM RURAL ROADS

ROAD NAME	DESCRIPTION OF VIEWS FROM RURAL ROADS
GAZOS CREEK ROAD	
(Extending from the Cabrillo Highway to Cloverdale Road - 11 miles)	This narrow, unpaved road winds its way through a wooded canyon of redwood and tan oak trees along Gazos Creek. It still retains the character of an early logging road. The road joins Cloverdale Road to form a loop back to Pescadero Road.
HALF MOON BAY ROAD (STATE ROUTE NO. 92)	
(Between Junipero Serra Freeway and the Cabrillo Highway in Half Moon Bay - 8.1 miles)	The major east-west route across San Mateo County, this segment of Route No. 92 crosses the San Francisco Watershed by passing over the causeway separating Upper and Lower Crystal Springs Reservoirs. It climbs to the crest of the Skyline ridge, and then descends into the Pilarcitos Valley below. Along the narrow valley floor, flowers and fields of pumpkins, when in season, are visible.
HIGGINS-PURISIMA ROAD	
(Between the Cabrillo Highway and Purisima Creek Road - 4.4 miles)	A narrow, rural byway which winds through the coastal hills, it joins Purisima Creek Road at its terminus to form a scenic loop road back to the Cabrillo Highway.
KINGS MOUNTAIN ROAD	
(Between Woodside Road in Woodside and Skyline Boulevard - 4.8 miles)	This route winds its way up the mountainside through forests of tan oaks and redwood. A major portion of the roadway lies within the boundaries of Huddart County Park.
LA HONDA ROAD (STATE ROUTE NO. 84)	
(Between Woodside Road in Woodside and the Cabrillo Highway at San Gregorio - 17.3 miles)	Climbing the eastern flank of the Santa Cruz Mountains from Woodside, La Honda Road provides a major access route to Skyline Boulevard and the Pacific Ocean. It is a winding mountain road until it turns westward past the community of La Honda, where it passes alongside Sam McDonald County Park

TABLE 4.1 (Continued)
VIEWS FROM RURAL ROADS

ROAD NAME	DESCRIPTION OF VIEWS FROM RURAL ROADS
	and enters the broad San Gregorio Valley on its way to the ocean. Interesting views of open and wooded areas can be seen from the roadway.
PESCADERO ROAD	
(Between La Honda Road and the Cabrillo Highway - 15.1 miles)	Pescadero Road travels through redwood forests, open meadows, and seasonal fields of strawflowers, artichokes and Brussels sprouts. It runs along the edge of Sam McDonald Park, traverses Memorial Park, passes through the village of Pescadero, and terminates at Pescadero State Beach. Through mountains, valleys, and coastal terraces, the roadway offers many visual and recreational experiences.
PORTOLA ROAD	
(Between Alpine Road in Portola Valley and Woodside Road in Woodside - 4.2 miles)	Portola Road provides a pleasing drive in a rural setting as it runs through wooded foothills and passes by attractive homes.
PORTOLA STATE PARK ROAD	
(Between Alpine Road and Portola State Park - 2.2 miles)	A mountainous road leading from Alpine Road to the 1,700-acre Portola State Park.
PURISIMA CREEK ROAD	
(Between the Cabrillo Highway and Higgins-Purisima Road - 3.3 miles)	This narrow coastal road follows along Purisima Creek. It joins Higgins-Purisima Road at its terminus to form a scenic loop with the Cabrillo Highway.
SAND HILL ROAD	
(Between Junipero Serra Freeway and Portola Road in Portola Valley - 1 mile)	This road provides views of open space lands and joins Portola and Alpine Roads to loop back to the Junipero Serra Freeway.

TABLE 4.1 (Continued)
VIEWS FROM RURAL ROADS

ROAD NAME	DESCRIPTION OF VIEWS FROM RURAL ROADS
SHARP PARK ROAD	
(Between Skyline Boulevard and the Cabrillo Highway in Pacifica - 2.1 miles)	From the crest of the ridge at Skyline Boulevard, Sharp Park Road descends the mountainside to the Cabrillo Highway below. Views of the Pacific Ocean and Pedro Point are visible to the traveler. A roadside vista point provides a place to stop and enjoy the surrounding scenery.
STAGE ROAD	
(Between Cabrillo Highway north of San Gregorio and Pescadero Road in Pescadero - 8.6 miles)	Connecting the communities of San Gregorio and Pescadero, this back road winds over mountainsides, through fields, past farmhouses, and under ancient eucalyptus trees. It retains, even today, much of the same character as when it was a stage route between the two villages a hundred years ago.
TUNITAS CREEK ROAD	
(Between Skyline Boulevard and the Cabrillo Highway - 9.5 miles)	Tunitas Creek Road is a narrow and winding road as it descends through redwood forests from its summit at Skyline Boulevard to the Cabrillo Highway below. It was originally constructed as a toll road to haul lumber from the mountains to the coast, has changed very little in the 100 years of its existence, remaining one of the most beautiful rural byways in the County.
WOODSIDE ROAD (STATE ROUTE NO. 84)	
(Between the Junipero Serra Freeway and La Honda Road in Woodside - 5 miles)	While present in both the urban and rural portions of the County, the segment west of 280 provides views of beautiful homes, stables and horses. It serves as a major access to Skyline and the coast.

A 1M

SAN MATEO COUNTY GENERAL PLAN

SCENIC CORRIDORS

STATE CORRIDORS

- SKYLINE (STATE RT. 35)
- CABRILLO (STATE RT. 1)
- JUNIPERO SERRA (INTERSTATE RT. 280)

COUNTY CORRIDORS

- WITHIN COASTAL ZONE
- OUTSIDE COASTAL ZONE

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

DALY CITY
BRISBANE
SIERRA POINT
OYSTER POINT
SAN FRANCISCO
POINT SAN BRUNO
SAN FRANCISCO BAY
MUSSEL ROCK
PACIFICA
MORI POINT
POINT SAN PEDRO
MILLBRAE
COYOTE POINT
SAN MATEO
FOSTER CITY
HILLSBOROUGH
MONTARA POINT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
PILLAR POINT
MENLO PARK
HALF MOON BAY
WOODSIDE
EEL ROCK
SEAL ROCK
PORTOLA VALLEY
SANTA CLARA COUNTY
PACIFIC OCEAN
MUSSEL ROCK
SAN GREGORIO RANCHO
PESCADERO POINT
BOLSA POINT
PIGEON POINT
SANTA CRUZ COUNTY
FRANKLIN POINT
ANO NUEVO POINT

B. INVENTORY OF URBAN VISUAL QUALITY

This section continues the routed visual inventory into the urban portion of the County. Again, the scenes described are observable by walking or driving through these areas.

1. General Landscape Description

Many of the natural visual resources once found in urban areas have been significantly altered or removed in order to accommodate intense development. Bayside foothills have been reshaped, native ground cover and extensive wooded areas have frequently been eliminated, and portions of the San Francisco Bay have been built over. These alterations have created a decidedly different landscape character from that found in the rural areas.

While the urban portions of the County, generally located in a region between the Santa Cruz Mountains and the San Francisco Bay, reflect extensive development, they still contain a number of visual resources. Beginning in the northern portion of the County and proceeding south, the Bayshore Freeway (101) provides magnificent views of San Francisco Bay. Visible next is San Bruno Mountain which immediately captures the attention of the observer. Rising to a maximum height of 1,300 feet, this landform represents a unique example of topography. The mountain consists of a series of ridges and canyons which ripple across the sloped sides. While these rippled slopes appear bare from a distance, they actually support grass and brush vegetation. During certain times of the year, colorful wildflowers growing here are visible. The base of the mountain supports extensive development while the upper portions remain undeveloped. Beyond this point, views of office development predominate behind the freeway landscaping.

Passing the San Francisco International Airport, arriving and departing planes may be visible overhead. Also visible in this general area is a small unexpected lagoon. Just beyond the Airport, scenes of billboards, hotels and similar development associated with the Airport come into view. At this point, views of the Bay become visible when the observer leaves the Freeway and travels along the remaining segment of the Old Bayshore Highway, located just east of the freeway.

Rejoining the Freeway and continuing south to the County line, development adjacent to the Freeway and on nearby hillsides continues to predominate but is relieved periodically by scenes of horses exercising at the Bay Meadows Race Track, small planes on the ground at San Carlos Airport, open Bayside marshland areas which allow views of distant mountains in the East Bay, and finally, a unique view of a hill of salt earmarking the operations of the Leslie Salt Company.

Moving inland to the foothills, a variety of visual resources exist in the remaining unincorporated neighborhoods. For example, Crystal Springs

Road and Polhemus Road provide access to the Highlands, a developed area, containing large expanses of open, sloped terrain supporting extensive dense growths of chaparral, grass and random stands of trees.

South of the Highlands, Palomar Park and Emerald Lake Hills represent other unincorporated areas which also contain similar visual resources. These areas, generally reached by Edgewood Road, display profuse cultivated vegetation areas which serve to compliment the natural landscape. Views of distant ridgelines and nearby hills can also be seen from these neighborhoods.

Leaving the hillside development and returning to the level Bayside plains, the presence of visual resources diminishes although some areas still retain them. Some areas of North Fair Oaks, for example, still contain mature trees and extensive ground cover while other areas of this unincorporated district do not. And finally, Menlo Oaks, another nearby unincorporated area, also contains extensive examples of mature oak trees and widespread plant cover which creates a densely vegetated atmosphere.

2. Urban Structural Development

Each of the intensely developed unincorporated urban communities and neighborhoods located on the Bayside has a particular character associated with it. The following sections briefly describe the appearance of these districts.

a. Urban Communities

The areas of Montara-Moss Beach-El Granada and North Fair Oaks can best be described as urban communities, for they are developed with several types of land uses and have a population and economic base large enough to make them relatively self-sufficient. Each of these communities, however, has a decidedly different appearance.

(1) Montara-Moss Beach-El Granada

The character of Montara-Moss Beach and El Granada is largely influenced by its coastal setting. Beautiful views of the Ocean, rocky hills, dense stands of mature eucalyptus trees and sloped terrain make this an extremely scenic area. Architecturally diverse housing styles range from one-story, single-family ranch and bungalow types with attached garages to two-story dwellings constructed on hillsides with glass walls oriented toward the ocean. Exterior construction materials and colors also vary and include masonry stucco finished in pastel shades or natural wood and earth tones. Streets here vary in design from a gridiron to a radial, semi-circular pattern. These streets may be found unpaved, partially paved or completely paved.

Frequently, agricultural production operations exist in these areas. Commercial development tends to be scattered in a few shopping areas. These buildings are small, one-story structures with masonry stucco exteriors finished in light colors.

Industrial development is contained in an area adjacent to the Half Moon Bay Airport and Pillar Point Harbor. Boat building repair and storage facilities are the primary uses. Outside storage is common and usually enclosed with chain link fences. Sidewalks are generally not present.

(2) North Fair Oaks

The district of North Fair Oaks has a very different appearance. It is a Bayside rather than Coastside community, developed on uniformly flat terrain and bisected by the Southern Pacific Railroad. The character of the residential area is shaped by small single-family bungalows with attached garages which co-exist in a number of areas with low rise multifamily dwellings. In these areas, adequate parking seems a problem. Exterior construction materials of both types of dwellings are generally masonry stucco and finished in pastel colors. Many areas use low fences to enclose front yards. Also found are a number of large oak trees. Street patterns are typically gridiron with a few curvilinear arrangements and often sidewalks remain undeveloped. Some areas of North Fair Oaks contain large amounts of vegetation, while others have a minimal amount.

Commercial uses in the Middlefield Road area of North Fair Oaks are intensely developed up to each property line. These uses range from automobile body shops to restaurants. Each of these uses has its own business identification sign, a practice which tends to create visual chaos. Outside storage for some uses is common and frequently these stored materials are readily visible. Overhead wiring is present. Parking is on-street, and there are no street trees or landscaping.

Industrial development is located generally in the Bay Road-Spring Road area, although there are similar types of uses located in other portions of the community. Structures tend to range between one and two stories, and are rectangular stucco buildings finished in pastel colors. Also present are several off-premise advertising billboards. Outside storage areas are generally visible because chain link fencing is frequently used.

b. Urban Neighborhoods

The second kind of district found in the unincorporated area is the urban neighborhood. These areas, developed exclusively with residential uses, are often so similar in appearance to surrounding incorporated areas that it is impossible to tell where the unincorporated portion ends. While there are several such neighborhoods, the three described in the following sections, represent examples of the variety that exists. The Highlands represents a very suburban neighborhood; Emerald Lake Hills represents a rural neighborhood in an urban setting; and finally, Broadmoor/Colma represents an urban neighborhood.

(1) The Highlands/Baywood Park

Surrounded by the Town of Hillsborough, the Cities of San Mateo and Belmont and the Crystal Springs Reservoir, is the urban neighborhood known as the Highlands/Baywood Park. Polhemus Road divides these two distinct areas. The Highlands, west of Polhemus, is developed on gently sloping terrain with small, uniform one-story, flat roof dwellings with attached garages. Many of these dwellings have atrium type/courtyard entrances, a characteristic of these Eichler-style dwellings. Exterior colors tend to be in earth tones.

The area east of Polhemus Road, Baywood Park, has a different character. Here dwellings are much larger in size than those in the Highlands. Developed on sloped terrain are large one-story dwellings that vary in style from one-story ranch types with attached two-car garages to two-story dwellings with attached three-car garages. Exterior materials vary and include brick, masonry stucco and siding. Exterior colors tend to be pastel with some earth tones. In both sections of this neighborhood, street patterns are curvilinear with quite a few cul-de-sacs. Also present here are large amounts of natural vegetation. Sidewalks also exist in both areas.

(2) Emerald Lake Hills

The neighborhood of Emerald Lake Hills is bounded by the City of Redwood City, the Town of Woodside and unincorporated Palomar Park. Entering from Edgewood Road, Emerald Lake Hills contains development located on both relatively flat and hilly terrain. Architecturally diverse, the dwellings have no one predominant style, rather, there are differing styles, building sizes and siting arrangements which combine to form an interesting mix. Exterior colors and construction materials reflect the shadings of the surrounding natural vegetation, which is extensive, and consist primarily of earth tones and wooden construction

materials. The abundant amount of vegetation creates a very rural atmosphere. Roadways follow the shape of the terrain and at times become quite steep with frequent hairpin turns and blind corners. An unusual feature found in this neighborhood are two small lakes, Upper and Lower Emerald Lake.

(3) Broadmoor Village/Colma

The urban neighborhood of Broadmoor Village is surrounded by the City of Daly City. Developed on sloped terrain, Broadmoor contains identical one-story bungalows with attached garages. Occasionally, there are larger two-story structures. Exterior construction materials and colors tend to be of masonry stucco and finished in pastel shades. Roadways are curvilinear with some streets ending in cul-de-sacs. While some stands of mature trees exist, generally the presence of vegetation here is limited to lawns and other similar types of landscaping.

Unincorporated Colma is surrounded by the Cities of Daly City and Colma. Portions of Colma are developed on sloped terrain. Residential structures range from one-story bungalows to two-story dwellings which sometimes exist side by side. Exterior construction materials vary between wood and masonry construction. There is also commercial development including a bowling alley, a golf driving range, grocery stores, motels, etc. Also found are several undeveloped parcels of land. Roadways are linear with some streets ending in cul-de-sacs. Vegetation is limited to lawns and cultivated landscaping.

3. Views from Urban Roads

Access to the variety of Bayside visual resources may be gained from a series of roads and highways. This section provides a table (Table 4.2) listing and describing these routes and the Map of Scenic Corridors illustrates their location.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING VISUAL QUALITY

Several plans, policies and regulations control the appearance and/or alteration of visual resources and community design. This section briefly describes the types of controls now in effect.

A. CALIFORNIA SCENIC HIGHWAY PROGRAM

In 1963, the State established the Scenic Highway Protection Program to develop a system of State roadways whose adjacent corridors contained scenic resources worthy of protection and enhancement. Procedurally, before roads can be officially designated, they must first be included in the Master Plan of State Highways eligible for official scenic highway

TABLE 4.2
VIEWS FROM URBAN ROADS*

ROAD NAME	DESCRIPTION OF VIEWS FROM URBAN ROADS
ALAMEDA DE LAS PULGAS	
(Between Crystal Springs Road in San Mateo and Woodside Road in Redwood City - 9.1 miles)	An urban street which passes through the Cities of San Mateo, Belmont, San Carlos and Redwood City. As it crosses through the Bayside foothills, this roadway provides diverse views of residential areas, wooded creeks, and finally, panoramic scenes of urban development and San Francisco Bay.
ALPINE ROAD	
(Between Route 280 and Alameda de las Pulgas - .75 miles)	A road paralleling San Francisquito Creek along the foothills near the Jasper Ridge Preserve.
BAYSHORE FREEWAY (STATE ROUTE 101)	
(Between San Francisco County line and Santa Clara County line - 25 miles)	A wide four-lane freeway running the length of the County near the San Francisco Bay. This route primarily provides views of urban development visible behind the landscaping and on nearby hills. Also visible along a northern segment of this route are views of the Bay and San Bruno Mountain.
CANYON ROAD	
(Between Easton Drive and Skyline Boulevard, Interstate Route 280 Frontage Road in Burlingame -2.1 miles)	A narrow, winding, residential street which winds down the Bayside foothills and passes next to a creek where heavy tree cover screens the adjacent homes.
CRYSTAL SPRINGS ROAD	
(Between El Camino Real in San Mateo and Skyline Boulevard - 3.7 miles)	Crystal Springs Road passes suburban homes in San Mateo and Hillsborough and winds alongside San Mateo Creek, under the Eugene A. Doran Memorial Bridge. It also passes along the scenic San Francisco Watershed property. Combined with El Camino Real, Easton Drive, Canyon Road, and Skyline Boulevard, a scenic loop is formed through urban and rural areas.

*All road mileage figures are approximate.

TABLE 4.2 (Continued)
VIEWS FROM URBAN ROADS*

ROAD NAME	DESCRIPTION OF VIEWS FROM URBAN ROADS
JOHN DALY BOULEVARD	
(Between Skyline Boulevard and Junipero Serra Freeway in Daly City - 1.4 miles)	Connecting State Route 35 and Interstate Route 280, John Daly Boulevard represents a good example of landscaped roadway in an urban setting.
EASTON DRIVE	
(Between El Camino Real and Canyon Drive in Burlingame - 0.7 miles)	Rows of mature eucalyptus line this residential street which provides an essential link in a scenic loop via Canyon Road, Skyline Boulevard, Crystal Springs Road, and El Camino Real.
EDGEWOOD ROAD	
(Between Alameda de las Pulgas in Redwood City and Canada Road - 3 miles)	Edgewood Road, which runs through Cordilleras Creek Canyon, is an urban route providing views of the Bay, the San Francisco Watershed, and the Santa Cruz Mountains.
EL CAMINO REAL (STATE ROUTE NO. 82)	
(Between Crystal Springs Road in San Mateo and Easton Drive in Burlingame - 2.8 miles)	El Camino Real is the most historic road in the County. This section, through San Mateo and Burlingame, retains much of its early character, with huge elms and eucalyptus growing alongside the roadway.
GUADALUPE CANYON PARKWAY	
(Between Bayshore Boulevard in Brisbane and Market Street in Daly City - 3.7 miles)	Traversing the saddle of San Bruno Mountain, this road provides the traveler with a drive through open grassland and meadows that are colorful with wildflowers in the spring. Frequently, the San Francisco skyline and the Bay come into view. The Parkway also provides access to the Regional Park on San Bruno Mountain.

TABLE 4.2 (Continued)
VIEWS FROM URBAN ROADS*

ROAD NAME	DESCRIPTION OF VIEWS FROM URBAN ROADS
POLHEMUS ROAD	
(Between J. Arthur Younger Freeway, Route 92, and Crystal Springs Road in San Mateo - 2 miles)	Along a steep and wooded valley, including lands of the San Francisco Watershed property, Polhemus Road connects Crystal Springs Road with Ralston Avenue. The roadway is in close proximity to adjacent development and provides a link between open space and urban area.
RALSTON AVENUE	
(Between the Alameda de las Pulgas and the J. Arthur Younger Freeway in Belmont - 2 miles)	An urban street, Ralston Avenue ascends the eastern foothills of Belmont and connects the Alameda de las Pulgas with Polhemus Road. Exceptional views of San Francisco, the Bay, and the Bayside communities are visible from the roadside.
WESTBOROUGH BOULEVARD	
(Between Skyline Boulevard and the Junipero Serra Freeway in South San Francisco - 2.2 miles)	Westborough Boulevard, a landscaped divided roadway, transverses a densely developed area. As it descends from Skyline Boulevard it affords panoramic views of the Bay, East Bay cities, and the Diablo Mountain Range. Connecting with Sharp Park Road, the road links the Junipero Serra Freeway to the Cabrillo Highway.
J. ARTHUR YOUNGER FREEWAY (STATE ROUTE NO. 92)	
(From the Alameda County line to the Junipero Serra Freeway - 11.4 miles)	The San Mateo Bridge segment of this freeway provides magnificent panoramic views of the Bay and the Peninsula cities from San Francisco to Palo Alto, against the background of the Santa Cruz Mountains. The freeway segment through San Mateo provides a bird's eye view of urban development. Continuing beyond the Alameda, the freeway links the foothill area to open space.

designation. Then the legislative body having jurisdiction over the lands adjacent to an eligible highway must request that a corridor study and highway facility study be made. However, prior to a request for studies, the local jurisdiction needs to have an adopted Scenic Roads Element.

Following the studies, the local jurisdiction must prepare and adopt a scenic corridor protection program which is then sent to the State Department of Transportation for review and approval. If the program is satisfactory, the route then receives official designation.

Table 4.3 describes those routes in San Mateo County which have received official designation as scenic roads. The rural landscape description contains full descriptions of these routes.

B. COUNTY

1. County General Plan Policies

a. Elements

(1) Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan defined viewsheds and assorted elements of the landscape; discussed the sensitivity of the landscape to alteration; discussed Skyline scenic corridor controls and alternative measures to protect State scenic corridors; established a procedure to designate scenic areas, landscape features and scenic corridors; and finally, developed general management and primary policies intended to: protect and enhance scenic resources; incorporate site design criteria into the zoning and land division code; establish aesthetic controls over utility structures and protect shorelines and scenic views.

(2) Scenic Roads Element (1975)

The 1975 Scenic Roads Element of the General Plan established goals and criteria for the selection of scenic roads; identified and designated routes for inclusion in the County system of scenic roads (see Map of Scenic Corridors); developed a series of policies to guide the design of scenic roads and the development within adjacent corridors; designated the scenic road development criteria within the Resource Management zoning district as the major device to implement the provisions of the Element; outlined additional measures for scenic corridors, specifically: conducting studies to determine the width of scenic corridors, modifying zoning and subdivision ordinance regulations and encouraging public participation activities; and finally, explained, through appendices, the standards and designation procedures for State scenic roads and corridors.

TABLE 4.3

STATE DESIGNATED SCENIC ROADS

ROAD NAME	DESCRIPTION
Route 1 Cabrillo Highway	Route 1 runs the length of the County along the Pacific Coast, although only that portion south of Half Moon Bay to the Santa Cruz County line has State designation. The remaining northern portion of the route, while eligible for such designation, has not been earmarked.
Route 280 Junipero Serra Freeway	Route 280, an award-winning freeway, runs the length of the County through the foothills; however, only that portion from a point near the City of San Bruno south to the Santa Clara County line has State designation. The remaining portion is listed on the State Master Plan as an eligible route but has not been designated.
Route 35 Skyline Boulevard	Route 35 traverses the length of the County and passes through a variety of landscapes; however, only that portion from the Route 92 intersection south to the Santa Clara County line has been designated by the State. The remaining portion is listed on the State Master Plan as an eligible route but has not been designated.

b. Area Plans

(1) San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment contains policies to guide the formation of specific plans for development of the area. Generally the policies seek to assure the open space character of proposed development, retain the visual integrity of the main ridgeline of San Bruno Mountain, leave the Northeast Ridge and the Saddle area undisturbed except for planned development areas, protect the view of the northeast ridge from Brisbane by keeping a significant amount of the area in open space and by blending development with the natural topography of the site, and establish criteria to guide the design of both cultivated landscaping and a system of street furniture.

(2) Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan includes a policy which seeks to locate and design dwellings so that prominent edgelines, hilltops and rock outcroppings remain open.

(3) Montara-Moss Beach-El Granada Community Plan (1978)

The Montara-Moss Beach-El Granada Community Plan contains policies which seek to preserve and protect the character and identity of individual communities, protect scenic vistas, encourage the planting of street trees, rehabilitate deteriorated portions of communities, design and locate new development to harmonize with their surroundings, employ the guidelines of the Community Design Manual, establish a program for undergrounding utility lines, and finally, assign program responsibilities to CalTrans.

(4) North Fair Oaks Community Plan (1979)

The North Fair Oaks Community Plan contains a policy which seeks to improve the appearance of commercial and industrial areas through use of the Design Review Zoning District.

(5) Coastal Energy Development Component of the Local Coastal Program (1980)

The Coastal Energy Development Component of the Local Coastal Program is designed to regulate those facilities used to produce oil and gas resources in the Coastal Zone. This Component addresses the visual impact created by these facilities by establishing performance standards to protect scenic quality. These standards address setting, screening, exterior colors and design, height limitations, and vegetation removal.

(6) Visual Resources Component of the Local Coastal Program (1980)

The Visual Resources Component of the Local Coastal Program seeks to protect the scenic and visual qualities of areas within the Coastal Zone. It enacts policies and regulations that regulate the siting and design of permitted development in order to minimize alteration of the topography, protect coastal views, ensure that new development is visually compatible with the character of surrounding areas and, where possible, restore and enhance the scenic quality of visually degraded areas. The Component also designates scenic roads, regulates development within the adjacent corridors, and exempts from architectural and site plan review all agricultural related development and all buildings and structures not visible from the roadway because of terrain and plant cover.

2. Other County Plans and Policies

(a) Community Design Manual (1976)

The Community Design Manual graphically illustrates preferred development techniques and establishes general architectural and site design policies. The Manual was designed for use while reviewing development proposals in those areas where the Design Review Zoning District is combined with the underlying zoning districts.

(b) Creative Road Design (1978)

The Creative Road Design Guide shows creative application of County road standards, including when and how the County should show flexibility in applying its road standards; how to creatively use surplus land left over from roadway projects; and how to make roadways more attractive.

(c) Skyline-Santa Cruz Mountains Area Study (1983)

The Skyline-Santa Cruz Mountains Area Study formed the basis of the recently adopted Skyline Area General Plan Amendment. During consideration of the study, the Board of Supervisors directed that those policies contained therein not adopted for immediate incorporation be considered during the development of the General Plan Update. Basically, policies of the Study relevant to visual resources seek to remove redundancy in existing design regulations and eliminate architectural design standards for some rural areas. This would be done by removing design criteria from the Resource Management (RM) and Timber Preserve Zone (TPZ) zoning districts and consolidating them with design criteria contained in the Scenic Roads Element and the Skyline Scenic Corridor design criteria. From this, two new sets of integrated design standards would regulate development in rural areas and scenic corridors.

In rural areas, the proposed Rural Design Review (RDR) overlay zone would regulate only site design for all development requiring a building permit. Currently, both site and architectural design are regulated. In scenic corridors, the proposed Scenic Corridor (SC) overlay zone would regulate both site and architectural design for all development requiring a building permit. The SC district would also contain administrative procedures.

(d) Scenic Corridor Controls

Other County controls affecting the appearance of development are resolutions and policy standards applicable to Scenic Corridors. Resolution 36046, applicable to the Cabrillo Highway, establishes a scenic corridor for portions of the route; empowers the Planning Commission or its representative to act as a Design Review Committee pursuant to applicable provisions of the Resource Management Ordinance; delineates what development within the corridor will receive design review, and finally, establishes building setback for structures within the corridor.

Resolution 22365, applicable to the Skyline Highway, approves in principal the Skyline Boulevard Study; establishes a minimum and maximum width for the scenic corridor, and finally, requests the State to officially designate Skyline as a Scenic Highway. Also applicable to the Skyline Scenic Highway are the Standards for Architectural and Site Control within the Skyline Scenic Corridor. These standards, implemented as policy direction, are designed to protect the rural character of the Skyline area by controlling the design and appearance of structures and equipment located within the scenic corridor. These guidelines indicate what information the architectural, site and building design plans of proposed development must contain; what architectural styles, building materials and exterior colors are preferable; and finally, that Planning Commission review is necessary.

Resolution 040015, applicable to the Junipero Serra Freeway, establishes a scenic corridor for portions of the route, designates the Planning Commission as a Design Review Committee pursuant to the provisions of the Ordinance Code, the Resource Management Zoning District and the Scenic Roads Element; and finally, indicates the type of development to be regulated.

3. County Ordinances

a. Zoning Ordinances

Currently in effect are a wide variety of zoning ordinances designed to regulate the appearance of development. This section describes those zoning regulations used most frequently to control visual quality. A summary of these ordinances is provided in Table 4.4.

(1) Design Review Overlay District

The Design Review District Zoning Ordinance is an overlay zone that establishes design standards for all new exterior construction or remodeling of residential, commercial, or industrial structures. This zone is currently in effect in Montara, Moss Beach, El Granada, Pescadero, San Gregorio, Emerald Lake Hills, and one area of North Fair Oaks. All applications for building or grading permits in these areas must be approved by the Design Review Administrator. Approval of these permits is subject to guidelines and standards designed to minimize the visual impact of development upon the natural features present at the building site along with reducing the impact upon the established character of existing development.

(2) Resource Management and Resource Management/Coastal Zone Districts

The Resource Management Zoning Districts within and outside the Coastal Zone contain provisions which address structural design in rural areas. These development review criteria primarily seek to reduce the disruptive impact of development upon the natural features of the landscape present at the building site. In addition to requiring that development be subordinate to the pre-existing natural character of the site, the RM and RM/CZ District development criteria also address the visual impact of three architectural features; namely, building heights, construction materials and exterior colors. These zoning districts also contain supplemental criteria applicable to development within scenic corridors and other areas determined to possess those natural features which can be considered scenic. For such areas, these additional provisions address public views, vegetation removal, access routes, screening, and finally, the location of development either in grass or brushland areas or upon landscape features which have unusual scientific, historic or scenic value.

(3) Timberland Preserve Zone and Timberland Preserve/Coastal Zone Districts

The Timberland Preserve Zoning Districts within and outside the Coastal Zone contain general and specific criteria applicable to the visual impact of development in timberland areas. Site and building design criteria seek to: make development subordinate to the surroundings, limit adverse environmental consequences created by alterations, limit the size and visual impact of parking lots, minimize the impact of new development upon adjacent views, reduce the adverse visual impact of utilities and finally, limit building heights and identify suitable exterior construction materials and colors. In addition, these zoning

TABLE 4.4

ZONING ORDINANCES WHICH ADDRESS VISUAL QUALITY

TYPE OF REGULATION	TYPE AND LOCATION OF DEVELOPMENT REGULATED	DESIGN FEATURES REGULATED	COMMENTS
DESIGN REVIEW ZONING DISTRICT (DR)	New exterior construction or remodeling of residential, commercial or industrial structures where the underlying zoning district is combined with this overlay district.	Architectural Features: A, B, C, D, E. Site Features: F, G, H, I, J, K, L, M, N, O.	
RESOURCE MANAGEMENT & RESOURCE MANAGEMENT/COASTAL ZONE (RM & RM/CZ) ZONING DISTRICTS			
Section 6324.2) Site Design Criteria Section 6912.3)	All development proposed for location on lands zoned RM or RM/CZ (including scenic corridors).	Architectural Features: A, B, D. Site Features: I, L, O.	Prohibits Damage to Primary Designated Landscape Features.
Section 6324.3) Utilities Section 6912.3)	All development proposed for location on lands zoned RM or RM/CZ (including scenic corridors).	Site Features: J.	
Section 6325.1) Primary Scenic Section 6913.1) Resources Areas	All development within scenic corridors and other primary scenic resources areas on lands zoned RM or RM/CZ.	Architectural Features: A. Site Features: G, H, I, K, M, N, Q.	Prohibits development on primary designated landscape feature. Permits A, G operations in grass and/or brush-land in scenic view areas to be unscreened.

TABLE 4.4 (Continued)

ZONING ORDINANCES WHICH ADDRESS VISUAL QUALITY

TYPE OF REGULATION	TYPE AND LOCATION OF DEVELOPMENT REGULATED	DESIGN FEATURES REGULATED	COMMENTS
TIMBERLAND PRESERVE AND TIMBERLAND PRESERVE/COASTAL ZONE (TPZ & TPZ/CZ ZONING DISTRICTS)	All Development on Land zoned TPZ or TPZ/CZ.	Architectural Features: A, B, D. Site Features: F, I, J, K, L, O.	Requires small screened parking lots.
Section 6761) Building and Utility Design Criteria Section 6974)	All Development in Primary Resource Areas and Scenic Corridors on Lands Zoned TPZ.	Site Features: H, K, M.	Prohibits any use of a designated primary landscape feature.
Section 6762.1) Primary Resource Area Design Criteria			
FORESTRY & CONSERVATION ZONING DISTRICT		Site Features: N.	
PARKING ZONING DISTRICT			
LIMITED HIGHWAY FRONTAGE ZONING DISTRICT			
NEIGHBORHOOD BUSINESS ZONING DISTRICT GENERAL COMMERCIAL ZONING DISTRICT LIGHT INDUSTRIAL DISTRICT HEAVY INDUSTRIAL DISTRICT	Outdoor advertising, signs, billboards and sign areas in the F-1, P, H-1, C-1, C-2, M-1 and M-2 Zoning Districts.		

districts provide supplemental design criteria applicable to scenic corridors and scenic resource areas. In scenic corridors, public views, screening of access roads and parking areas, and the appropriate type of screening materials, are addressed. In scenic resource areas, the additional provisions prohibit the use of those features deemed to possess unusual, scientific, historic, or scenic value.

(4) Sign Regulations

The County Zoning Regulations include sign controls in individual districts. Specific requirements concerning the size and placement of signs are included in the F-1, P, H-1, C-1, C-2, M-1, and M-2 district regulations. In addition, signs are permitted in residential districts when advertising the sale or lease of the property on which they are displayed, advertising a non-conforming business, serving as an announcement for public charitable or religious institutions, and personal name plates.

b. Other Ordinances and Guidelines

(1) County CEQA Guidelines

Environmental evaluations of development requests include an assessment of aesthetic impacts. To determine whether significant impacts will result from a project, County California Environmental Quality Act guidelines call for determining if a project will be adjacent or within a scenic corridor, obstruct views or intrude into areas with natural scenic qualities.

(2) In addition, other County Ordinances also contain provisions which address the appearance of development. These are: the Significant Tree Ordinance, the Timber Harvesting Ordinance, the Grading and Excavating Ordinance, the compilation of Sign Regulations, the Subdivision Ordinance, and finally, the Surface Mining and Reclamation Ordinance. Table 4.5 provides a summary of these regulations.

TABLE 4.5

OTHER COUNTY ORDINANCES WHICH ADDRESS VISUAL QUALITY

TYPE OF REGULATION	TYPE AND LOCATION OF DEVELOPMENT REGULATED	DESIGN FEATURES REGULATED	COMMENTS
GRADING AND EXCAVATING ORDINANCE			
Section 8602.2	Land clearing operations in scenic corridors.	Site Features: I	Requires a permit when vegetation removal exceeds 1,000 sq. ft. within any 2 yr. period.
Section 8604.3	Land clearing and grading operations in scenic corridors.	Site Features: I, L	Gives Planning Commission permit granting authority.
	Land clearing and grading operations outside of scenic corridors.	Site Feature: I, L (1,000 cubic yds or less)	Gives Planning Director permit granting authority.
SIGNIFICANT TREE ORDINANCE			
Section 12,030	Significant Trees within Scenic Corridors.	Site Feature: I	Requires permit to cut, remove or destroy trees within 100' from R-O-W of any scenic road. Requires Planning Commission approval to substantially alter vegetation within a scenic corridor.
SUBDIVISION ORDINANCE	Development within all new subdivisions.		Establishes street and alley widths, block lengths, parcel size and shape and finally requires placement of significant trees.

TABLE 4.5 (Continued)

OTHER COUNTY ORDINANCES WHICH ADDRESS VISUAL QUALITY

TYPE OF REGULATION	TYPE AND LOCATION OF DEVELOPMENT REGULATED	DESIGN FEATURES REGULATED	COMMENTS
SURFACE MINING AND RECLAMATION ORDINANCE	Quarry operations on lands zoned M-Z, RM, RM/CZ, TPZ and TPZ/CZ.		Requires a reclamation plan specifying how the scenic quality of an area, to the extent feasible, will be restored.
TIMBER HARVESTING ORDINANCE			
Section 10,351--Special rules for east side of Skyline Boulevard.	Timber Harvesting on east side of Skyline Boulevard.	Site Feature: I	Allows special supplemental guidelines to be established over and above those contained in the Ordinance.
Section 10,451.1--Scenic Corridor specifications.	Timber Harvesting in Skyline Scenic Corridor.	Site Feature: I	Restricts the removal of timber in the scenic corridor. Location of truck roads and trails subject to Planning Commission approval prior to construction.
Section 10,451.2--Roadside Corridor specifications.	Timber Harvesting in Roadside Corridors.	Site Feature: I	Limits timber harvesting within first 100' of roadside corridors; allows the establishment of a visual impact area where harvesting is limited.

Notes to Tables 4.4 and 4.5

KEY TO ARCHITECTURAL FEATURES

A - Colors
B - Construction Materials
C - Architectural Scale and Design
D - Building Height
E - Accessory Exterior Features (Antennas, Lights, etc.)

KEY TO SITE FEATURES

F - Location of Main and Accessory Buildings
G - Location of Roads, Driveways, etc.
H - Restriction on Number of Access Roads
I - Removal of Vegetation and Trees
J - Location of Utilities
K - Location and Type of Screening
L - Alteration to Topography (Grading, Fill, etc.)
M - Protection of Public Views, Particularly Ridgeline Silhouettes
N - Location and Type of Signage
O - Minimize Visual Impact of Development
Q - Color of Pathway Pavements

VISUAL QUALITY ISSUES

I. IMPORTANCE OF PRESERVING VISUAL QUALITY

San Mateo County is in the unique position of having two discrete, environments: the predominantly rural Coastside and the highly urbanized Bayside. The rural area is characterized by a wide variety of colorful vegetation, richly textured rolling hills, soaring mountains and many dramatic, often magnificent views. The urbanized portion is characterized by a series of well-maintained, attractive neighborhoods and communities. The scenic diversity of the rural environment and the attractive appearance of the man-made environment make important contributions to the County's visual quality; protecting their individual aesthetic characters provides important benefits.

The appearance of rural areas provides important psychological, social and physical benefits. Quiet, pristine rural settings relieve the tension and stress of hectic urban living. They provide opportunities for recreational pursuits, an awareness and appreciation for the beauty of nature, and a distinct contrast to the concrete and masonry of developed cities.

The image of communities also provides significant psychological, social and economic benefits. Communities which are orderly, planned and developed with attractive buildings and structures, represent pleasant areas to live and work, create a sense of well-being, and stimulate and heighten aesthetic sensibilities. Attractive communities also affect social behavior by stimulating increased community affiliation and participation along with creating a sense of place and identity. Finally, well-maintained and attractively developed areas stimulate economic investments, increase property values and strengthen the tax base. There are, however, areas that are less attractive because of poor planning, neglected design standards, and the construction of buildings out of scale and harmony with their surroundings. While it is important to protect the appearance of attractive areas, it is also necessary to improve the image of those less attractive areas.

The appearance of both rural and developed areas make important contributions to the quality of life in San Mateo County and need to be protected. A necessary task in accomplishing this is to identify those operations and uses which have the ability to degrade the visual quality of these environments and then develop appropriate regulations and programs to lessen or eliminate their negative effect.

II. OPPORTUNITIES AND CONSTRAINTS AFFECTING VISUAL QUALITY

A. RURAL LANDSCAPES

1. Site Planning

The aesthetic character established by the natural landscape can be adversely affected by improper siting techniques. Particularly vulnerable landscape features include skylines, ridge tops and open grasslands. Because of the high visibility of skylines and hilltops, structures which don't relate to the shape of these landforms or fail to blend with the existing silhouette attract attention and detract from visual quality. Visual impacts can be lessened by siting structures down the slope in order to blend more with these landforms. Similarly, impacts upon visual quality of structures in open grassland areas can be lessened by locating them in or close to nearby forested areas.

Insensitive grading and vegetation removal also detract from the established character of the landscape. Harsh cutting, filling, padding or terracing of building sites can disturb the natural form of the terrain and remove all tree cover and vegetation. This disruption can be minimized through contour grading techniques which blend and harmonize with adjacent landforms. Similarly, preservation of natural vegetation or replacement with comparable plant types helps to retain visual quality.

The edges of water bodies are another landscape feature vulnerable to alteration. Locating structures too close to shorelines, streams, or drainage areas increases their visibility and creates a solid, imposing edge disrupting an otherwise open and varied border.

Finally, the placement of utilities also impacts visual quality. Utility poles and overhead wires can introduce shapes totally dissimilar to features usually found in natural landscapes. To lessen the impact upon visual quality when viewed from nearby travel routes, utility wires could be placed underground. There are, however, situations where undergrounding can create environmental damage that outweighs the benefits. In these cases, utility fixtures need designs with an uncluttered appearance which blend with the natural setting.

2. Exterior Appearance

a. Construction Materials and Colors

Another aesthetic consideration of development in rural areas involves construction materials and colors. Ideally, to ensure visual harmony with adjacent surroundings, building materials should reflect the textures of the natural setting. However, the diverse physical and environmental characteristics of the rural area make it difficult to dictate one set of standards for materials. Therefore, it seems appropriate to prohibit the use of construction materials so dissimilar to their surroundings that they detract from the visual quality of any natural setting. This includes building materials with highly reflective surfaces such as shiny metal siding.

And finally, use of color represents an important aesthetic consideration. Because the natural landscape reflects greens, browns, rusts and similar earth tones, structures which do not use these colors tend to stand out from the pre-existing range of hues. However, it is possible for structures to use colors other than earth tones and still be compatible with natural surroundings. A white farmhouse, a red barn, or a white lighthouse can be attractive focal points in natural settings. Colors other than earth tones can enhance rural development when it can be assured that their use will complement the other essential elements of good site design, namely, appropriate building styles and siting techniques.

b. Building Size and Scale

Structures out of scale with the size of the lot can overpower the existing landscape, particularly on parcels five acres or less in size. Blending large structures with existing terrain, trees and plant cover so that development remains subordinate to the natural setting becomes difficult on this size lot. To compensate, it seems appropriate to develop specific site coverage requirements for structures on small parcels to preclude out-of-scale development.

3. Resource Production Operations

In addition to the visual impacts that development imposes upon the rural landscape, operations to recover resources such as minerals, timber, and oil can also disrupt the visual quality of the landscape. Mineral extraction, for instance, creates unsightly visual impacts. This operation significantly alters the shape of natural landforms, removes vegetation, thus effectively eliminating color and texture, and lastly, scars the landscape. Further, these changes in landscape character will be evident from the onset of operations through the reclamation process. Sensitive planning to determine which portions of the proposed operations will have the most impact upon visual quality when viewed from adjacent access routes and nearby dwellings could reduce the disruptive impact. Techniques might include limiting the amount of land disturbed, controlling the location of haul routes, locating equipment in obscured places and completing restoration of disturbed areas so they blend with their surroundings.

Timber harvesting operations also affect the aesthetic quality of rural landscapes. Unattractive skid roads, stumps, burned and/or clear cut patches can significantly affect the visual quality of forested areas. These phases of timber operations need screening from nearby travel routes and scenic roads. Visual quality in forested areas may be maintained by selective harvesting and controlling the amount of open area viewed from the road.[1]

Finally, offshore oil and gas facilities also affect the visual quality of shoreline areas. Although prohibited in the Coastal Zone, the open character of these areas could be impacted by the construction of onshore facilities to service off-shore rigs and platforms. Generally,

these on-shore areas require the construction of processing facilities, temporary housing for labor, boat storage areas, and loading and unloading space.[2] The impact to visual quality these on-shore industries create could be lessened by modifying the architectural design and placement of structures upon a given site, taking advantage of naturally obscured areas or fully screening the operations from view. For additional information on the recovery of this resource, please see the Mineral Resources Chapter.

B. RURAL COMMUNITIES

1. Rural Service Centers

a. San Gregorio

The few remaining structures in San Gregorio lack a consistent architectural style, making it difficult to determine what visual standards need to be established for new development. Two buildings dominate the community and they represent different styles of design. The General Store reflects a strong Spanish Colonial influence illustrated through the use of a red roof tile, arched windows and stark white stucco exterior. The San Gregorio House, a much older structure, is Monterey Traditional and displays a restrained use of Greek Revival ornamentation with a gabled roof, a veranda with balcony and a wooden exterior. The few scattered dwellings nearby also have no dominant architectural theme.

Since it is doubtful that any significant growth will occur in San Gregorio, creating a visually unified area would be difficult. However, any new buildings will need to feature architectural elements similar to those found in the San Gregorio House and other houses in the community.

b. La Honda

The structures in the commercial portion of La Honda display a distinctive development character conveyed through the consistent use of low scale, rectangular structures with similarly shaped roofs, porches, overhangs, and natural color wooden exteriors. Overall, the physical character of development here is quite compatible with the surrounding wooded areas and a strong sense of visual harmony has been established. Using these particular elements of design and architectural detail in future development would ensure the continuation of this visually pleasing district.

The appearance of residential development in the surrounding hillsides, the Cuesta La Honda area, suffers from a lack of visual harmony among existing dwellings. There is no readily discernible architectural style since structures range from cottage-like bungalows to two-story dwellings and different construction materials and colors are used. As the design of future development really has no theme or style to conform or blend with, it seems best to focus on

ensuring a visually pleasing relationship between the structure and the existing features of the building site.

c. Pescadero

The rural service center of Pescadero established its development character along the lines of wooden Greek Revival. This is illustrated through the consistent use of particular architectural details and colors such as symmetrical positioning of windows and doors, steep roof lines and the color white. The structures also illustrate a restrained but effective us of such ornamentation as pierced columns, scroll work, wood shingles, porches, and picket fences. These embellishments contribute to a certain community composition and harmony.

While new development in Pescadero continues low in scale, it does not incorporate the design features found in the historic community buildings and colors tend to be earth tones rather than white. The disruption to visual quality that development of this type creates could be reduced by requiring future construction to use those architectural details and colors which will blend and harmonize with earlier structures.

2. Rural Subdivisions

The character of development in the two case study rural subdivisions, Skylonda and Redwood Park, is quite similar. Both areas use low, small-scale cottage type dwellings clearly illustrative of their origins as vacation structures. Similarly, narrow dirt access routes and profuse natural vegetation also contribute to the country atmosphere. It seems a very appropriate development style for heavily wooded settings.

Sky Ranch Estates, however, developed a much different physical character. Dwellings here are much larger and luxurious than those in Skylonda or Redwood Park. Paved access routes with curbs, gravel-covered sidewalks and lots of cultivated landscaping combine to give a suburban character. While all these subdivided districts display two distinct development characters, both types work well and need to be continued.

C. URBAN AREAS

As in rural areas, the visual character of development in urban areas and districts can also be affected by architectural elements and site layouts which either enhance or interfere with the established and desired character of the surrounding development. Different areas throughout the County such as urban communities and urban neighborhoods project different types of development character. For ease of discussion, each will be presented individually.

1. Urban Communities

a. Montara/Moss Beach/El Granada

The development character of Montara-Moss Beach-El Granada was established through the repeated use of similarly sized bungalow type dwellings, similar roof styles, building heights, construction materials and pastel exterior colors. The presence of wooded areas, rolling hills, distant mountains and the Ocean greatly enhances the visual quality of the area. However, many homes built in recent years disrupted the established visual character of this community. This occurred through the construction of dwellings which ignore established building heights and architectural styles, lot coverage dimensions, and natural landscape features. Often, new development reached three stories, too large for the lot size and totally out of scale with neighboring structures. Natural vegetation and land form contours were often destroyed in an attempt to mold hillside lots to fit structures designed for flat terrain. The disruptive visual impacts created by this type of development could be lessened through the use of consistent, though not necessarily identical architectural styles, consistent lot coverages, and conservation of the natural features present on the building site.

Another factor which impacts the visual character of this area is the appearance of roadways. Many partially or totally unimproved roads with similarly unimproved adjacent rights-of-way present a disorderly image. It is common to discover roads where only one side of the block is paved, creating an unfinished look. This appearance is reinforced by the presence of quite a few totally unpaved roads. The appearance of these heavily used travel routes is often degraded by potholes, dust in the dry season and mud during the wet season. The adjacent unimproved right-of-way currently providing drainage fails to give any definition to the roadway. Rather than cleanly delineating the property line from the roadway, the two blur and run together in the right-of-way. A more clearly defined road system would improve the visual quality of the area.

b. Princeton-by-the Sea

The design of commercial and industrial areas of Princeton presents a problem. In the commercial area, a predominant archi tectural theme has yet to be established. Because of this district's proximity to Pillar Point Harbor, a nautical theme seems the most appropriate development character. In the industrial area, Princeton suffers from an established yet blighted development character more reminiscent of a junk yard than a boat yard. Outside storage areas are unattractive, there are no sidewalks, and land uses are mixed with some residential development. These factors create visual chaos. Again, the establishment of a nautical development theme seems suitable for future development.

c. North Fair Oaks

Small, one story, pastel-colored bungalows with attached garages, mixed in some areas with three-story low rise, multi-family apartment buildings, establish the character of residential development in North Fair Oaks. The visual harmony, however, of these areas is disrupted by oversized multi-family structures squeezed on small lots and the lack of adequate parking areas. These buildings, constructed on the same size lots as neighboring single-family dwellings, appear quite out of scale and dimension because building heights and bulk overshadow lower buildings, thus creating a discordant mix of structures. The parking of vehicles in asphalt covered front yards also contributes to a cluttered image.

The development character of the commercial area is established by the presence of a diverse mix of uses. These include auto body shops, discount warehouses, hardware stores and restaurants. The appearance of these uses is marred by incompatible mixes of buildings, unscreened outside storage areas, overhead utility wires, large business identification signs competing for the attention of motorists, off-site billboards and no landscaping or setbacks. As a result, this area has a very cluttered and chaotic appearance. A carefully designed program to modify or eliminate these disruptive features seems necessary.

2. Urban Neighborhoods

Two of the three urban neighborhood case studies, Highlands/Baywood Park and Emerald Lake Hills, represent areas where the existing pattern of development is orderly, attractive, and needs conservation. The Colma neighborhood, however, illustrates an area where an opportunity exists to improve upon and upgrade the appearance of development.

a. The Highlands/Baywood Park

The Highlands/Baywood Park subdivisions have developed with visually pleasing architectural styles that respect the integrity of the terrain while permitting views of nearby natural areas. Care must be taken to ensure that new development is consistent with both the architectural quality of existing development and sensitive to the constraints imposed by sloped terrain and natural vegetation.

b. Emerald Lake Hills

The siting arrangements and the appearance of structures in Emerald Lake Hills conforms well to the sloped terrain and heavy concentrations of natural vegetation. New development needs to be compatible with this rustic development character and continue to be subordinate to the natural landscape features present on the building site.

c. Colma

While many areas of Colma have pleasing, orderly residential and commercial development, there are some problem areas. Generally, these areas appear visually chaotic because of dissimilar land use groupings. For example, two-story dwellings often appear next to one-story dwellings on similar sized lots; commercial uses appear next to residential uses; or residential uses appear next to institutional uses. Large commercial parking lots also impair visual quality. Often these large expanses of paved areas have no landscaping or screening. Future development needs to avoid the visual chaos caused by mixing dissimilar uses. Further, large parking lots need to use landscaping to lessen their adverse affect upon visual quality.

D. VISUAL CORRIDORS ALONG ROADS

The strip of land immediately adjacent to County roads and highways is highly visible to a number of people, as many of these travel routes carry high volumes of traffic. Generally, this band of land or visual corridor contains a variety of features. In rural areas, visual corridors are likely to contain such natural landscape features as stands of mature trees, abundant plant cover, sloped terrain, man-made structures, agriculture operations and bodies of water. In urban areas, visual corridors can contain structures of historic and civic significance, vegetation and residential, commercial and industrial land uses. Often, these corridors, in both rural and urban areas, contain features of outstanding scenic quality. Examples include the natural scenery of the watershed lands adjacent to the Junipero Serra Highway, agricultural operations adjacent to the Cabrillo Highway, the Ocean, or the scenes of urban development adjacent to the Alameda de las Pulgas.

When visual corridors contain such scenic features, they need special protection from the adverse impacts of development. A preliminary task in developing a protection program is deciding how much land requires special protection. Ideally, each designated travel route needs to be inspected and the view from the roadway of the proposed corridor recorded upon topographic maps. The width of these corridors will vary depending upon the amount of development present, topography, and vegetation viewable from the road. Once boundaries are established for these visual corridors their scenic and landscape features then need to be inventoried. After the corridor widths are established and features inventoried, specific corridor management techniques can then be developed.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING VISUAL QUALITY

Presently a number of plans, policies and regulations control the appearance of development. How well these implementation measures eliminate or reduce previously identified factors which affect visual quality in rural and urban areas will be discussed in this section.

A. RURAL LANDSCAPES

1. Site Planning

The issue of improper site planning techniques which can adversely affect the aesthetic character of the rural landscape is well addressed by provisions in a number of zoning districts and ordinances. In the Coastal Zone, the RM/CZ, PAD, TPZ/CZ Districts, and the LCP Visual Resources Component of the Coastal Development District combine to provide protection for the visual quality of the rural landscape. These provisions also protect those features especially vulnerable to alteration such as landforms, ridgelines and edges of water. In addition, these provisions adequately guard against insensitive grading techniques and vegetation removal. These provisions also address the placement of utilities so their appearance remains subordinate to the setting. Outside of the Coastal Zone, the impact of improper development techniques is mitigated through the identical provisions of the RM and TPZ Zoning Districts and the Grading and Excavating Ordinance.

In addition to the above described regulations which address siting, there are additional provisions regulating siting and appearance for development in the scenic corridors. These regulations will be discussed later in the Scenic Corridor section.

2. Exterior Appearance

a. Construction Materials and Colors

Exterior construction materials and colors used in development in rural areas is an issue addressed in the Coastal Zone by the RM/CZ and TPZ/CZ Zoning Districts and the LCP Visual Resources Component of the Coastal Development District. Basically, the provisions of these districts seek to encourage the use of materials and colors which blend rather than contrast with the colors of surrounding natural resources. Outside of the Coastal Zone, the provisions of the RM and the TPZ are identical to their Coastal Zone counterparts.

Both the RM and RM/CZ Zoning Districts, however, effectively preclude anything other than textured materials finished in earth and vegetative colors in rural areas. Current language requires building materials and colors to be rough-textured and of deep earth hues in forested areas and in grassland areas materials and colors must reflect hues similar to the predominate colors of the site. This ordinance could be less restrictive by permitting colors and materials other than those specified when it can be demonstrated that they will not be visually disruptive to the rural landscape.

b. Building Size and Scale

The issue of out-of-scale development on small lots overpowering existing landscape features is somewhat addressed by Coastal Zone zoning districts and ordinances, namely the RM/CZ, TPZ/CZ and the

LCP Visual Resources Component of the Coastal Development District. Outside the Coastal Zone, the RM and TPZ Zoning Districts contain identical provisions. All the zoning ordinance requirements seek to limit building elevations in wooded areas so they do not exceed the height of the forest canopy. None of the ordinance provisions, however, address the related issue of lot coverage. The amount of land covered by a building on a small lot in rural areas needs regulating to restrict the intensity of the development and protect the visual quality of the rural landscape.

3. Duplication of Structural Development Regulations

While all these regulations, the RM, RM/CZ, TPZ, TPZ/CZ and the CD Districts adequately address the protection of visual quality in rural areas, they tend to be repetitive. With few exceptions, each ordinance addresses similar aspects of siting, grading, vegetation removal, and building materials and colors. Protecting the aesthetic quality of rural areas from the disruptive impacts of structural development could be accomplished more effectively by eliminating this duplication. This could occur by consolidating and synthesizing all the architectural and site design provisions into one concise set of regulations.

4. Resource Production Operations

a. Surface Mining Operations

The issue of minimizing the negative visual impacts upon the rural landscape created by surface mining operations is adequately addressed through the Surface Mining and Reclamation Ordinance. Provisions of this ordinance require the submission of long range plans indicating how adverse impacts upon visual quality will be minimized, how the mining activities will be phased and, finally, how the area will be reclaimed one year from date of completion.

b. Timber Harvesting Operations

The Timber Harvesting Ordinance addresses the impact upon visual quality in rural areas created by timber harvesting operations. While the ordinance allows the harvesting of 60% of old growth stands, prior cut stands and hardwood stands of trees in eligible areas, the provisions reduce the allowed harvested amount to 50% in areas adjacent to roadsides in general and the Skyline Scenic Corridor in particular. Further, the provisions prohibit the accumulation of slash material along roadsides and require the Planning Commission to approve the locations of truck roads, trails and/or landings, additional elements of timber operations which also affect the aesthetic quality of wooded areas. The increased regulation of operations readily visible from travel routes seems appropriate to reduce impacts upon the aesthetic quality of forested areas.

c. Oil and Gas Facilities

The impact upon the visual quality of the rural landscape caused by oil and gas recovery operations seems adequately addressed by provisions of the LCP Energy Component in the Coastal Zone and the Oil and Gas Well Ordinance outside the Coastal Zone. The provisions require screening, revegetating, painting and finally, limiting facility heights.

B. RURAL COMMUNITIES

1. Rural Service Centers

a. San Gregorio

Correcting the lack of an established development character for existing structures in San Gregorio is beyond the scope of current County regulations. However, establishing design guidelines for new structures and alterations is adequately addressed by the provisions of the DR Zoning District in conjunction with the supplemental guidelines of the LCP Visual Resources Component. These provisions call for new development to use clean lines, steeply-sloped roofs, similarly portioned windows and doors and wood construction.

b. La Honda

The residential area of La Honda also suffers from a lack of a consistent development character. However, here, as in San Gregorio, it is beyond the ability of the DR Zoning District to reshape the visual character of existing development. If the residents of La Honda should decide that the appearance of future development needs more stringent control, then the DR Zoning District can be an effective tool to control the design of new development.

c. Pescadero

Since the enactment of the LCP, the issue of new development being dissimilar in appearance to the historic buildings in the community is adequately addressed by the special design guidelines of the Visual Resources Component. These guidelines seek to preserve the historical development character of the district by encouraging the use of architectural elements similar to those found in older portions of the community, i.e., wood construction, white paint, and steep roof lines.

2. Rural Subdivisions

While the development character of Redwood Park and Skylonda is decidedly different than that of Skyranch Estates, each seems to work equally well in their respective surroundings. To ensure that the appearance of these areas is maintained, new development needs to use architectural features, elements and colors similar to those found in a given district. However,

it is difficult to say whether Design Review is the best tool to use to accomplish this.

C. Urban Areas

1. Urban Communities

The issue of overscaled development, dissimilar architectural styles and poor site planning in Montara-Moss Beach-El Granada seems adequately addressed through the provisions of the S-17 Combining District and the special design guidelines of the Visual Resources Component of the Local Coastal Program. The S-17 Combining District addresses building heights by limiting it to two stories, and reducing the amount of land the building can cover from 50% to 35 % on 5,000 square foot lots, and from 40% to 30% on 7,500 square foot lots. The concern raised by dissimilar architectural styles is addressed by special design guidelines which outline preferred elements of architectural design for these areas. Further, these special guidelines also encourage proper site planning.

The issue of unimproved roadways is not readily addressed by current regulations, as their improvement is entirely dependent upon available funding. The cost of these improvements is usually borne by the residents and many have been unable to afford them. For additional information on this issue, see the Transportation Chapter.

Establishing a design theme for future commercial and industrial uses in Princeton-by-the Sea appear adequately addressed by the special design guidelines of the LCP Visual Resources Component. These guidelines encourage a nautical development theme for commercial uses along with pitched roofs, wood siding and sea or natural colors. For industrial uses, the guidelines also encourage the use of subdued colors, textured building materials and landscaping to soften the harsh lines created by the use of stock or standard designs for industrial buildings.

The issue in North Fair Oaks of inappropriately scaled development in residential areas of mixed densities is not adequately addressed by the North Fair Oaks Community Plan. While the plan recognizes and addresses some of the impacts associated with mixed densities, it does not address the issue of overscale development.

The issue of visually chaotic commercial development in North Fair Oaks is not adequately addressed by the Community Plan. While the plan recognizes the need for well-designed commercial areas, the remedy of revising the zoning requirements related to commercial land uses to include standards of architecture and site control in order to assure attractive development seems appropriate to impact future development, it is less than adequate to resolve the design problems of existing development.

Finally, the adverse impact created by unattractive business signs is not adequately addressed by current regulations. Ordinance provisions limiting sign size, a significant visual factor, only specify a maximum size rather than limiting size in proportion to building scale. Theoreti-

cally, a building 20 ft. wide can have the same size sign as a building 50 ft. wide. Sign illumination, another factor, is only prohibited for signs advertising property sales or non-conforming uses, personal name plates, or announcement signs. This allows commercial business signs to use constant and/or flashing illumination. Lastly, current regulations fail to address sign colors. A business sign could have ten different colors and still be allowed.

Because North Fair Oaks contains a myriad of design problems, it seems appropriate to initiate extensive study resulting in comprehensive solutions to improve the appearance of the district.

2. Urban Neighborhoods

The issue of conserving the established development character of the Highlands/Baywood Park seems partially addressed by current zoning district standards. While the various zoning districts in effect, R-1/S-8, RE/SS-107 and RM, assure quality site planning, they do less well in assuring the architectural quality of subsequent development.

The issue of regulating development in order to preserve the aesthetic quality of the Emerald Lake Hills area is addressed by the Emerald Lake Hills Community Plan, the Residential Hillside (RH) District and the Design Review (DR) District. Together, these regulatory measures address site planning and architectural considerations and seem suitable to maintain the visual quality of the area.

Correcting the inappropriate mix of development in portions of Colma is an issue not readily addressed by current visual quality controls. Although various zoning provisions or architectural reviews could affect future development, these tools are not designed to improve the appearance of existing development. In order to correct existing design problems, it seems appropriate to encourage an in-depth study of the problem areas and determine design alternatives.

The issue of large unlandscaped parking lots is addressed by general zoning provisions. Section 6121 requires all parking lots to landscape those areas adjacent to street rights-of-way with live landscaping. It also requires parking areas with more than ten spaces to have landscaped areas, including those areas adjacent to the street, equal to at least 5% of the total parking lot area.

D. ADEQUACY OF DESIGN REVIEW ZONING DISTRICT

Because the Design Review Overlay District is a widely used tool to control the appearance of development, an evaluation of its effectiveness is necessary. In the Mid-Coastside, an area acknowledged as important to conserve because of the visual quality of the rural landscape features, the DR standards for review of development do a good job. These guidelines ensure that new development respects the visual and environmental characteristics of streams and other natural drainage areas, landforms, trees and vegetative ground cover, and finally, protects views.

In addition, the DR standards also contain a limited number of standards which address architectural concerns. For example, the standards seek architectural styles, construction materials, colors and building bulk compatible with the natural setting and/or surrounding community. In addition, a guideline encourages signs to be compatible with the structures they identify. In brief, the DR standards of review emphasize site planning in order to preserve the natural environment.

The ordinance, however, could be more effective if the standards for review were expanded to include guidance for design problems found in the predominantly urban bayside. Areas of concern often involve parking lots, landscaping, strip commercial development, multi-family development and industrial areas.

As a final word, it is important to acknowledge that the Design Review District by itself is not an effective tool to transform blighted areas. Rather, the Design Review District was conceived and implemented to control the appearance of new development. This tool is most effective when there is widespread community support for it.

E. VISUAL CORRIDORS

With the exception of Route 101, the views from those rural and urban travel routes described in Tables 4.1 and 4.2 meet current County Scenic Road criteria. These criteria encourage the inclusion of roads that are convenient to large population centers, provide access to public recreation areas and places of historic interest, provide scenic views, and are representative of a variety of road types. While Route 101 provides views of some attractive areas such as San Bruno Mountain and portions of the San Francisco Bay, the majority of areas visible do not represent examples of scenic urban development.

The next issue of determining how much land adjacent to selected travel routes needs protection seems adequately addressed by the approach taken in the Coastal Zone. In this region, viewsheds from select routes were identified and mapped on USGS Topographic maps as permanent scenic corridors. Outside the Coastal Zone, permanent scenic corridors have yet to be defined. In these areas, temporary corridors have been established until permanent ones can be developed. While the concept of temporary corridors seems appropriate, the mechanism used is inconsistent. Temporary corridors in lands zoned RM can be 1,000 feet in width, yet for all lands zoned other than RM, the corridor is as wide as those parcels immediately adjacent to the particular roadway. This can create situations where, not only do corridor boundaries fluctuate drastically between zoning districts, but it allows resources worthy of protection to be excluded if they appear just beyond a parcel immediately adjacent to the travel route. Temporary corridor boundaries of consistent widths need to be established until such time as permanent corridor boundaries are developed.

The issue of preserving the scenic quality of visual corridors in rural areas by regulating the appearance of development is well addressed through a multiplicity of regulations, policies and ordinances. The RM, RM/CZ, TPZ, TPZ/CZ and CD Zoning Districts, the Grading and Excavating Ordinance, the Significant Tree Ordinance, the Timber Harvesting Ordinance, specific regulations for the State-designated Scenic Corridors of Skyline, Cabrillo and Junipero Serra and the policies of the Scenic Roads Element all contain adequate provisions . However, the duplication and multiplicity of these regulations makes implementation difficult and confusion results as to where and how these regulations should be applied. The effectiveness of these measures would improve greatly by consolidating all the regulations applicable to the location and appearance of development into one concise set of regulations. While these regulations address issues associated with rural visual corridors, they do not regulate development in urban visual corridors. This is because many of these corridors lie within incorporated areas and each city must adopt regulations for the protection of visual corridors within its jurisdictional limits.

Although the County has no regulatory authority over many of the roads described in Table 4.2, they are included not only because of their scenic value but also because they form part of a network of City, County and State scenic roads. In this manner, the city's scenic road system supplements the County's system which in turn supplements the State's system, thus forming a network of travel routes.

F. SUMMARY OF PROBLEMS

The following list is a summary of those problems discussed in the evaluation of current design controls.

1. The provisions of the RM Ordinance to allow colors other than earth tones for development in rural areas need to be relaxed.

2. The amount of lot coverage for small lots in rural areas should be limited.

3. The multiplicity of similar provisions which control the appearance of development in rural areas should be eliminated.

4. An in-depth examination of residential and commercial design problems in North Fair Oaks and Colma is needed.

5. The Design Review development standards should be broadened to incorporate guidelines for predominantly urban design problems.

6. Consistent techniques for defining temporary visual corridors should be developed until permanent corridors are developed.

7. The multiplicity of standards regulating development in visual corridors should be eliminated.

IV. ALTERNATIVES

The following are alternative approaches to addressing the inadequacies in current implementation measures designed to regulate the appearance of development.

1. Consolidation of Measures Regulating Rural Development

The multiplicity of architectural and site design regulations currently in effect in rural areas of the County all focus primarily on preserving and protecting existing natural landscape features. Not only because of their aesthetic quality but also because development constructed in harmony with the natural characteristics of the land creates less environmental problems in the future. In order to simplify the regulation of development in rural areas, the consolidation of all site and architectural provisions contained in current ordinances could prove an effective solution. These consolidated design regulations could function most efficiently as an overlay district used exclusively in rural areas. These consolidated regulations could supplement existing zoning ordinance provisions and function much like the Design Review Ordinance.

2. Consolidation of Measures Regulating Visual Corridors

An alternative to the current duplication found in the assortment of regulations governing architectural and site design within visual corridors is the consolidation of all these measures into a concise set of guidelines. A comprehensive Visual Corridor Ordinance would be much easier to administer and enforce and could function as an overlay zone. Such as ordinance could contain standards applicable to development in rural visual corridors.

3. Special Studies in North Fair Oaks and Colma

In order to develop solutions to design problems in particular areas of North Fair Oaks and Colma, special studies could be conducted which would identify techniques and programs to improve the appearance of development in these areas.

4. Broadening the Scope of Design Review

The scope of the Design Review District could be broadened to incorporate provisions that address design problems common to urban areas. Such provisions could address the design problems of multi-family development that occur when constructed in predominantly single-family areas or the design problems associated with neighborhood and strip commercial development. Design problems of industrial areas adjacent to conflicting land uses could also be addressed. By including development review standards that address more of the visual quality problems associated with predominantly urban areas, the effectiveness of the Design Review District would increase. To accomplish this, a new urban design review overlay district could be developed.

5. When to Implement Design Review

Design Review works best when implemented in response to a request by a local community. When a community recognizes that new development is disrupting the visual quality of that neighborhood or community and wants to correct the problem, DR can be an appropriate solution. This approach of initiating the need for design control at the community level can have important benefits. First, it permits local development of design objectives tailored to meet the specific needs of the community. Second, this approach creates public awareness, acceptance and support for the design program. These benefits, local development of and support for design control, go a long way toward the success of any design program.

VISUAL QUALITY FOOTNOTES

[1] T. Daniel, H. Schroeder, Scenic Beauty Estimation Model: Predicting the Perceived Beauty of Forest Landscapes, p. 516.

[2] P. Marcus, E. Smith, Managing the Visual Effects of Outer Continental Shelf and Other Petroleum-Related Coastal Development, P. 628.

[3] San Mateo County Planning and Development Division, Coastside Cultural Resources of San Mateo County, p. 26.

VISUAL QUALITY APPENDICES

APPENDIX A - SCENIC CORRIDOR AND VIEWSHED DESIGNATION PROCEDURES

APPENDIX B - SUPPLEMENTAL ISSUE STATEMENT

APPENDIX C - TOPICS FOR FUTURE CONSIDERATION

APPENDIX A

SCENIC CORRIDOR AND VIEWSHED DESIGNATION PROCEDURE

The views seen from select transportation routes should be identified and mapped to ensure their preservation. The boundary determination processes and inventory techniques to be used by the County are outlined below:

1. Topographic Platting

   The limited visibility from each roadway is platted on a United States Geological Survey topographic map. All land areas, including distinct hilltops and hillocks visible from the existing or proposed corridors, will be considered during the topographical scenic definition of the corridor.

2. Scenic and Landscape Inventory

   The scenic and landscape features of each corridor are determined through on-site investigations. Landscape notation and photographic techniques similar to those developed by the United States Forest Service may be used in addition to other County criteria. After the scenic and landscape features and areas within the corridor boundaries have been determined, specific scenic corridor management measures should be prescribed and applied. Temporary scenic corridor boundaries should be applied while the topographic and landscape inventory processes are underway.

APPENDIX B

SUPPLEMENTAL ISSUE STATEMENT

In response to requests by the San Mateo County Planning Commission on December 12, 1984, the following statement was added to the Issues section of the Visual Quality Chapter.

GREENHOUSE STRUCTURES

Greenhouses, glass one-story structures used to grow flowers, present a unique problem in managing the visual quality of the landscape. The architectural features, construction materials, colors and siting requirements for these buildings are often perceived as visually unattractive. Typically, greenhouses are rectangular or cylindrical in shape, long, one story in height and have glass walls and roofs that are painted white. Greenhouses are usually developed in uniformly aligned groupings in sunny, open areas. Because the appearance and siting of these structures tends to be totally dissimilar to surrounding natural landscape features, the visual effect is often obtrusive.

To mitigate the impact upon the visual quality of the landscape, the following siting techniques should be considered: staggered rather than uniform placement to lessen the massiveness; vegetative or bermed screening and imaginative painting.

APPENDIX C

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Visual Quality Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

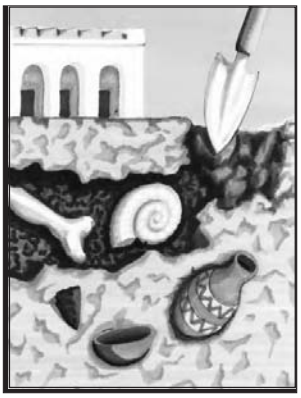
1. Examine the appropriateness of design regulations for Montara.

2. Consider developing different local design standards for each area or community.

5

Historical and Archeaological Resources

Background ▪ Issue



HISTORICAL AND ARCHAEOLOGICAL RESOURCES BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

From the times of the earliest Indian inhabitants to today's era of high technology development, San Mateo County has had a legacy rich in historical, archaeological and architectural resources. Many of these still remain and must be protected because of their value as physical links to the County's heritage.

This Chapter of the General Plan discusses the purpose and function of preserving historical, archaeological and paleontological resources; examines the benefits of preservation; describes methods for protecting these resources; analyzes preservation issues and provides policies to guide the implementation of resource preservation. The Chapter also provides inventories of architectural styles found in San Mateo County and important historical resources that are a product of the County's heritage.

B. STATE PLANNING LAW

The California Government Code allows the development of optional general plan elements. Section 65303(J) of the Code permits the inclusion of "a historical preservation element for the identification, establishment and protection of sites and structures of architectural, historical, archaeological or cultural significance, including significant trees . . . , and other plant materials." The Code states that a program to implement policies will be part of the element.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Elements

a. 1981 Historic Resources Element

The 1981 Historic Resources Element of the General Plan was divided into two sections. Section I, The Historical Setting, presented the historical background of the County from the time of the Coastanoan Indians onward. Section II, The Protection Program, discussed the purpose of historic preservation, issues and implementation techniques and developed policies to guide the implementation of the program.

This new chapter does not provide a history of the County from the times of the earliest inhabitants of the Peninsula to the present day. Readers interested in this subject are referred to the illustrated historical overview, San Mateo County . . . Its History and Heritage. This document expands the historical summary presented in

Section I to include recent occurrences of historical significance. San Mateo County . . . Its History and Heritage was prepared by the San Mateo County Historic Resources Advisory Board in cooperation with the Planning Division of the Department of Environmental Management, and it is available at the offices of the Planning Division.

In preparing this new chapter, Section II of the 1981 Historic Resources Element provided the majority of the information, and was updated to include a report on the implementation of the 1981 Element, specifically, the Historic Preservation Ordinance. Section II was further expanded to incorporate the archaeological/paleontological information of the Conservation and Open Space Element.

Issue statements and policies of the prior document have also been examined. As a whole, these issues and policies have been included. They have been augmented, where necessary, to incorporate additional issues and policies from current area plans which are relevant to the entire County.

The goals contained in the 1981 Historic Resources Element have been reviewed and combined with policies to produce collective statements to guide actions. Each policy statement has been titled and numbered, and unnecessary duplication has been eliminated. This revised Historical and Archaeological Resources Chapter of the General Plan reflects the achievements made to date and, once adopted, will replace the 1981 Historic Resources Element.

b. 1973 Conservation and Open Space Element

The 1973 Conservation and Open Space Element of the General Plan also discussed preservation. This document addressed archaeological/paleontological resources in the County, discussed issues concerning the preservation of these sites and developed policies to assist with their protection. As with the 1981 Historical Resources Element, relevant background information, issue statements and policies have been reviewed, modified where necessary, and included in this document.

2. Area Plans

The County has adopted as part of the General Plan the following area plans for unincorporated areas: North Fair Oaks Community Plan, Emerald Lake Hills Community Plan, Montara-Moss Beach-El Granada Community Plan, Local Coastal Program, the San Bruno Mountain General Plan Amendment and the Skyline Area General Plan Amendment. Four of these area plans contain particular historic and archaeological policies which apply to the specific area. The policies of this chapter are more generalized and apply to the entire unincorporated area.

D. PAST PRESERVATION EFFORTS IN THE COUNTY

In 1965, the Historic Sites Subcommittee of the Regional Planning Committee published a report identifying historic sites and landmarks in the County along with recommendations for their protection. Portions of this report were included in the County's 1968 Parks and Open Space Element. This initial effort to address the issue of historic preservation was later renewed and expanded to include the issue of protecting archaeological/paleontological sites. These concerns were discussed in the 1973 Conservation and Open Space Element, and policies were developed to aid in their preservation.

Further work on the issue of preservation was conducted in 1974, when an appointed Historic Sites Committee produced an inventory of historic landmarks and sites. This inventory provided a broad base which was useful in developing the preliminary inventory found in Appendix B.

It was determined, however, that a comprehensive approach to the subject was needed to bring the separate studies together in a plan that would represent official County policy. Therefore, on recommendation of the Historic Sites Committee, the Board of Supervisors requested that the Planning Division prepare a Historic Resources Element to the County General Plan.

To further assist the effort, in 1978 the Board of Supervisors appointed a County Historic Resources Advisory Board. Composed of an archaeologist, architect, archivist, attorney, historian, Director of the County Historical Association, and five members at large who have an interest in historic preservation, the Board assisted County staff in the preparation of the 1981 Element.

II. EXISTING HISTORICAL AND ARCHAEOLOGICAL RESOURCES

A. HISTORICAL RESOURCE INVENTORIES

1. Categories of Historic Resources

The State Office of Planning and Research has defined six types of historic resources which can be included in an inventory. These categories are:

a. Architectural History

Examples of the diverse styles and variations of residential and commercial architecture, whether vernacular or works of identifiable artisans, master craftsmen, builders, or architects. A good representation of a particular period or style might mean an entire street of such structures, each of minor importance individually, but of great importance in a grouping. Appendix A is a preliminary inventory of architectural styles found throughout San Mateo County.

b. Community Design and Aesthetic Features

Objects or relationships of design and aesthetic interest. This category includes such items as street lights, light fixtures, street graphics, street furniture, local or unusual building materials, interesting or pleasant design components, or landscape features that contribute to the "look and feel" of a community.

c. Cultural History

Sites and structures important to the history of the community. These include places associated with early development; continuing cultural events such as yearly festivals, parades or theater; places associated with literary or political figures and events; and places associated with educational, religious, or ethnic groups, and with individuals important to the community.

d. Development History and Industrial Archaeology

Surviving sites, routes, or structures important to the early settlement, economic origins, or technological development of the locale. This category might include evidences of the Spanish colonial or Mexican period, early agriculture or industry, town plat or subdivision history, and transportation routes from paths and trails to waterways, railroads, and more recent highways.

e. Historic Districts

Groups of structures, historic sites, natural features, landscape architecture, and/or other interesting design details which together create an exceptionally rich historic or cultural ambiance. Clusters of significant historic, cultural or aesthetic elements will normally justify designation as a historic district.

f. Paleontological and Archaeological Sites

Sites which yield information or evidences of earlier historic cultures; areas of cultural, social or economic importance to earlier people's daily lives or spiritual traditions (e.g., petroglyphs, ritual sites, hunting or gathering areas); grounds potentially rich in fossils.

2. Existing Inventories of Historic Resources

Included in the appendices of this report are the two existing inventories of County historical resources. Appendix B is a preliminary inventory of significant historic structures and sites located throughout the County. It was first published in 1981 in the Historic Resources Element of the General Plan. Appendix C is a comprehensive inventory of historic resources found in the Coastal zone. It was published in the Coastside Cultural Resources of San Mateo County in 1980.

B. INFORMATION ON ARCHAEOLOGICAL/PALEONTOLOGICAL RESOURCES

It is thought that the first known inhabitants of the Bay Area were members of an American Indian tribe identified by the Spanish name Coastanoan. By 1770, this tribe had grown to about 50 different groups and spoke a language consisting of approximately eight dialects. The presence of fresh water, fire wood, protection from the wind and easy access to food sources encouraged the Coastanoans to settle primarily on the Bayside. Some Indians, however, did live on the Coastside despite the climate and remains have been discovered in excavated middens and village sites.

Evidence of the Coastanoan culture has been discovered from excavated middens or shell mounds along the San Mateo Coast and from scattered sites inland. These middens are deposits of refuse often made up of shells, soil, ash, charcoal lenses, rock clusters, bones, skeletons and artifacts. Shell mounds range in size at the base from about 30 to 600 feet in diameter and in height from a few inches to about 30 feet. In age, many Bay Area middens range from 3,000 to 4,000 years.

A number of archaeological sites have been discovered throughout San Mateo County. In 1970, through the support of the Treganza Anthropology Museum at San Francisco State, several archaeologically significant areas were located and mapped. These maps are kept on file with the Planning Division of the County Department of Environmental Management. The exact locations, however, of these sites have been kept confidential in an effort to protect the areas from both vandalism and artifact hunters.

Paleontological resources or prehistoric fossils have also been discovered in the County. Examples of these limited resources have been discovered in exposed bluffs above the ocean bench along the coast. These sites contained molluscan fossils from the Pleistocene Period.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING HISTORICAL AND ARCHAEOLOGICAL RESOURCES

The following sections describe the various regulations, policies and programs currently being used in the County to protect historic resources.

A. FEDERAL

1. National Register of Historic Places and Historic Preservation Act of 1966

The National Register of Historic Places is the official inventory of the Nation's historic resources. The National Historic Preservation Act of 1966 expanded this register to include places deemed to be of regional, state or local historical, architectural or cultural interest. Eligible resources may be nominated and placed in the National Register upon approval of the Secretary of the Interior.

Although obtaining listing in the National Register is often difficult and a time-consuming process, it has several advantages: (1) it makes private property owners eligible for state administered Federal grants-in-aid for historic preservation programs; (2) it requires the National Advisory Council on Historic Preservation to comment on the effect federally assisted projects will have on listed resources; and (3) it makes owners who rehabilitate certified historic properties eligible for Federal tax benefits.

The County has several significant resources listed in the National Register of Historic Places. Appendix B describes which historic resources in San Mateo County are included on the National Register.

2. Tax Reform Act of 1976

Signed into law on October 4, 1976, Section 2124 of the Tax Reform Act amended the Federal Income Tax Code to: (1) allow favorable tax treatments of historic commercial and income producing structures, and (2) reduce tax incentives both for the demolition of historic commercial and income-producing structures and for new construction on the site of demolished historic buildings.

Specifically, the Act permits owners of certain depreciable properties to amortize the costs of rehabilitation over a five year period or to depreciate the costs of a rehabilitated structure at an accelerated rate. The tax incentives are available for any project which the Secretary of the Interior certifies as conforming to the standards and guidelines for rehabilitation of historic structures.

B. STATE

1. State Historical Building Code

Created under the provisions of Section 18950 et. seq. of the State Code, the State Historical Building Code allows a more sensitive approach to restoring structures that were built prior to the development of modern construction techniques and the implementation of current building codes. The legislation provides local jurisdictions with alternative building regulations for the rehabilitation, preservation, restoration, or relocation of designated historical buildings or structures. This bill allows the building code regulations, alternative building code regulations, or any combination thereof, to be used to permit repairs, alterations, and additions to historical buildings or structures.

2. Office of Historic Preservation of the California Department of Parks and Recreation

In accordance with the National Historic Preservation Act of 1966, the Office of Historic Preservation is responsible for preparing a statewide long range historic preservation plan, conducting a statewide survey of historic sites, nominating and overseeing the protection of sites eligi-

ble for the National Register of Historic Places, and administering a matching grants program. This office also serves as staff for the California Historical Resources Commission. Appendix B describes which historic resources in San Mateo County are included in the State Inventory of Historic Resources.

C. COUNTY

1. County General Plan Policies

a. Elements

(1) 1981 Historical Resources Element

The 1981 Historical Resources Element of the General Plan developed a comprehensive set of policies to aid in the protection of significant historical, cultural and architectural resources. These policies set forth a course of action and provide a framework for historic preservation planning in the County. The policies have been included in this revised Historical and Archaeological Resources Chapter.

(2) 1973 Conservation and Open Space Element

The 1973 Conservation and Open Space Element of the General Plan included a discussion of County archaeological and paleontological resources and addressed issues affecting their preservation. Policy statements were developed to aid in the protection of these resources through continued identification, study and management of excavation sites.

b. Area Plans

(1) San Bruno Mountain General Plan Amendment

The San Bruno Mountain General Plan Amendment contains policies to protect archaeological and historical resources and continue protection programs during the preparation of specific plans.

(2) Montara-Moss Beach-El Granada Community Plan

The Montara-Moss Beach-El Granada Community Plan contains a policy to obtain historic designation for the Montara Light Station. This resource is included in the State Inventory of Historic Resources.

(3) Local Coastal Program

The Visual Resources Component of the 1980 Local Coastal Program of San Mateo County identified several structural features within the Coastal Zone of historical, architectural or cultural significance. Policies were developed to aid in

their preservation and special supplemental design policies were set forth to guide the appearance of structures in identified coastal communities.

Archaeological/paleontological resources are also addressed in the Locating and Planning New Development Component of the LCP. This policy requires that sites proposed for development be reviewed, based upon sensitivity maps, to determine if they are within resource sensitive areas. If so, a mitigation plan prepared by a qualified professional is to be submitted, reviewed, and implemented as part of the project.

2. Other County Policies and Programs

a. Inventories

An inventory of historical resources provides the basis for the preservation plan and is the first step in developing a protection program.

There are two levels of inventory work--preliminary and comprehensive. The preliminary inventory is a first attempt to compile a list of well known and easily recognized historic resources. This list is usually compiled by citizens knowledgeable in the history of the County. It is by no means a final list; rather, it represents the beginnings of a County inventory and provides a basis for the second or comprehensive level of inventory work.

A preliminary inventory of the County's resources has been prepared by the County Historic Resources Advisory Board and is included in this report in Appendix B.

The comprehensive identification of resources through a second, in-depth inventory of resources is the next step toward developing a preservation plan. This second inventory goes a step further than the initial identification of obvious resources documented by the preliminary inventory. A comprehensive inventory investigates in depth cultural, historic or aesthetic aspects of the community that make it an interesting or pleasant place to live and work. This may include structures of historic or archaeological value, archaeological/paleontological sites, or design features of special interest. A comprehensive inventory is also normally conducted by a professional survey team or by a team of well-trained nonprofessionals under the supervision of a professional historian. A comprehensive inventory may entail a block by block study of the community. Such an inventory of resources located within the County's Coastal Zone has been completed (see Appendix C) and covers a major portion of the unincorporated area.

b. Historic Resources Advisory Board

In 1978, a County Historical Resources Advisory Board was appointed by the Board of Supervisors to insure implementation of the goals, policies, and programs set forth in the Historic Preservation Plan. This body advises the Planning Commission, Parks and Recreation Commission, and the Board of Supervisors on matters relating to the protection and preservation of man-made resources of historical, cultural and architectural significance.

c. Acquisition

(1) Public

Public acquisition of significant historic structures is a preservation technique which has been used on a very limited basis in the County. To date, the Woodside Store, Sanchez Adobe, the Lathrup House, and the Folger Stables in Wunderlich Park are examples of historic structures in County ownership.

(2) Private

Acquisition of significant structures through the private sector remains a feasible approach to protecting historic resources. The Johnston House and the Filoli Estate are examples of local historic structures which have been privately acquired and renovated.

3. County Ordinances

a. Zoning Ordinances

(1) Coastal Development District

Sections 6328.19 and 6328.26 of the Coastal Development District implement the policies set forth in the Local Coastal Program by establishing them as standards for review for proposed development in the Coastal Zone.

(2) Resource Management District

Section 6324.5 of the Resource Management District implements the policies of the 1973 Conservation and Open Space Element. This section requires a survey by a qualified professional to be performed whenever there is substantial indication that an archaeological or paleontological site may exist within a project area. Further, when such a site is discovered during construction work which could damage the site, work is to be suspended pending an investigation by qualified professionals in accordance with certain procedures. This section also prohibits the destruction of primary sites and requires the professional excavation of other sites prior to development.

b. Other Ordinances

(1) Historic Preservation Ordinance

A Historic Preservation Ordinance has been prepared to provide the County with the authority to protect eligible resources listed in the various inventories included in the appendices of this report. This ordinance: (1) provides criteria and procedures for the designation of County historic landmarks and historic districts; (2) requires permits to be obtained to demolish, alter, or relocate designated landmarks or districts, and to construct, place, alter or relocate signs, exterior lighting, fences or other features within historic districts or on landmarks or landmark sites; and (3) when approved by the Secretary of the Interior, allows owners of structures or buildings within designated historic districts to qualify for favorable tax treatments for approved rehabilitation work.

(2) Modification of Regulated Uses Within Historic Structures

A second ordinance relative to historic preservation has also been prepared. This ordinance amends the zoning regulations to permit uses not allowed by the underlying zoning district regulations to locate in eligible historic structures provided certain criteria are met.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES ISSUES

I. IMPORTANCE OF HISTORICAL PRESERVATION

The preservation of historical resources returns a variety of benefits to a community. Some benefits, for example, social and cultural rewards, are less clear-cut and identifiable than the more tangible economic benefits resulting from preservation. They are, however, no less valid. Each of these benefits is discussed below.

A. CULTURAL BENEFITS

The cultural benefits realized from preservation are varied and most often linked to the subtle influences that surviving historical resources have on people.

Remaining historical landmarks psychologically benefit a community by imparting a sense of attachment to a place and a sense of comfort from "feeling at home" in familiar surroundings. Such resources verify that a community has had a past and help to establish a sense of self-identity and permanence for present-day inhabitants.

Historical resources also serve as tangible examples of a community's architectural legacy. Past building styles, materials and methods of construction lend an appreciation of styles of craftsmanship no longer practiced.

B. ECONOMIC BENEFITS

Although cultural benefits are crucial to any historical preservation program, the economic benefits make preservation planning more attractive. Economic benefits are:

1. Property Values

Rehabilitated and protected historical sites and districts acquire prestige and distinction, resulting in higher property values.

2. Retail Sales and Commercial Rents

Commercial use of historic structures, i.e., Ghirardelli Square, the Cannery, and Jackson Square in San Francisco, has been successful. In these and other older commercial areas, shoppers, business people, and professionals are attracted by the feel of older structures and the distinctive quality of design. Commercial space has become more valuable and retail sales have increased after the areas were rehabilitated for commercial use.

3. Replacement Costs

In a period of diminishing resources, expensive building materials, and rising construction costs, recycling older structures becomes more cost-effective. Despite heavier code compliance requirements and new seismic safety standards, the reuse, rehabilitation, and restoration of existing structures often cost less per square foot than new construction.

4. Tax Revenue

When rehabilitation and restoration of historical structures raise property values, then tax revenues correspondingly increase. Communities concerned about declining revenues in central areas or in older residential sections should consider these benefits.

C. SOCIAL BENEFITS

Historical preservation is also community conservation. Preservation of structures in areas undergoing varying stages of decline can provide the residents with a renewed sense of well-being. By demonstrating that the area is worthy of improvement efforts, the residents may have more positive feelings about the neighborhood and participate more in its upkeep. The resultant removal of blight and other undesirable influences can do much for increasing community pride.

Preservation of historic resources can also be a positive and realistic approach to countering ill effects of urban sprawl by reducing the need to consume more natural resources. In communities that are completely developed, preservation may be the best way of maintaining or reviving the area.

II. OPPORTUNITIES AND CONSTRAINTS AFFECTING HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Many of San Mateo County's historical and archaeological/paleontological resources are threatened either by destruction or by alteration. Several factors threaten to destroy these resources: namely, demolition for redevelopment; ruin of archaeological/paleontological sites; difficulty in finding an economic use, and lack of maintenance funds. Improper rehabilitation and the impact of infill development can also negatively alter these resources.

A. DESTRUCTION OF RESOURCES

1. Demolition for Redevelopment

As land suitable for development in the County becomes scarcer, older urban areas are being redeveloped. Many of these older areas contain excellent examples of structures that are part of the County's heritage. An example is the Twelve Mile House in South San Francisco that was destroyed in 1977 to make way for a store and parking lot. The structure, built in 1851, served for many years as a stage coach stop

for travelers going to and from San Francisco, and it was the last remaining building of its kind in the County. This was just one of many structures whose contribution to the development of the County is now gone and can never be replaced because of redevelopment.

2. Ruin of Archaeological/Paleontological Resources

A number of archaeological/paleontological sites throughout the County have been destroyed because of vandalism, urban development, agricultural production, new roadway construction, water resource projects and similar kinds of activities. As urbanization spreads, the vulnerability of sites to disturbance also increases. Unfortunately, archaeological-paleontological sites are not renewable resources.

Protecting archaeological resources often provides the benefit of knowing how past cultures developed as well as how man was able to adapt to the environment. This educational reward is considered to be significant, because it forms the basis from which the present day activities of mankind can be compared and judged.

3. Difficulty of Finding an Economic Use

In some cases, historical resources in low density areas can no longer be economically used for the purpose for which they were built. If they could be redeveloped for more intensified uses, i.e., commercial, office or multiple family, it may be feasible to restore them. These uses, however, often are not compatible with the zoning or consistent with the General Plan for the area. An example of this is the Johnston House south of Half Moon Bay. In order to make the project a more viable endeavor and functional part of the community, the house was proposed to be used as a community center for senior citizens. Since the structure is located outside the urban area, conversion to a community center would result in a more intensive use of rural land and a need for urban services.

The Local Coastal Program, however, prohibits the extension of urban services, since they could be used to expand urban development into a rural area. Because of these factors, the project was denied by the Coastal Commission. To help protect and maintain historic buildings, such as the Johnston House, a process could be developed that would allow a reasonable economic use of historically significant structures which otherwise would be in conflict with zoning and general plan requirements.

4. Lack of Maintenance Funds

It is becoming increasingly difficult to obtain funds to maintain historic structures. Two County historic properties, the Woodside Store and the Folger Stables, are in need of repair and may not be saved unless corrective action is taken soon. Since the passage of Proposition 13, local governmental funds are severely limited for preservation purposes. In the past, most funding for historical preservation came

from the Federal government through grants coordinated by the State Office of Historic Preservation. This funding, however, is being severely curtailed as part of the Nation's new economic program. Private funding may be the only source for preservation work in the foreseeable future.

B. ALTERATION OF RESOURCES

1. Improper Rehabilitation

In order to protect the market value of a building as well as preserving its architectural and historical integrity, rehabilitation must be done properly. Older structures can lose historical character when owners decide to rehabilitate their buildings and do not have adequate information or expertise on how to preserve its original design.

Many well-intentioned homeowners spend a lot of time and money on inappropriate improvements when rehabilitating older homes. Important architectural detailing is often stripped away or covered over with layers of asphalt shingles or stucco, and aluminum windows are often used to replace wooden ones.

Correct rehabilitation can be accomplished when compatible structural elements are used which are suitable in both material and design to the original architectural concept of the building.

2. Inconsistent Character of New Development

Land use planning for the County now emphasizes encouraging new development on vacant land in urban areas in order to protect rural areas from urbanization. The Local Coastal Program, for example, encourages new development in the Coastal Zone to locate in already developed areas.

Because of this infill strategy, the character of such communities as Pescadero and San Gregorio may be endangered from new development which does not conform to the established design character. To address this concern, the Local Coastal Program has developed design criteria for coastal communities to ensure that new construction blends within the context of the historical setting. These criteria, however, address only the resources of the Coastal Zone and similar guidelines may be necessary for other historic areas countywide.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Various programs, policies and regulations are currently used by the County to protect resources of historical, archaeological/paleontological, architectural or cultural significance. An assessment of these protection techniques is discussed in this section.

A. PROTECTION TECHNIQUES

1. Preservation Plan Inventories

The cornerstone of any historic preservation plan is the identification of all significant resources. Two levels of inventory work, preliminary and comprehensive, are required. The County has already developed a preliminary inventory of significant sites, structures and architectural styles.

The inventories, however, have not included an updated assessment of archaeological/paleontological resources. Since 1970, no attempts have been made to update the inventory prepared under the sponsorship of the Treganza Anthropology Museum at San Francisco State University. An updated preliminary identification of these resources is necessary to develop a thorough countywide protection program.

In 1980, the County made a start developing a comprehensive inventory of significant sites, structures and architecture in the Coastal Zone. Through a matching grant from the National Endowment of the Arts, the County identified buildings, structures and sites of importance to the Coastside. This survey, however, was limited to the Coastal Zone and needs to be expanded to include countywide resources.

2. Historic Resources Advisory Board (HRAB)

To date, the HRAB has proven itself to be a capable body whose continued work is necessary for the implementation of the preservation plan. The Historical Resources Advisory Board, however, only has jurisdiction over the unincorporated area of the County. The Board, as a lead agency, could work toward organizing a unified approach to historic preservation for the entire County through the coordination of their activities with local city historical societies, the County Historical Association, and schools and colleges in the County.

3. Acquisition

a. Public

Public ownership is a preservation technique to be considered when a significant structure becomes available in a location appropriate to the performance of a particular public function or when this is the only chance remaining to save a truly out-standing building.

Possible uses for significant historic buildings might include city or county offices, branch libraries, office space for special agencies, an art school annex or rental gallery affiliated with an art museum, a community center for the provision of various government services, etc.

A lack of funding, however, is cited as the reason this preservation approach has not been used on a widespread basis. In light of recent national fiscal policy which has restricted local government spending, the prospect of public agencies earmarking funds for projects of this type does not appear likely in the near future.

b. Private

Private ownership is an approach to protection which could be promoted for those significant structures whose future is threatened. Acquisition of structures converted to new and economically viable uses such as offices, restaurants and the like would generate revenue and, more importantly, ensure the preservation of a valued resource.

Private sources can assist in finding and funding appropriate reuses for historic and cultural structures permitted by existing zoning and land use regulations. There are numerous examples throughout the country where private organizations or individuals have purchased and restored historic buildings for their own use. Ghirardelli Square and the Cannery in San Francisco are excellent examples of the conversion of historic buildings into successful commercial centers, a trend which has been copied in numerous cities throughout the country.

B. COUNTY ORDINANCES

1. Coastal Development District

The policies and regulations of this overlay district protect and preserve significant historic, architectural, archaeological and paleontological resources located within the Coastal Zone.

The guidelines, however, developed to protect archaeological/paleontological sites require the use of location maps to determine the proximity of new development to a site. These maps are quite out of date. To ensure that the presence of these resources is considered when new development proposals are reviewed, these maps need to be updated.

The remaining guidelines which focus on eligible historic structures and sites protect these resources through both the Historic Preservation Ordinance, and supplemental design guidelines for particular coastal communities. Though the adequacy of the ordinance has yet to be proven, the supplemental guidelines afford protection from improper rehabilitation and the potentially inconsistent character of new development.

2. Resource Management District

The provisions of the Resource Management District to protect archaeological/paleontological resources by requiring site surveys, cessation of construction work and excavation by qualified professionals are suitable protection techniques. These methods, however, apply only to lands zoned Resource Management and Planned Agricultural District. In order to protect resources located countywide, these techniques need to be expanded.

3. Preservation Regulations

Since the two new regulations to implement the 1981 Historic Resources Element have just been adopted, their effectiveness has yet to be proven. The first regulation, the Historic Preservation Ordinance, addresses the issue of resource protection through establishing criteria and procedures to designate historic landmarks and districts. Further, this ordinance protects resources from demolition and alteration by requiring permits to demolish, alter or relocate either the structure or accompanying features.

The second ordinance is designed to address the issue of a viable economic reuse of historic structures. By permitting uses normally not allowed in certain zoning districts to occupy eligible structures, these resources can continue to function as productive modern day reminders of the County's cultural heritage.

C. SUMMARY OF PROBLEMS

1. Lack of updated inventory of archaeological/paleontological resources.

2. Lack of comprehensive countywide inventory of significant historical resources.

3. Insufficient funding to acquire historic resources for public ownership.

4. Lack of updated archaeology/paleontology resource location maps and the need for these to be stored in a more convenient location.

5. Insufficient protection provisions for archaeological/paleontological resources.

IV. ALTERNATIVE PRESERVATION TECHNIQUES

The following methods are additional techniques of protection which the County could consider to help encourage and assist historic preservation.

A. DEVELOPING GUIDELINES FOR HISTORIC REHABILITATION

The County could publish guidelines for historic rehabilitation similar to those developed by the Department of the Interior. Such guidelines could be used to help owners who are undertaking rehabilitation of older structures choose compatible products, suitable in both materials and design to the original concept of the building and the surrounding neighborhood.

B. TRANSFER OF DEVELOPMENT RIGHTS

Transfer of development rights (TDR) is a concept which may be used to protect historic areas or structures. The technique separates development rights from a landmark structure and reuses them in other locations. Many times these transferred development rights appear as zoning density bonuses on other buildings.

When a local government purchases the development rights for a particular landmark, they can be sold to interested developers. The transfer of development rights in this manner shifts preservation costs from the local government and the landmark owner to the development process itself.

C. REVOLVING FUNDS

Basically, in a revolving fund, monies are raised to purchase and restore historic structures, which are then rented or resold (usually with deed restrictions to protect the exterior appearance of the structures--facade easements) with the proceeds returning to the fund to be applied to other structures. Revolving funds are generally operated by private historic preservation groups or foundations, although local government may contribute.

The revolving fund method minimizes government in historic preservation. A historic property is thus preserved but remains in private ownership.

D. FACADE EASEMENTS

The facade easement is a means for public control of the appearance of a building without substantially affecting the use of the property. Typically, a public agency or private association acquires through purchase, or perhaps donation, an easement over the facade of the building by paying the property owner 10-20% of the actual value of the property. This prohibits the owner from altering the exterior appearance of the building without approval of a designated public agency.

A major advantage of using facade easements is that it preserves the architectural quality of a structure while placing a minimum limitation on property use. The acquisition of facade easements is much less expensive than direct public acquisition of historic properties, while accomplishing many of the same desired results.

E. RESTRICTIVE COVENANTS

A covenant is a private legal restriction on the use of land and binds the owners and their successors to particular practices with respect to their property. While restrictive covenants may provide effective controls, they may be virtually impossible to create in historic areas with many owners. Restrictive covenants are most useful when an individual owner or foundation purchases or restores numerous old structures.

Restrictive covenants cannot be employed by governmental agencies but, in certain cases, may be an effective method for a private organization to protect a group of historic buildings they control.

F. RECOGNITION

A final type of private effort is more an educational technique than a tool to accomplish historic preservation. Local historical associations can place a distinctive marker on the structure to signify its importance to the community if the owner agrees to a certain standard of maintenance. If the owner fails to meet this standard, the plaque is removed.

The County Historic Advisory Board could consider recognition techniques such as this to identify historic structures protected by the County Historic Preservation Ordinance.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES APPENDICES

APPENDIX A - INVENTORY OF ARCHITECTURAL STYLES

APPENDIX B - PRELIMINARY INVENTORY OF HISTORIC RESOURCES

APPENDIX C - COMPREHENSIVE INVENTORY OF COASTAL RESOURCES

APPENDIX D - PERFORMANCE CRITERIA AND DEVELOPMENT STANDARDS FOR COUNTY HISTORIC SITES

APPENDIX E - SUMMARY OF RECENTLY ADOPTED STATE LEGISLATION AFFECTING HISTORICAL RESOURCES

APPENDIX A
INVENTORY OF ARCHITECTURAL STYLES

INTRODUCTION

The following inventory represents a preliminary survey of architectural styles found within San Mateo County.

1. Adobe (1780-1850)

   The term adobe refers to a building material and to a construction type used during the Spanish and Mexican periods in California history. Adobe structures must, by definition, be built at least partially of adobe: large, unfired, sun-dried bricks made from clay-type soil mixed with straw for strength. The architectural style is characterized by long structures with a covered porch extending along the facade.

   Construction consists of adobe walls, usually varying from one and a half to six feet in thickness, resting on dirt foundations. Roofs are usually either brea (natural tar), tile, or shingles supported by heavy wooden beams. Door and window openings are normally surrounded by heavy timbers also, and often there are arches and long porches. In the 19th and early 20th centuries, many adobes were covered with wood siding in order to protect and modernize them.

2. Pioneer (1850's)

   Pioneer buildings are rectangular-shaped cottages which were built by California's early settlers. Sometimes these houses were sent in sections from the East Coast and reassembled in California. Usually 1 to 1 1/2 stories, the cottages were frame structures with either hipped or gable roofs. If gabled, roofs often take on the "salt-box" configuration typical of New England's Colonial houses. Front porches and shelf moldings over doors and windows are typical features.

3. Salt Box (1850's-1900)

   This early American house form is of frame construction and has a symmetrical facade. It was derived from England and brought to California by New Englanders, mainly in the 1850's. The name comes from the profile of the gable roof, which comes down lower in the rear (north elevation) than it does in the front. The typical California version adds a full front porch with a shed roof whose pitch is lower than that of the gable.

4. Greek Revival (1850's-1860's)

   The Greek Revival style was one of the most popular in the United States. Buildings of this style are very straightforward statements, with clean, simple lines and precise detailing. Facades are usually devoid of extraneous ornamentation, save perhaps decorated porch posts.

In its early California stages, Greek Revival is noted for its sharp, severe lines. Building volumes appear as a simple block, or a juxtaposition of simple blocks. Roof slopes are steep, and different building volumes are positioned perpendicularly. Doors and windows are positioned at very regular intervals, often in a symmetrical relationship. Doors have the same proportions as windows, both long and narrow. Windows are composed of many small panes with simple architraves at the top. Molding around windows and doors and at building edges is very precise. The more articulated examples of Greek Revival have gable returns, i.e., roof plane framing that returns at the building edges.

5. Gothic Revival (1850's-1860's)

Gothic Revival was an important architectural style for churches, institutions, and large houses in the Eastern United States during much of the first half of the 19th century. In form, typically, it has steeply-pitched central cross-gables or gable ends. Characteristic detail includes vertical siding, shallow pointed arches on porches and doors, lancet windows, window tracery, finials, pendants, crenelation and lacy bargeboards.

During the Victorian period, which lasted from 1860 to 1900, the Gothic Revival style often took on characteristics of Victorian architecture and is referred to as Victorian Gothic.

6. Victorian (1860's-1890's)

Literally, the word "Victorian" describes the era when Victoria was Queen of the British Empire.

California Victorian architecture varies in design and can be divided into three distinctive styles: Italianate, Stick, and Queen Anne. These styles are discussed below:

a. Italianate (1860's-1880's)

The Italianate style derives its form and ornament from 15th and 16th century Italian architecture. It is characterized by cube shaped construction, tall, narrow windows and doors, angled bay windows, a small portico with classical columns, and a flat, heavily bracketed roof line. Room heights diminish at upper stories and floor divisions are articulated by horizontal coursing. This style was adapted from stone structures, translated into native redwood and Douglas fir. The square groins at the corners of an Italianate house are decorative imitations of masonry reinforcements, and the Corinthian columns on the porch are carved from wood in the shape of marble originals. The windows have a three-dimensional quality that makes them resemble sculpture more than conventional panes of glass. Italianate is the most classical in spirit of the Victorian styles.

b. Stick (1870's-1890's)

The Stick architectural style is characterized by tall proportions, irregular silhouette, projecting eaves, diagonal "stickwork," and applied wood (often in strips), suggesting unseen structural framing. Flat, narrow boards nailed to the outside of the building reinforce the structural skeleton beneath the clapboard skin. Diagonal braces, installed parallel to the facade instead of projecting from it, frame the porch. Its composition of right triangles is ornamented with spindles, curved brackets, grooved moldings, and incised sunrays and starbursts which cast shadows on the facade behind. This ornamentation was easily worked on machinery that was developed and widely available in the 1880s. Builders of this style were treating wood as wood, rather than imitating stone as in the Italianate houses.

c. Queen Anne (1880's-1890's)

The Queen Anne style is characterized by rounded corner towers, shingles, unusual chimneys, and high peaked roofs, mixed with elements taken from other late 19th century architectural fashions. It marks a dramatic departure from the rigorously vertical Italianate and Stick styles. The Queen Anne design is more horizontal in appearance, but more importantly, it is an absolute concoction of volumes and textures. Round corner towers with peaked witch's caps intersect steeply pitched gables with applique sunbursts. Recessed upstairs balconies with turned balustrades overlook prominent front porches trimmed with arched latticework. The arrangement of forms often appears haphazard, as the assortment of surfaces is totally unrestrained. There is no single roofline, but rather a picturesque composition of merging shapes.

7. Romanesque Revival (1890's)

The Romanesque Revival style became the vogue for business building in the 1890's. Popularized by the American architect Henry Richardson, who used it for many of his works in Chicago and the Midwest, this design is based on French and Spanish Romanesque models of the 10th to 12th centuries. It is characterized by solid masonry construction, with semicircular arches and heavy piers.

8. Beaux Arts (1880's-1915)

Les Beaux Arts--the fine arts--refers essentially to the aesthetic principles enunciated and perpetuated by L'Ecole des Beaux-Arts in Paris. Numerous American architects trained at the school and were strongly influenced by the design principles taught there, which emphasized the study of Greek and Roman structures. Towards the end of the 19th century, the grandiose styles which prevailed gave way to more sedate forms, which were used for the townhouses and country estates of the rich.

9. Colonial Revival (1890's-1910)

This late 19th century American architectural style revived Georgian plans and forms, which were Baroque in general character. The Colonial Revival style was rich in elements derived from the Greek and Roman humanistic tradition and stressed symmetrical facades and floor plans and sensitive architectural proportions.

10. Mission Revival (1905-1925)

Despite its name, the Mission Revival style has almost no direct connection with the mission architecture of old California. Instead, it is an assortment of arts and crafts "simplicity." Materials are not disguised to appear as something else, and design elements are based on pseudo-Mexican colonial design elements, with hints of Romanesque heaviness. Arches and tiled roofs are the most general features of this style. Other features are low-pitched roofs, white plastered walls, balconies, and towers on large buildings. This style lasted up to the 1920's, when a more sophisticated, formal, and classic Hispanic style came into favor.

11. Bungalow (1905-1925)

The bungalow style characterized by a rustic exterior and sheltered-feeling interior, were most successful in the growing suburbs of Southern California. When built of stucco, the style is referred to as California Bungalow. When constructed of wood, clapboards or shingles, it is known as a Craftsman Bungalow. Characteristic of this style are spacious front porches supported by square, buttressed posts atop river boulder and brick piers. Windows are often tripartite and may be small-paned, or divided into a large lower pane and small upper panes. Bungalows often have broad spreading eaves supported by multiple gables with projecting beams.

12. Prairie (1905-1920)

The Prairie house has a predominantly horizontal appearance, with flat or very low-pitched, hip roofs and overhanging eaves, horizontal compositions with banding of casement windows, and extension of horizontal lines such as window sills around buildings as courses. Characteristic window mullions form geometric designs with smaller panes at the top. The Prairie style had a strong influence on California architects Bernard Maybeck and Charles and Henry Green.

13. Period Revival

During the first third of the century, a broad range of historical styles was revived in domestic architecture. Called the Period Revival, the major variations were the Regency Revival, Tudor Revival, Pueblo Revival, and Colonial Revival. These styles were usually executed by builders who knew little of their sources, using only decorative details. They are frequently inaccurate re-creations of earlier styles which at their best are highly imaginative impressions of an earlier style.

14. Spanish Colonial Revival (1915-1935)

The Spanish Colonial Revival style house, also known as Mediterranean, is identified by red roof tile and stark white stucco, although many of these houses are painted in various hues today. There was originally little color, except for the terra cotta of the tile and, frequently, the burnt sienna paint on the wooden window frames. Ornamentation was restrained, with wood or wrought iron being used for second-story balcony railings on larger homes, and window grills on cottages. Arches are common, either in the front porch, front windows, front door, or all three. Extending from the side of many Spanish Colonial Revival style homes is a stucco wing, with another arched opening. Depending on its size, it may be an entrance to the backyard or to the garage.

15. Art Deco (1925-1930's)

Also known as Modern or Modernistic, Art Deco was a popular style in the United States for commercial structures such as hotels, restaurants and cinemas. Art Deco was essentially a style of decoration, much of it found inside buildings, and could be applied to crafts as well as architecture. Its ornamentation consists largely of low relief geometrical designs, often in the form of parallel straight lines, zigzags, chevrons, and stylized floral motifs. Concrete, smooth-faced stone and metal were characteristic exterior architectural coverings, with accents in terra-cotta, glass, and colored mirrors. Forms were simplified and streamlined, and a futuristic effect was sought.

16. International (1930-1950)

The International style is based on modern structural principles and materials. Concrete, glass and steel were the most commonly used materials. The band window, curtain wall, lack of ornamentation, and geometric simplicity all contributed to the honesty the style expresses. As a set of principles emphasizing functionalism, stark simplicity, and flexible planning, the International style continues to exert a great influence on modern architecture. The rejection of nonessential decoration was perhaps the major feature which distinguished the International style from the Art Deco.

APPENDIX B
INVENTORY OF COUNTY HISTORIC RESOURCES

INTRODUCTION

The following inventory is a preliminary survey of historic resources found in San Mateo County. It represents the County's most important cultural resources and the ones for which the highest priority should be given for preservation.

The inventory was compiled by the County Historic Resources Advisory Board and is based on earlier research done by a previous body, the County Historic Sites Advisory Committee. The inventory contains all resources that are designated National or State Historic Landmarks, and are listed in the National Register of Historic Places, the Historic American Building Survey, the Historic American Engineering Record, and the State Inventory of Historic Resources. It is by no means a "final" list. It represents the beginnings of an inventory in the County and provides a basis for work on a more comprehensive survey to be completed later.

EXPLANATION OF ABBREVIATIONS

The abbreviations that follow the name of each resource in the County Inventory indicate State and national inventories in which the resource is listed. The explanation for these abbreviations is as follows:

NR - National Register of Historic Places

The Secretary of the Interior was authorized by the Historic Site Act of 1935, and expanded by the National Historic Preservation Act of 1966, to establish the National Register as a list of districts, sites, buildings, structures and objects of local, State and national significance in American history, architecture, archaeology and culture. The program is administered through the National Park Service.

NHL - Historic American Building Survey

This is a related program to the National Register of Historic Places and is administered by the Secretary of the Interior through the National Park Service. It is a list of buildings, sites, objects or districts of national significance which possess exceptional value or quality in illustrating the historical (history and archaeology) heritage of the United States. All properties eligible for National Historic Landmark Status are also entered in the National Register.

HABS - Historic American Building Survey

A related program to the National Register of Historic Places, it was established in 1933 and is administered by the National Park Service of the Department of the Interior, and conducted in cooperation with the American Institute of Architects and the Library of Congress. The program's aim is preservation through documentation and historic build-

ings of architectural significance are recorded by detailed studies which include measured drawings, photographs, and architectural and historical data. The material is deposited in the HABS archives in the Library of Congress.

HAER - Historic American Engineering Record

Establish in 1969, this program is closely related to the Historic American Building Survey and is administered by the National Park Service in cooperation with the American Society of Civil Engineers and the Library of Congress. Its purpose is to record a complete summary of engineering technology by surveying significant examples of engineering solutions which demonstrate the accomplishments of all branches of the engineering profession. Records are deposited in the HAER archives in the Library of Congress.

SHL - State Historic Landmark

State Historic Landmarks are structures or sites of Statewide significance which have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or merit(s). State Historic Landmarks are approved by the State Historical Resources Commission. The number following is the State Landmark Number. They are numbered in the order they were registered by the State and it does not represent any order of historical significance.

SI - State Inventory of Historic Resources

The State Inventory of Historic Resources is based on information gathered through surveys of historic buildings, structures, objects, and sites in California. It was published by the State in 1976 in response to the National Historic Preservation Act of 1966 which directs each state to identify all properties possessing historical, architectural, archaeological, and cultural value.

INVENTORY

1. Ano Nuevo--SI

Punta del Ano Nuevo was named by Captain Sebastian Viscaino when he sited the point and its island from his ship on New Year's Day in 1603 while exploring for Spain. It was one of the first landforms in California to receive a Spanish name. The first contact between the Portola Expedition and the Costanoan Indians occurred here in October, 1769. An outpost of Mission Santa Cruz was later established. After the Gold Rush, American settlers built a wooden railroad for lumbering and introduced large scale dairy farming. In 1872, a steam whistle was installed on Ano Nuevo Island to warn mariners. It was replaced by a light station in 1890. The U.S. Coast Guard closed the light station in 1948. In 1958, the area became a State Reserve that is famous for the elephant seals which migrate here each year.

2. Anza Expedition Campsites

Arroyo Court, San Mateo--SHL 47, SI
El Camino Real near Howard Avenue, Burlingame--SI, SHL 48

In March, 1776, the Anza Expedition, under the command of Lt. Col. Juan Bautista de Anza, camped at these two locations after exploring the Peninsula and selecting sites for the Mission and Presidio of San Francisco. The party of families, soldiers and priests under Lt. Jose Moraga also camped at the San Mateo Site (SHL 47) in June, 1776, on their way to establish San Francisco.

3. Bank of San Mateo County--NR, HABS

Broadway and Main Streets, Redwood City

This building was constructed in 1900 as the first commercial bank in San Mateo County. Designed in a Renaissance Revival style with Neo-Classic detailing, the building is constructed of brick, faced with stone from Utah. The structure was damaged during the 1906 earthquake, but was rebuilt and open for business within two months.

4. Broderick-Terry Duel Site--SHL 19, SI

1100 Lake Merced Boulevard, Daly City

During the first decade of California's Statehood, the political arena was dominated by two factions of the Democratic Party: the "anti-slavery Democrats" led by former New Yorker David C. Broderick and the "Chivalry Democrats" were led by former Mississippi Congressman William C. Gwin. In addition to the slavery issue, control of federal patronage, personality conflicts and the struggle for California's U.S. Senate seat all contributed to a growing feud between Broderick and Gwin and the Gwin's close ally, California Supreme Court Justice David S. Terry.

The hostility erupted into a duel between Broderick and Terry on the morning of September 13, 1859; the site was a shallow ravine near the shore of lake Merced. Broderick's pistol misfired, according to numerous witnesses, and Terry then coolly shot and killed his opponent.

As a result of the duel, public opinion in California swung sharply away from the divided Democratic Party and toward the newly-formed Republican Party of Abraham Lincoln and soon-to-be-Governor Leland Stanford.

5. Burlingame Railroad Station--NR, SHL 846, SI

California Drive at Burlingame Avenue, Burlingame

This station, an early example of the Mission Revival style of architecture, was designed by George H. Howard and J. B. Mathison. Opened for service on October 10, 1894, it was financed by local residents and by

the Southern Pacific Railroad. The roof is constructed of 18th century tiles from Mission San Antonio de Padua at Jolon, and the old mission hospice in San Mateo.

6. California Highway System--SI

El Camino Real at San Mateo Drive, San Bruno

On August 7, 1913, ground was broken here for the first California State highway. Ceremonies took place in front of Uncle Tom's Cabin, a tavern previously known as 14-Mile House. The first stage of the $18 million project paved El Camino Real from this point south to Millbrae. Here, California's modern highway system began.

7. Camp Fremont Site--SI

Menlo Park

A small park at the southwest corner of the Santa Cruz Avenue and University Avenue marks the headquarters area of a busy World War I training camp for thousands of U.S. soldiers and U.S. engineers.

Every method of modern warfare was taught to the 43,000 military inhabitants of the tent city, named after Captain John C. Fremont of early California prominence. The camp boundaries extended east to west from El Camino Real to Alameda de las Pulgas and north to south from Valparaiso Avenue to San Francisquito Creek.

With the signing of the Armistice in 1918, the camp was closed and Menlo Park reverted to a quiet village of about 1,200 residents.

8. Carolands--NR, SHL 886, SI

565 Remillard Road, Hillsborough

Named after Francis Carolan, this French Renaissance mansion was constructed from 1913-1915. It was an effort by Carolan's wife, Harriet Pullman, heiress to the Pullman fortune, to out shine any other home built by a California aristocrat. The residence, designed by the French firm of E. Saint-Saens, is an adaptation of Vaux Le Vicomte, the structure which was the prototype for the Palace of Versailles.

9. Casa de Tableta (Also called Chapete's Place, Buelna's Roadhouse, Alpine Inn)--NR, SHL 825, SI

Alpine and Arastradero Roads, Portola Valley

This structure, built by Felix Buelna in the 1850's, was a gambling retreat and meeting place for Mexican-Californians. It was strategically located on the earliest trail used by rancheros and American settlers to cross the Peninsula to the coast. Acquired by an American in 1868, the building has continued to serve under various names as a roadhouse and saloon.

10. Church of the Nativity--NR, HABS

    210 Oak Grove Avenue, Menlo Park

    This redwood church building, an outstanding example of stick-style Gothic design, was erected on another site in 1872 and moved to this one in 1878. Except for the rose window over the altar, added in 1900, few alterations have been made. It contains artifacts from the earlier Roman Catholic church erected by Dennis Martin near Woodside.

11. Coleman Home--SI

    Peninsula Way, Menlo Park

    Built by James V. Coleman in 1882, this Italianate style structure is one of the oldest surviving Victorian mansions on the Peninsula. It is now used as a private school (Peninsula School).

12. Cooley Landing Site

    End of Bay Road, East Palo Alto

    In 1848, Adams and Company of San Francisco, a banking and express company, acquired 3,670 acres of this land near San Francisco Bay. One of the firm's partners, Isiah C. Woods, learned of the Pacific and Atlantic Railroad's plan to construct a bridge across San Francisco Bay adjacent to the property, and persuaded his partners to make a considerable investment in their property. In 1849, an elaborate wharf was constructed, the first town to be platted (Ravenswood) in San Mateo County was laid out and hotels, saloons, and shacks were constructed along the main street. When the railroad decided not to build a bridge, the company lost its entire investment and was forced to close.

    In 1868, the property was purchased by Lester P. Cooley and it became known as Cooley Landing. Cooley planned to make this the principal shipping point for lumber in transit from the Woodside area to San Francisco, however, the wharf proved to be less accessible than that on Redwood Creek and fell into disuse.

13. Congregational Church (Pescadero Community Church)--NR, HABS

    Stage Road, Pescadero

    Built in 1867, this is the oldest Protestant Church in the County. It was originally a simple building with a square, louvered bell tower above the entry. The 40-foot single-covered Victorian Gothic spire was added in 1889. The church expresses in wood the temple forms of Greek Revival. The walls are scored to simulate stone and the imitation of stone is carried further by the use of quoins at the corners.

14. Charles Brown Adobe

2000 Portola Valley Road, Portola Valley

One of the oldest buildings in the County, this adobe was constructed by an American adventurer Charles Brown sometime in the 1830's. The square adobe is completely surrounded by a veranda, with heavy, cut timbers supporting the overhang of the tiled roof.

15. Crystal Springs Dam--HAER, SI

Skyline Boulevard, San Francisco Watershed Property

When construction began in 1887, this was the largest concrete dam in the world and became a prototype for big dams everywhere. Built of interlocking, precast reinforced concrete blocks, it was begun in 1887 and took three years to complete. It survived the 1906 earthquake without any damage. A plaque commemorating its designer, Herman Schussler, is in the turnout just north of the dam.

16. Diller (Chamberlain) Building--NR, HABS

726 Main Street, Redwood City

John V. Diller in 1853 opened a general merchandise store in Redwood City in a frame structure beside the old rancho landing. In 1859, he constructed an adjacent "new store" which is still in use today at 726 Main Street. Diller's first store provided a temporary courtroom and jail as well as the first meeting place for the San Mateo County Board of Supervisors after the County was created in 1856. The "new store" of brick with iron shutters was more secure than any other structure in the County, including the new courthouse, and for many years was the depository for public money held by the County Treasurer. Hanson and Company, a pioneer lumber firm, had an office in the store. Later owners of the building included P. P. Chamberlain who for more than 30 years operated a store, was treasurer of San Mateo County, and managed the Wells Fargo office. During World War I, classes of an aviation school were held in the building.

17. Douglass Hall--SI

El Camino Real, Menlo Park

The home was originally built for Mr. and Mrs. Theodore Payne. Built between 1906-1910 at a cost of more than $1 million, it is, as far as it is known, the first poured concrete building for private use, west of the Mississippi. Leon Forrest Douglass, inventor of electronic, phonographic and photographic devices bought the home in 1921. Mr. Douglass was responsible for the trade mark of the black and white terrier with his ear cocked in the gramophone horn and known the world over as "His Master's Voice." During World War I, the Douglass home was used as a

temporary convalescent home for wounded soldiers. In 1945, Menlo School and College acquired the property and it is now used as administrative offices.

18. Embarcadero Site--Redwood City

Marshall Street west of Main Street, Redwood City

This was the center of the waterfront which at its height extended for more than a mile along each side of Redwood Creek. Until the 1860's, when the Bay side of the redwood forest was cut over, great amounts of lumber, posts, and shingles were shipped from here to San Francisco and other cities. A plaque in back of the Diller Building commemorates the site.

19. Filoli Estate--NR, HABS, SHL 907, SI

Canada Road, Woodside

This Georgian style mansion was designed by Willis Polk in 1916 for William Bourn, President of the Spring Valley Water Company. The surrounding gardens, designed by Bruce Porter and Chesley Bonnestal, are laid out in a sensitive Italian-French based system of parterres, terraces, lawns, and pools. The name of the estate was derived from the three words that epitomized William Bourn's philosophy: fight, love, live. After Bourn's death in 1936, the house was acquired by the Roth family, owners of the Matson Navigation Company. In 1975, Mrs. William P. Roth donated the home and gardens to the National Trust for Historic Preservation. It is open to the public by reservation.

20. Fitzpatrick Building--NR, HABS

2010 Broadway, Redwood City

This two-story building, built in 1905, adjoins the Bank of San Mateo County Building. Edward F. Fitzpatrick employed the same architect who designed the bank but he executed it in a completely different style. Its terra cotta brick facade, palladian windows, and heavily bracketed cornice give the building dignity without undue heaviness.

21. Folger Stables

Wunderlich Park off Woodside-La Honda Roads, Woodside

Built in 1905 by James A. Folger, San Francisco "Coffee King," this structure and adjoining buildings were designed by Arthur Brown, Jr. They reflect the Edwardian style of the main house, about one-half mile to the east, with deep roof, dormers, and ground-floor arches. The interior of the stable features a cobblestone floor, mahogany panelling, and pink marble baseboards.

22. Frank's Tannery Site

Veteran's Boulevard, Redwood City

The leather tanneries in Redwood City were a major San Mateo County industry for nearly 100 years. In 1873, I. M. Wentworth Company of San Francisco constructed a tannery on Redwood Creek which expanded under the S. H. Frank and Company to become the largest west of the Rockies. Until it ceased operations in 1959, Frank's Tannery bought and sold hides and leathers to the world's markets. Fires and demolition removed all vestiges of Frank's Tannery by 1969 except for the bulkhead along the creek east of Veteran's Boulevard in Redwood City. A shopping center now occupies the Frank's Tannery site.

23. Garretson Schoolhouse

Pescadero Road, Pescadero

Built in 1875 by John Garretson as a private schoolhouse, this building was purchased in 1885 by Braddock Weeks and moved to its present location to serve as a dairy building. It is one of the earliest surviving elementary schools in the County.

24. Green Oaks Ranch--NR, SI

Cabrillo Highway, south of Pescadero at Green Oaks Creek

For many years, the Steele Brothers operated dairies on the South Coast between Gazos Creek and Ano Nuevo which became famous throughout the West. Isaac Steele built a typically eastern style wooden house here in 1863. The Steele Brothers Dairies are listed as a State Historic Landmark.

25. Half Moon Bay Methodist-Episcopal Church--NR

777 Miramontes, Half Moon Bay

Built in 1872, in Gothic Revival style, this was one of the first Protestant churches on the San Mateo Coastside. Some repairs were necessary following the 1906 earthquake and further renovations were made in 1930 and 1949/50 but the character and integrity of design have been preserved.

26. Hospice Site (Mission Dolores Outpost)--SHL 393, SI

El Camino Real and Baywood Avenue, San Mateo

A building was probably first built in 1793 as a farming outpost of Mission San Francisco de Asis. Destroyed by an earthquake in the early 1800's it was rebuilt. Following the secularization of the California missions in 1834-35, the building served other purposes including ware-

housing. It was destroyed by earthquake in 1868. When the Burlingame railway station was built in 1895, among the tiles used on the south wing were some salvaged from the Hospice.

27. Johnston (James) House--NR, HABS, SI

Higgins-Purisima Road, Half Moon Bay

In 1853 this salt box style home was built by one of the first American families on the Coastside. Constructed of redwood and painted white, it commands an imposing site above the coastal terrace on a knoll that was part of the Miramontes land grant.

28. Johnston (William) House

Higgins-Purisima Road, Half Moon Bay

This house was built in 1854 in an Italianate style by William Johnston, brother of James. It is located across the road from the James Johnston House. The large farmhouse is constructed with wooden pegs instead of nails and still has its original shutters and corner boards.

29. La Honda Store Site--SHL 343, SI

La Honda Road (State Route 84), La Honda

In the winter of 1861-62, John F. Sears settled in the mountains 17 miles from Redwood City, at a place he named La Honda. Here he supposedly employed Jim and Bob Younger, who later turned out to have been members of the Jesse James gang, to construct what was sometimes called the "Bandit-Built Store." The accuracy of this story is questioned, however. The store was destroyed in 1960.

30. Latham Gate House--SI

439 Ravenswood Avenue, Menlo Park

Built in 1883, this is the only remaining building of the once extensive estate of former California Governor Milton S. Latham. Despite damage from the 1906 earthquake, and subsequent remodeling, the house has retained its Victorian character. It is owned by the City of Menlo Park and provides quarters for number of private agencies, including Junior League of Palo Alto and the League of Women Voters of South San Mateo County.

31. Lathrop House--NR, SI

627 Hamilton Street, Redwood City

This two-story, redwood house was constructed in 1863 by Benjamin G. Lathrop, first clerk, recorder, and assessor of San Mateo County. It was later owned by Patrick E. Connor, Civil War General, Indian fighter, and

pioneer Utah mining man. The house, built in the Victorian Gothic style, is an outstanding example of what is sometimes called carpenter's or steamboat Gothic, with sharp, pointed gables and finials, bargeboards, and broad porch with octagonal pillars and flattened decorative arches. The house is now owned by San Mateo County.

32. La Questa Vineyard and House

240 La Questa Road, Woodside

Established in the 1880's by Emmett H. Rixford with vines imported from France, the vineyard was the best known in the County and even survived Prohibition. The two-story winery was constructed by a Swiss mason, of stones dug from the fields when the vineyard was laid out. Its beautifully-worked walls are 18 inches thick. It has been converted into a residence.

33. McCormick House

Stage Road, Pescadero

Built in the late 1860's by James McCormick, one of the early families in Pescadero, this is the most sophisticated of the houses built in this era. Influenced by the Classic Revival, the house is representative of the unique architectural style found in Pescadero.

34. Menlo Park Railroad Station--NR, HABS, SI

Merrill Street, Menlo Park

Built in 1867, the original structure was a plain, functional building. By 1890, however, it seemed hardly grand enough for the customers it was serving, including Leland Stanford, and was extended and remodeled. The decorative elements added to the basic structure indulged all the fanciful taste of the time, combining Victorian Gothic, Queen Anne, and Stick styles. A waiting shed was added during World War I to accommodate the many travelers to and from Camp Fremont, which was adjacent to the station.

35. Methodist-Episcopal Church--NR, HABS

Stage Road, Pescadero

Built in 1889, this Victorian style building was designed on a cruciform plan with some Gothic Revival details and a high-pitched roof. The natural redwood interior is relatively undisturbed and much of the hardware is original. During the 1920's, it served as the Pescadero Community Center and later as a cultural school for the children of Japanese Americans. It is presently owned by the Native Sons and Native Daughters of the Golden West.

36. Millbrae Railroad Station--NR

Millbrae Avenue, Millbrae

Built in 1907, this two-story, wood-frame structure with hipped roof was designed with a Colonial Revival look. It is typical of railroad stations built in the early 1900's.

37. Montara Light Station--SI

Coast Highway, Montara

As early as 1875, a steam whistle was used to warn shipping off the dangerous coast during times of thick fog. This was replaced in 1900 by an oil lighted lantern and lens. An automated lighted horn-buoy was installed off Montara Point in 1970, replacing the lighthouse.

38. Ocean Shore Railroad

Between 1908 and 1920, the Ocean Shore Railroad operated trains along the Coastside from San Francisco to Tunitas Glen. During its brief existence, the railroad and its promoters were responsible for the sub-division of hundreds of lots in new coastal towns such as Montara, Moss Beach, and El Granada. The railroad failed due to initial financial problems which were never resolved and the coming of automobiles. Today all that remains of the old railroad are the scars of abandon road cuts along coastal bluffs and the following remodeled structures which once served as passenger stations:

Vallemar Station, Coast Highway, Pacifica, is a one-story wooden building with pitched roof and a front porch supported by wooden columns. Its external appearance remains virtually unchanged. It is now used as a restaurant.

Tobin Station, Shelter Cove Avenue in Pacifica, was originally constructed as a single structure with only a roof, and stone supports inlaid with abalone shells. It was later remodeled, with walls added, for a private residence. The building was called the Tobin Station because of the nearby summer home of Richard M. Tobin, one of the founders of the Hibernia Bank in San Francisco.

Montara Station, at the corner of Second and Main in Montara, was built in 1906 of fieldstone by Italian masons. It has now been remodeled into a private residence.

Granada Station, Alhambra at Granada in El Granada, was constructed in a Mediterranean style with tile roof, stucco walls, and arched openings. It was the largest and most elaborate station built by the railroad. The building has been altered to serve commercial uses and bears little resemblance to its original appearance.

Arleta Park Station, Railroad Avenue in Half Moon Bay, was constructed of wood, with a hipped roof, in a traditional style associated with turn-of-the century railroad stations. It is presently used as a private residence.

39. Old Spanish Trail--SI

Coal Mine Ridge, Portola Valley

The path was used by Indians, settlers, and soldiers crossing to Ano Nuevo Point from the Bayside. Traces may still be found on undisturbed properties.

40. Our Lady of the Wayside--NR, HABS, SHL 909

Portola Valley

Early Catholic residents of Portola Valley found that their first church, a reconditioned dance hall, was inadequate and set out to construct a new one. Many residents participated in the construction in some fashion. Materials were donated by some families, while another housed the construction superintendent. The church, dedicated in 1912, is constructed of reinforced concrete covered with stucco. Designed by Timothy L. Pflueger, the building incorporates elements of both the Mission Revival and the Georgian style.

41. Pigeon Point Light Station--NR, HABS, HAER, SHL 930, SI

Coast Highway, Pigeon Point

First illuminated on November 15, 1872, this lighthouse was named for the clipper ship, Carrier Pigeon, that hit the rocks here on May 6, 1853. Early Californians called the headland Whale Point and Portuguese whalers once had 12 cottages and 2 warehouses at the cove south of the lighthouse. The tower, 115 feet in height and 28 feet in diameter, is constructed of bricks shipped around Cape Horn from Norfolk, Virginia. The light's 9-foot diameter fresnel lens was built by Henri Le Paute of Paris in the 1850's. Illumination for the light first came from whale oil. Kerosene was later substituted, and then electricity to run the light, which is magnified to 800,000 candlepower in a beam seen 18 miles at sea. In 1974, an automatic beacon was set up on a platform outside the lighthouse, replacing the historic lens.

42. Pilarcitos Cemetery

State Route 92, Half Moon Bay

This cemetery land was a gift from the Tiburcio Vasquez family who settled in Spanishtown in the 1840's. This was the site of the earliest Coastside Catholic Church which was served by visiting priests from Santa Clara.

43. Pilarcitos Dam--SI

San Francisco Watershed

Built in 1860-63, this earth-fill dam is the first one constructed by the Spring Valley Water Works. Water was delivered to San Francisco by gravity flow in a 32-mile redwood flume. The dam was enlarged in 1867 and in 1874 the height was raised to 95 feet by Hermann Schussler.

44. Portola Expedition Campsites

On October 23, 1769, the Portola Expedition entered what is now San Mateo County. Led by Captain Don Gaspar de Portola, the party of 63 men with 200 horses and mules were looking for Monterey Bay which they had mistakenly passed. On November 4, 1769, they reached Sweeney Ridge and first sighted San Francisco Bay. Seeking a route around the large body of water, the party traveled south down the San Andreas Valley to San Francisquito Creek. Running short of supplies and unable to get around the Bay, the expedition in great despair began retracing its steps to San Diego--little realizing the significance of their discovery of San Francisco Bay. The following landmarks denote sites where the expedition camped:

SHL 23. On October 23, 1769, the Portola Expedition entered what is now San Mateo County. They camped that night on Whitehouse Creek about 2 miles inland.

SHL 26. From October 24 to 26, the expedition camped near the mouth of San Gregorio Creek.

SHL 375. At Tunitas Creek, the Portola Expedition discovered an Indian village.

SHL 22. On October 27, the expedition camped at a site on Purisima Creek which they called Rancheria de las Pulgas because of fleas in a nearby Indian village.

SHL 21. On October 28 and 29, the expedition rested in this camp near the mouth of either Pilarcitos Creek or Frenchman's Creek.

SHL 25. On October 30, the expedition camped by a stream at the foot of Montara Mountain. They named the site El Rincon de las Almejas because of the mussels found at the nearby beach.

SHL 24. On November 1, the expedition crossed Montara Mountain and camped at San Pedro Creek.

Discovery Site--NHL, NR, SHL 394. On November 4, the expedition climbed to the top of Sweeney Ridge and became the first Europeans to report their discovery of San Francisco Bay.

SHL 27. On November 4, seeking a route around the Bay, the expedition camped near a lagoon now covered by San Andreas Lake. They also stayed here on their return trip on November 12.

SHL 94. On November 5, the expedition camped at Laguna Grande, now a part of Upper Crystal Springs Lake.

SHL 2. From November 6 to 10, the expedition camped on San Francisquito Creek near El Palo Alto while scouts attempted to go around the Bay.

SHL 92. On November 11, in lower Canada de Reymundo, the expedition made their first camp on the return trip back to San Diego.

45. Portola Valley School--NR, HABS, SI

775 Portola Road, Portola Valley

Designed in Mission Revival style, this school was built in 1909 on land donated by Andrew Hallidie, inventor of the cable car. The architect, Le Baron R. Olive, interpreted the style in wood rather than stucco, which, in the heart of the redwoods, was less expensive and gave the building a distinctive effect.

46. Princeton Inn--NR

Prospect and Princeton Street, Princeton-by-the-Sea

Constructed in 1908 as a seaside resort hotel in the Mission Revival architectural style. It originally attracted throngs of tourists from San Francisco via the Ocean Shore Railroad. When the railroad went out of business, the resort-like atmosphere faded. The hotel came alive again in the 1920's as a bordello, and a haven for the rum-runners who coursed up and down the coast with their midnight deliveries of bootleg whiskey during Prohibition. It is typical of the turn-of-the century coastal hotels.

47. Pulgas East Base Monument

North side of Farrell Park at end of Gonzaga Street, East Palo Alto

This is the last remaining marker of the 1853 U.S. Coast Survey which is still in its original location. Legend on the marker reads: "U.S. Coast Survey Measured in July and August, 1853, Alex Dallas Bache, Superintendent."

48. Pulgas Water Temple--SI

Canada Road, San Francisco Watershed

A Roman Renaissance style structure, the temple is located at the outfall of the Hetch-Hetchy tunnel. The inscription around the entablature

reads, "I will give water in the wilderness and rivers in the desert to give drink to my people" (Isaiah). The present structure, built in 1938, replaced an earlier temporary structure of plaster which had been built especially for the ceremonies held in October, 1934, marking the completion of the Hetch-Hetchy project and the first flow of water into the San Francisco reservoirs.

49. Purisima Townsite--SI

Verde Road, 4 miles south of Half Moon Bay

Purisima, established around 1853, was an early American settlement in the Half Moon Bay area. In its heyday, it was a bustling stagecoach stop and shopping area with stores, school, hotel, saloon, dance hall, and harness and blacksmith shops, which served farmers and loggers. By the turn of the century, the town was in decline with the growth of Half Moon Bay as the produce shipping center of the region. By the 1930's, Purisima was a ghost town. Remnants today are the ruins of the school and the cemetery.

50. Ralston House--NHL, NR, HABS, SHL 856

College of Notre Dame, Ralston Avenue, Belmont

This redwood mansion was completed in 1868 by William Chapman Ralston, a San Francisco financier. Incorporating Count Cipriani's earlier villa, this enlarged structure, with its mirrored ballroom, became the symbol of the extravagance of California's Silver Age. It anticipated features later incorporated into Ralston's Palace Hotel in San Francisco.

51. Saint Anthony's Church--NR, HABS

North Street, Pescadero

This church was built between 1868-70 and is basically Greek Revival in style. The tower, which has a rose window in a formal frame, was added in 1888. The design of the building reflects, to a large degree, the style of the Congregational Church and the homes of the community at the time it was built. The structure was moved off its foundation during the 1906 earthquake, but was replaced on new foundation on the original site.

52. St. Denis Church and Cemetery Site--SI

Sand Hill Road, Menlo Park

A plaque here commemorates the first church in San Mateo County. It was dedicated in 1853 by Catholic Archbishop Joseph S. Alemany who named it St. Denis to honor the founder, Dennis Martin.

53. Saint Matthew's Episcopal Church

El Camino Real at Baldwin Avenue, San Mateo

Designed by Willis Polk, St. Matthew's Church was built in 1909 on the site of the original church which was erected in 1865 and destroyed by the 1906 earthquake. Its style is English Gothic; it owes much of its elegance to purity of design and to sensitive use of materials. With the earthquake in mind, it was constructed of stone with a steel framework. Without changing its appearance, the church was extended 30 feet in length in 1956 to allow the seating of 160 additional pews. The new stained glass windows are the work of Henry Lee Willet of Philadelphia and the older ones are by Messrs. Heaton, Butler and Bayne, a London firm.

54. San Andreas Dam--SI

San Francisco Watershed

Completed in 1868, this was the second dam constructed by the Spring Valley Water Works. Made of earth, it is 95 feet high, 710 feet long and holds 6 billion gallons of water.

55. San Carlos Railroad Station--SI

San Carlos Avenue, San Carlos

This Romanesque Revival stone structure was built in 1888, when San Carlos was platted by a syndicate of railroad men. Stanford University was being built at the same time, and, through the railroadmen's connection with Governor Stanford, they obtained the same sandstone that was used for the University. European stone masons who worked on the University constructed the depot in the same architectural style.

56. San Gregorio House--NR, HABS

Stage and San Gregorio Roads, San Gregorio

Opened in 1866, the San Gregorio House was the first business in the village. It served as a summer resort, stage stop, and hotel. Other buildings associated with the hotel include a livery stable, granary, water tower, laundry, and an old dance hall. A saloon was later opened, but it was converted to a gas station during Prohibition. The old hotel is used today as a private residence.

57. San Mateo County Courthouse--NR, HABS

Broadway, Redwood City

The current courthouse, the fourth in San Mateo's history, is an unusual example of Roman-Renaissance architectural style. Designed in 1903, the building had been accepted by the Board of Supervisors but not yet occupied when the 1906 earthquake struck. The building was severely

damaged but the 116-foot dome and its massive panels of stained glass came through the earthquake unharmed. In 1910 the Board of Supervisors held their first meeting in the new courthouse.

58. San Mateo County First Sawmill--SHL 478, SI

Portola Road, Woodside

San Mateo County's first waterpowered sawmill, built by Charles Brown in 1847, stood along the banks of Alambique Creek. At about the same time, Dennis Martin was building a second mill on San Francisquito Creek. These mills were similar to the famous Sutter's Mill at Colma, site of James Marshall's 1848 gold discovery.

59. Sanchez Adobe--NR, SHL 391, SI

Linda Mar Boulevard, Pacifica

This was the home of Francisco Sanchez (1805-1862), former El Alcalde of San Francisco and commandant of militia under the Mexican Republic. He was grantee of the 8,926-acre Rancho San Pedro. His house, built 1842-46, and afterwards owned and remodeled by General Edward Kirkpatrick, is one of the few remaining adobe structures in the County. Recent archaeological exploration has shown this to be an important outpost of the Mission in San Francisco. It is now a County park and museum.

60. Searsville Site--SHL 474, SI

Sand Hill Road, Woodside

Searsville was a lumbering village whose first settler, John Sears, arrived in 1854. Here stood a hotel, store, school, blacksmith shop and dwellings. The buildings were removed in 1891, as water rose behind a new dam which created Searsville Lake.

61. Shine House--SI

Canada Road, Woodside

This Victorian Gothic house, built in 1882 by Michael Brune, was originally known as the Brune House. Its board siding and broad sharply-angled dormers give the structure a distinctive grace.

62. Steele Brothers Dairies--SHL 906

Cabrillo Highway, south of Pescadero

In 1862, Rensselaer Steele and his three cousins established a chain of dairies on the Coastside, between Gazos Creek and Ano Nuevo, known as the Steele Brothers Dairies which became famous throughout the West. Important structures remaining from the dairies include: The Cascade Ranch House and Dairy Building, the Ramsey-Steele House, the Ano Nuevo Ranch House and the Dickerman Barn.

63. Tanforan Racetrack Site--SHL 934, SI

El Camino Real, San Bruno

The land was originally granted by the Mexican Government to the Sanchez family as part of the Rancho Buri Buri. It was inherited by a son-in-law, Torribio Tanforan.

The first race track was opened there on November 4, 1899. Famous horses raced here under the colors of such names as A. B. Spreckles, Leland Stanford, Charles Fair, and George Hearst. Before its final closing in 1962, this was the oldest commercial track in California.

Here at a 1909 automobile race under the sponsorship of the Olympic Club, a Stevens-Duryea automobile went 300 miles at an average speed of almost 60 miles per hour. In 1910, the first known airplane flight in San Mateo County was made by Jean Paulhan, who stayed aloft for 8 minutes and achieved an altitude of 700 feet. In 1911, it was the take-off point for the world's first shore to ship (the U.S.S. Pennsylvania) flight.

In World War I, the land was used for troop concentrations, particularly the "California Grizzlies." In World War II, it was a temporary detention camp for persons of Japanese ancestry. The site is now developed as a shopping center.

64. Templeton Crocker Home (Uplands)--SI

400 Uplands Drive, Hillsborough

The Italianate-style home was designed and built in 1917 by Willis Polk, for Templeton Crocker. Representatives of the County's final stage of mansion building, the estate is now the Crystal Springs School.

65. Twelve-Mile House Site--SI

1076 Old Mission Road, South San Francisco

Constructed in 1851, the Twelve-Mile House was used as a rest stop for stagecoach passengers during Gold Rush days. The building was the last surviving Mile House on the Peninsula until it was demolished in 1978.

66. Union Cemetery--SHL 816, SI

Woodside Road, Redwood City

The name of this cemetery, established before the first shots were fired at Fort Sumter, reflects the controversy that brought on the Civil War. On March 16, 1859, the purchase of 6 acres was consummated but the cemetery association, not being a corporate body, did not take title to the property. Instead it was deeded to the Governor of California in trust, for the use and benefit of the Union Cemetery Association of San Mateo County. It is owned by the City of Redwood City.

67. Watkins-Cartan House--NR, HABS, SI

25 Isabella Avenue, Atherton

Said to be the oldest house in the Menlo Park-Atherton area, this summer residence of Captain James W. Watkins, of the Pacific Mail Steamship Company, was built in 1860. Of Victorian Gothic style, the house was prefabricated in Connecticut, brought around the Horn, and originally erected on the site of the Atherton railroad station.

68. Woodside Store--SHL 93, HABS, SI

Kings Mountain Road, Woodside

Built in 1854 among sawmills and redwood groves by Dr. R. O. Tripp and M. D. Parkhurst, the store was operated by Dr. Tripp (who also served as dentist, librarian, postmaster, and community leader) until his death in 1909. It was purchased by the County of San Mateo in 1940 and opened as a public museum in 1947.

69. Zaballa House

Main Street, Half Moon Bay

The oldest building in Half Moon Bay, it was built in the early 1860's by Estanislao Zaballa, merchant and surveyor of the original town plat. He was married to Maria Dolores Miramontes, eldest daughter of Candelario Miramontes, owner of the land grant south of Pilarcitos Creek.

Note: This inventory is adopted by reference as part of the Historic Resources Element. Any additions or deletions of the inventory by the County Historic Resources Advisory Board, the Planning Commission, or the Board of Supervisors will not require amendment of this Element by the Planning Commission or the Board of Supervisors.

APPENDIX C
COMPREHENSIVE INVENTORY OF COASTAL RESOURCES

INTRODUCTION

The following inventory represents a comprehensive survey of cultural resources found within the San Mateo County Coastal Zone.

1. Devil's Slide

   Coast Highway, north of Montara

   Where Montara Mountain extends to the ocean's edge, undercutting by waves has produced an exceedingly steep and lofty escarpment which rises over 800 feet above the ocean from San Pedro Point to the valley north of Montara. The Coast Highway cuts through the rock here, creating one of the most spectacular sights north of Big Sur. Along the road cut tightly folded, thin-bedded, Paleocene sandstones and shales meet with granitic rocks (primarily quartz diorite) of the earlier Cretaceous period. Portions of the road bed of the old Ocean Shore Railroad are still visible along sections of the cliff.

2. Montara Mountain

   Towering over 1,900 feet above sea level, Montara Mountain is a major north County landmark. It forms the backdrop for the communities of Montara, Moss Beach, and El Granada, and its ridge is the easterly boundary of the Coastal Zone between the Devil's Slide area and Half Moon Bay.

3. Corner Store

   Second and Main Streets, Montara

   This one-story brick building of simple construction is a good example of the "corner store" of the early 1900's; it is the only known commercial structure built of brick on the Coastside. The building stands along the route of the old coast highway, and was probably once frequented by travelers. It is used as a private residence today.

4. Montara Grammar School

   Sixth and Le Conte Streets, Montara

   This two-story school was built in 1915, in the Mission Revival style of architecture which was popular at the time. The building is presently used as a residence.

5. Point Montara Light Station

Coast Highway, Montara

A steam whistle and keeper's residence were installed at Point Montara in 1874 to warn ships of the sunken rocks which lie west of the point. The squat metal light tower which stands here today was constructed in 1901. Its stern white practicality is reminiscent of lighthouses seen on the New England Coast.

6. Ocean Shore Railroad

Between 1908 and 1920, the Ocean Shore Railroad operated trains along the Coastside from San Francisco to Tunitas Glen, carrying visitors to the beaches and hauling farm produce to market. During its brief existence, the railroad and its promoters were responsible for the subdivision of hundreds of lots in new coastal towns such as Montara, Moss Beach, and El Granada. The railroad failed due to financial problems which were never resolved and the coming of automobiles. Today all that remains of the old railroad are the scars of abandoned road cuts along coastal bluffs and several remodeled structures which once served as passenger stations. These are:

a. Montara Station, Second and Main in Montara, was built in 1906 of fieldstone by Italian masons. It has now been remodeled into a private residence.

b. Granada Station, Alhambra at Granada in El Granada, was constructed in a Mediterranean style with tile roof, stucco walls, and arched openings. It was the largest and most attractive station built by the railroad. The building today has been so altered to serve commercial uses that it bears little resemblance to its original design.

7. St. Seraphims Hermitage

Coast Highway and Virginia, Moss Beach

A one-story, wooden building, this Russian Orthodox monastery is distinguished by a small "onion" dome and Russian Cross on its roof.

8. Fitzgerald Marine Reserve

Moss Beach

Extending from Point Montara to Pillar Point, this nature reserve constitutes one of the richest intertidal rocky shore areas in Central California and is of great geologic interest. The rock formations provide a variety of intertidal and subtidal reefs, protected channels, and tidepools, all of which support an abundance of intertidal and subtidal marine organisms.

9. Princeton Inn

Prospect and Princeton Streets, Princeton-by-the-Sea

Constructed in 1908 as a seaside resort hotel in the Mission Revival architectural style. It originally attracted throngs of tourists from San Francisco via the Ocean Shore Railroad. When the railroad went out of business, the resort-like atmosphere faded. The hotel came alive again in the 1920's as a bordello, and a haven for the rumrunners. It is typical of the turn-of-the-century coastal hotels and is listed in the National Register of Historic Places.

10. Pillar Point Whaling Station Site

Pillar Point

A small, sandy cove marks the spot where whalers came to render the blubber of their catches of humpback and California gray whales. Operations continued at the station intermittently from 1861 until the 1890's.

11. El Granada

This community was subdivided in 1906 in a Beaux-Arts design of radial and semi-circular streets, and divided landscaped boulevards. The town design is unique as it is the only one of its type in the County, and is the work of the famous Architect and City Planner Daniel Burnham. The town was intended to rival Atlantic City, Long Beach, and Coney Island as a beachside resort.

12. Sandstone Outcroppings

Route 92, east of Half Moon Bay

Numerous large boulders and outcroppings of Miocene sandstone on the hillside above the roadway are distinctive to the area.

13. House of Doors

Route 92, east of Coast Highway

This house is constructed of doors which, it is rumored, were salvaged from the 1915 Panama-Pacific Exposition in San Francisco. Located close to the roadway, the front yard is filled with artifacts from previous eras.

14. William Johnston House

Higgins-Purisima Road, Half Moon Bay

Constructed around 1857 in an Italianate style by William Johnston, a member of one of the early Anglo families on the Coastside. The building is constructed entirely with wooden pegs instead of nails and still has its original shutters and corner boards.

15. James Johnston House

Higgins-Purisima Road, Half Moon Bay

This Salt Box style home was constructed in 1853 and is one of the few of this typically Atlantic seaboard design in California. In its prime, it was the showplace of the area and the center of social activity. Because of its history and architectural uniqueness, it is one of the County's most important early structures. During rehabilitation of the house in 1977, it was blown down during a wind storm; however, it has been rebuilt exactly as originally constructed. It is listed in the National Register of Historic Places.

16. Purisima Townsite

Higgins-Purisima Road, south of Half Moon Bay

Purisima, established around 1853, was the first Anglo settlement in the Half Moon Bay area. In its heyday, it was a bustling stagecoach stop and shopping area with stores, hotel, school, saloon, dance hall, and harness and blacksmith shops, which served farmers and loggers in the surrounding area. By the turn of the century, the town was in a decline with the growth of Half Moon Bay as the produce shipping center of the region. By the 1930's, Purisima was a ghost town. All that remains today are the ruins of the school and the cemetery.

17. Tunitas Creek

Coast Highway, south of Half Moon Bay

Here on the high coastal bluffs at Tunitas Creek, Alexander Gordon in 1872 built a wooden chute from the top of the cliff to the ocean below in a daring attempt to create a port. The venture failed and in 1885 a storm wrecked the structure. Nothing remains today except several bolts in the rocks that supported the structure.

Tunitas Creek also marks the transfer point for the old Ocean Shore Railroad where travelers boarded a Stanley Steamer Automobile for Davenport and continuation of the railroad to Santa Cruz. A large wooden trestle was constructed across the creek for the railroad bed but the company went out of business before it was ever used. The structure burned in 1940 and nothing remains today except the concrete footings which supported the trestle.

18. Peterson and Alsford General Store

Route 84 and Stage Road, San Gregorio

This old country store has served residents of the San Gregorio area since the 1920's. The Spanish Colonial Revival style structure also serves as a post office and service station.

19. San Gregorio House

Route 84 and Stage Road, San Gregorio

This two-story gable roof hotel was built by George Washington Tully Carter in 1865 to service the stagecoach trade between the Bayside and Coast. In the 1870's it was enlarged to its present size and a veranda with balcony was added to the front in a style which can best be described as Monterey Traditional. It is one of the rare surviving examples in California of a hostelry of that type and period. The old hotel dominates the townscape of San Gregorio and is an integral part of the village and its setting. The building is listed in the National Register of Historic Places and the Historic America Building Survey.

20. Seaside School

Stage Road, San Gregorio

Constructed in 1875, this one-story wooden schoolhouse is typical of the one-room schools that graced rural America in the 19th century and is one of the few remaining on the Coastside. It is presently used as a residence.

21. Stage Road

Between San Gregorio and Pescadero

Except for a thin cover of asphalt, this old roadway remains untouched by modern engineering methods of construction. As it twists and winds its way over the coastal hills between San Gregorio and Pescadero, the modern traveler experiences many of the same sights that greeted the stagecoach as it carried passengers between the Bayside and these thriving coastal villages over a century ago.

22. Eucalyptus Grove

Stage Road, north of Pescadero

For nearly 1,200 feet this majestic grove of eucalyptus arches over Stage Road, creating a tunnel-like effect which has sheltered travelers from the summer sun and winter rains for over 100 years.

23. Monterey Cypress

Pescadero Road, east of Pescadero

This single Monterey Cypress is 120 feet in height and has a circumference of 40 feet, 4 inches, making it the largest specimen of its kind in the United States. Its landmark location, by the bend of the road, and estimated age, 150 years, indicates it was planted in the Spanish-Mexican Era, probably to mark a site or boundary line.

24. Pescadero Marsh

Coast Highway at Pescadero Road

The largest marsh on the coast between Monterey and San Francisco, it is an important habitat for a variety of animals. The marsh is owned by the State as a wildlife refuge and a trail system allows the visitor to explore the area for closer observation.

25. Pescadero Beach Unconformity

Coast Highway and Pescadero Road

Here at beach level, on the south side of a point of land extending westward into the sea, nearly horizontal beds of sandstone and conglomerates of Oligocene age rest on nearly vertical sandstones and shales of the Pigeon Point Formation of Late Cretaceous age. Approximately 50 million years of geologic record are missing at the contact or unconformity between these two geologic units. During this interval, the Pigeon Point Formation was uplifted from the ocean floor and the rocks were beveled before the deposition of the much younger sandstones and conglomerates.

26. St. Anthony's Church

North Street, Pescadero

This Roman Catholic Church was built in 1868-1870 and its tower was added in 1888. The building was knocked off its foundations by the 1906 earthquake, but was replaced on a new foundation on the original site. Its style is basically Greek Revival, but the spire shows a strong Victorian Gothic influence, being octagonal in shape and cut by four pointed dormers with louver-filled arches. The tower on which it rests has a rose window in a formal frame. The design of the building reflects, to a large degree, the style of the Congregational Church and the homes of the community at the time it was built.

27. Braddock Weeks House

Pescadero Road, Pescadero

Built in the 1860's, this house is typical of early homes in Pescadero. The porch columns have fancy cut ornaments at the tops, and decorative brackets are used under the long eaves and at the gable ends. The window frames have Italianate cornices.

28. Garretson Schoolhouse

Pescadero Road, Pescadero

Built in 1875 by John Garretson as a private schoolhouse, this building was purchased in 1885 by Braddock Weeks and moved to its present location to serve as a dairy building. It is one of the earliest surviving elementary schools in the County.

29. Pescadero Community Church (Congregational Church)

Stage Road, Pescadero

Built in 1867, this is the oldest Protestant Church in the County. It was originally a simple building with a square, louvered bell tower above the entry. The 40-foot single covered Victorian Gothic spire was added in 1889. The church expresses in wood temple forms of Greek Revival with cornice returns and quoins. The bell tower has a pseudo-rose window in the shape of a Maltese cross and the walls are scored to simulate stone.

30. James McCormick House

Stage Road, Pescadero

Built in the late 1860's by James McCormick, one of the early families in Pescadero, this is the most sophisticated of the houses built in this era. Influenced by the Classic Revival, the house is almost the mirror image of the Thomas W. Moore House on the other end of Stage Road.

31. Bartlett V. Weeks House

Goulson Road, Pescadero

Constructed in 1885, this house shows a slight departure from earlier homes in Pescadero in that it indicates an awareness of the Victorian style. Porch columns are solid, rather than pierced, and are decorated with concave fans that suggests arches between the posts.

32. Methodist-Episcopal Church

Stage Road, Pescadero

Built in 1889, this Victorian style building was designed on a cruciform plan with some Gothic Revival details and a high-pitched roof. The natural redwood interior is relatively undisturbed and much of the hardware is original. During the 1920's it served as the Pescadero Community Center and later as a cultural school for the children of Japanese Americans. It is presently owned by the Native Sons and Native Daughters of the Golden West.

33. I. O. O. F. Hall

Stage Road, Pescadero

This meeting place was built around 1878 by the International Order of Odd Fellows, one of the most active fraternal groups in the community at the time. The street facade was made more elaborate in 1890 by the addition of an overhang to the gable, decorative brackets under the eaves, and veranda with a balustrated balcony. Remodeling has destroyed the original classic symmetry of the building, which is now used as a private residence.

34. Woodhams House

Stage Road, Pescadero

Built in the mid-1880's, the house has a square bay window typical of the period. Pierced quarter-fan ornaments on each corner of the porch and on either side of the supports give it unusual interest. The apex of the gable has a simple stick form and at the crest is a double fan with a finial center.

35. Thomas W. Moore House

Stage Road, Pescadero

Built around 1863, this is one of the oldest houses in the community. Constructed with classically inspired motifs, it reflects the architectural influence of early homes in Pescadero.

36. Pebble Beach

Coast Highway, south of Pescadero

This small beach, covered with polished fragments of agate, carnelian, and jasper, has been a favorite gathering point for visitors since the 1860's. The Swanton House in Pescadero would carry their guests to the beach by wagon each morning to sun and collect pebbles. A large hotel on the bluff above the beach was a tourist mecca until it burned in the 1920's.

37. Pigeon Point

Coast Highway, south of Pescadero

This headland was originally called Whale Point by early Californians. Here, on the cove on the south side of the point, Portuguese whalers established a whaling station that consisted of a dozen cottages, two warehouses and a wharf. Later the area became known as Pigeon Point for the clipper ship, Carrier Pigeon, that hit the rocks and sank here in 1853.

The area has great scenic beauty, and is also of considerable biological and geological interest.

38. Pigeon Point Lighthouse

Coast Highway, Pigeon Point

First illuminated on November 15, 1872, this lighthouse was named for the clipper ship, Carrier Pigeon, that hit the rocks here on May 6, 1853. The tower, 115 feet in height and 28 feet in diameter, is constructed of bricks shipped around Cape Horn from Norfolk, Virginia. The light's 9-foot diameter fresnel lens was built by Henri Le Paute of Paris in the 1850's. Illumination for the light first came from whale oil. Kerosene was later substituted, and then electricity to run the light, which is magnified to 800,000 candlepower in a beam seen 18 miles at sea. In 1974, an automatic beacon was set up on a platform outside the light-house, replacing the historic lens. The lighthouse is a State Historical Landmark, and is listed in the National Register of Historic Places and the Historic American Building Survey.

39. Steele Brothers Dairies

Gazos Creek to Ano Nuevo

In 1862, Rensselaer Steele and his three cousins established a chain of dairies between Gazos Creek and Ano Nuevo known as the Steele Brothers Dairies which became famous throughout the Bay Area for their products. A number of houses and barns still stand which were constructed by the family. The dairies are listed as a California State Landmark.

40. Cloverdale Ranch House

Coast Highway, south of Pigeon Point

This two-story wooden house was originally built by William Ramsey in 1873 but was purchased in 1880 by Edgar Steele. It is constructed in a Classical Revival style with quoins at each corner, and gables that end in ranking cornices. A bay window on the front elevation adds an elegant flourish to the house. The building is presently owned by the Campbell Soup Company which uses it for labor housing.

41. Franklin Point

Coast Highway, south of Pescadero

This wild, scenic area represents a good example of an open-cut environment. Onshore are fine examples of sand dunes, both mobile foredunes and, inland, older dunes now established and covered by vegetation. Offshore rocks and reefs fringe much of the area.

42. Cascade Ranch House

Coast Highway, south of Franklin Point

Built in the mid-1860's for Rensselaer and Clara Steele, the building is constructed in a classical form with a symmetrical placement of windows and doors, and is the most elegant of the buildings. A wide veranda with a balcony on the second floor runs along the front and both sides of the house. Alterations made to the house over the years have not destroyed its distinctive coastal character.

43. Cascade Ranch Dairy Building

This three-story redwood structure was the first erected by the Steeles after their location on the Coastside in 1862. The building was designed for function rather than style, which may explain the irregular placement of its windows. A wide band, or fascia, just under the eaves was the builder's only architectural embellishment.

44. Green Oaks Ranch House

Coast Highway, south of Franklin Point

Built in 1863 by Isaac Steele, this wooden house was originally constructed in a Greek Revival style but later additions have substantially altered its architectural character. The house is listed in the National Register of Historic Places.

45. Ano Nuevo Ranch House

Coast Highway, Ano Nuevo

Constructed in 1895 by Horace Steele, this house is unique as it is one of two Salt Box style structures on the Coastside. Built with its rear to the ocean winds, an innovative feature of the house is a bay window on the south side.

46. Dickerman Barn

Coast Highway, Ano Nuevo

This redwood barn was constructed around 1878-1900 by Isaac Steele's daughter Effie and her husband Edwin Dickerman. The structure is comparable to three stories in height with a gable roof. It is a style of barn generally found in the eastern part of the United States. Unlike the usual California barn, with its long sloping roof, this one enclosed its space by going up three stories, reducing the roof size and maintenance cost without losing square footage. The beams used in the barn's construction are quite large, 18 x 18 inches. They were salvaged after 1877 from a burned-out wharf in nearby Ano Nuevo Cove. The barn is listed in the National Register of Historic Sites.

47. Point Ano Nuevo

Coast Highway, south of Franklin Point

A number of features combine to make Point Ano Nuevo the most remarkable and spectacular area on the entire Coastside. Punta del Ano Nuevo was one of the first landforms in California to receive a Spanish name. From his ship in January 1603, Captain Sebastian Viscaino saw the point and its island while exploring Spain. The first contact between Europeans and the natives of this land, the Ramaytush or San Francisco Costanoan Indians, occurred here in 1769 when the Portola expedition entered what is today San Mateo County one mile to the south. A Spanish engineering officer returned later to survey the area and an outpost of Mission Santa Cruz was established after 1798. The first American settlers came in the decade after the Gold Rush, building a wooden railroad for lumbering and introducing large scale dairy farming.

The area is rich in fauna, particularly in the marine area where, due to submarine stacks and shoals which prevent commercial fishing, there is a prolific population of fish, crustaceans, and other invertebrates. Tide pools are found in the bedrock outcrops. Sea birds nest on the shoreline cliffs, and recently the northern elephant seal has extended its breeding area from Ano Nuevo Island to the mainland beaches.

48. Ano Nuevo Island

This small island, once the tip of a peninsula, is one of the most important pinniped breeding grounds in Northern California, including the elephant seal. This animal has returned to the island in the past decade after virtual extinction around the turn of the century.

The island has been the site of a light station since 1890, when a light was added to the warning of the foghorn installed in 1872. The light station was abandoned in 1948 and today is occupied by seals and sea lions.

49. Portola Expedition Campsites

From October 23 to November 20, 1769, the expedition of Captain Gaspar de Portola was in San Mateo County searching for Monterey Bay. Traveling north up the coast, the expedition camped at several locations until it reached San Francisco Bay and became the first Europeans to view this great body of water. State Historic Landmark status commemorates these sites at San Gregorio Creek, Purisima Creek, Pilarcitos Creek, and Martini Creek.

APPENDIX D
PERFORMANCE CRITERIA AND DEVELOPMENT STANDARDS FOR COUNTY HISTORIC SITES

In response to requests by the San Mateo County Planning Commission on December 12, 1984, the following background data was added to the Historical and Archaeological Resources Chapter.

COUNTY HISTORIC SITES

1. Standards

   a. A County Historical Site should consist of significant historical, traditional or cultural resources of the County.

   b. Sufficient area should be provided for reasonable protection of the site.

2. Planning and Management Guidelines

   a. The prime resource of the site should be determined.

   b. The management objective should be the preservation of the prime resource to the exclusion of all unrelated development.

   c. Public facilities should be harmonious in appearance with the style of construction associated with the site's historical period. Vehicle access should be controlled.

   d. Commercial uses such as crafts, stores, bookshops and art shops may be permitted if they preserve and enhance the resource and are compatible with the site's architectural style.

   e. A County Historical Site may be a separate site or may be contained within a County Park or within a County Natural Preserve.

   f. Interpretative programs for historic sites should be provided in order to foster maximum enjoyment and educational value.

APPENDIX E
SUMMARY OF RECENTLY ADOPTED STATE LEGISLATION AFFECTING HISTORICAL RESOURCES

1. Historical Rehabilitation (SB 885--Marks)

Summary (1/23/84): Under the existing Marks Historical Rehabilitation Act of 1976, various terms are defined with respect to the financing of the rehabilitation of historical property. This bill would redefine several of the terms and add new definitions.

Actions: 9/10/84 - Approved by Governor.
9/10/84 - Chaptered by Secretary of State.

Status: Chaptered (84-996).

2. Historical Resources (SB 1252--Marks)

Summary (8/31/84): This bill would increase the membership of the State Historical Resources Commission to nine members, appointed in accordance with prescribed procedures. The bill would revise the requirements for membership on the Commission, require the Commission to meet at least four times per year, and revise the duties of the Commission.

Actions: 9/20/84 - Approved by Governor.

Status: Chaptered (84-1289).

3. Conservation Easements (SB 2260--Marks)

Summary: This bill would provide that a conservation easement is an enforceable restriction, for purposes of the provision requiring the assessor to consider enforceable restrictions in the assessment of land.

Actions: 8/27/84 - Approved by Governor.
8/27/84 - Chaptered by Secretary of State.

Status: Chaptered (84-777).

4. Historical Preservation: State Archives (SB 2264--Marks)

Summary (6/8/84): This bill would provide that the Secretary of State shall conduct a feasibility study, as specified, to assess the needs, costs, and appropriate location for a new facility or the conversion of an existing facility to house the collections and operations of the California State archives for the next 50 years.

Actions: 10/1/84 - Chaptered by Secretary of State.

Status: Chaptered (84-1519).

5. Historical Preservation (SB 2321--Marks)

Summary (8/29/84): This bill would require the State Historical Building Code Advisory Board to adopt such alternative building standards and would make these standards binding on all State and local agencies. It would require all local building authorities to administer and enforce its provisions and would thereby impose a State mandated local program.

Actions: 9/21/84 - Approved by Governor.
9/21/84 - Chaptered by Secretary of State.

Status: Chaptered (84-1314).

6. Property Taxation: New Construction (AB 3945--Farr)

Summary (8/22/84): This bill would provide that the term "newly constructed" does not include any addition to, alteration or reconstruction of, or reconstruction of once extant features of, a certified historic structure, including, but not limited to, and modifications necessary to comply with health and safety code or handicapped access requirements, so long as that addition, alteration, or rehabilitation is in conformance with "the Secretary of the Interior's standards for rehabilitation and guidelines for rehabilitating historic buildings."

Actions: 9/17/84 - Chaptered by Secretary of State.

Status: Chaptered (84-1132).

7. Historical Grant Program (ACR 164--Farr)

Summary: This measure would request the Department of Parks and Recreation to consolidate information developed by the Heritage Task Force with respect to establishing an Historical Grant Program, to conduct a public hearing on proposed criteria for the grant awards, and to report its findings and recommendations to the Legislature on or before November 30, 1984.

Actions: 9/14/84 - Chaptered by Secretary of State.

Status: Chaptered (R-176).

6

Parks and Recreation Resources

Background ▪ Issues

PARK AND RECREATION RESOURCES BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

Outdoor recreation offers a variety of activities to many people, such as the intense exercise of a football game, silent meditation during a sunrise, involvement in an activity shared with hundreds of people, or the solitary pursuit of just one person. San Mateo County offers thousands of acres of open space to accommodate many types of outdoor leisure activities ranging from sightseeing or camping to baseball or tennis. This unique assortment of natural land and water facilities must be preserved and protected in order to continue to provide present and future generations with a full range of outdoor recreational opportunities. The Parks and Recreation Chapter of the General Plan describes park and recreation facilities provided by both the public and private sector, analyzes relevant issues affecting these facilities, and provides policies to address them.

B. STATE PLANNING LAW

The California State Government Code permits the inclusion of a recreation element in City and County General Plans. Section 65303(a) of the Code states that such an element should show a comprehensive system of areas and public sites for recreation which includes the following: (1) natural reservations, (2) parks, (3) parkways, (4) beaches, (5) playgrounds, and (6) other recreation areas. Where feasible, the Code says that the locations and proposed development of these areas and sites should be indicated.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing General Plan Documents

a. Elements

(1) Parks and Recreation Element (1978)

In April of 1976, the Board of Supervisors appointed a 20 member Citizens Advisory Committee to advise County staff and Commissioners on all aspect of developing the 1978 Element and to assure that the broadest range of citizens' concerns was reflected. Committee appointments were drawn from divergent political, social and economic groups in the County, and included six public members and 12 representatives of business and civic groups. In addition, one Planning and one Parks and Recreation Commissioner were appointed to the Committee as nonvoting liaison members. Over a 22-month period, the Committee met at least once a month with County staff to help develop various parts of the 1978 Element.

The background data, issue statements, goals and policies of the 1978 Park and Recreation Element provided much of the information contained in this Chapter of the General Plan. Specifically, background information in this Element which focused on County park facilities has been revised and expanded to incorporate new information on recreational facilities supplied by all public agencies and the private sector. Also discussed are the roles played by all these providers of recreational opportunities. Issue and policy statements have been reorganized and augmented by the inclusion of issues and policies relevant to both the public and private sector and those of County-wide importance.

Prior goals have been reviewed and combined with policies to produce policy statements to guide decision-making actions. Once adopted, this Chapter will replace the 1978 Parks and Recreation Element.

(2) 1973 Conservation and Open Space Element

The 1973 Conservation and Open Space Element supplied background information for use in developing this Chapter.

b. Area Plans

The North Fair Oaks Community Plan, Emerald Lake Hills Community Plan, Montara-Moss Beach-El Granada Community Plan, Local Coastal Program, and the San Bruno Mountain General Plan Amendment contain parks and recreation policies which apply to each particular area. The policies contained in this Chapter are more generalized and apply to the entire County. Because the Park and Recreation Resource Chapter and the area plans are all part of the General Plan, under the government code requirements (Section 65300.5), they cannot be inconsistent.

2. Other Chapters of the Updated General Plan

While this Chapter does discuss facility locational criteria, it does not designate land uses (see the Land Use Chapter of the General Plan). Similarly, this Chapter discusses bicycling as a recreational activity, but does not discuss it as a mode of transportation (see the Transportation Chapter of the General Plan).

D. OTHER COUNTY PLANNING EFFORTS TO PROVIDE PARKS AND RECREATION FACILITIES

1. Charter For Parks

In November of 1972, San Mateo County voters approved a charter amendment (Proposition A) that established a special fund to finance a ten year County Parks and Open Space Acquisition and Development Program which had been approved earlier that year by the Board of Supervisors. The Charter amendment required the Board of Supervisors to transfer

annually for a ten year period, a sum of money from the General Fund to the County Parks and Open Space Acquisition and Development Fund. Following the passage of Proposition 13, however, the special funding allocation was suspended for one year and then reinstated at reduced levels until the program ended in 1983.

2. Parks and Recreation Commission

Unlike other chapters of the General Plan whose implementation is directly managed by the Planning Division, implementation of the policies of this chapter rests largely within the Parks and Recreation Division and, of course, the Board of Supervisors. The Planning Division, however, does retain responsibility for the development of environmental impact reports for plans for County park and recreation facilities and reviews capital improvements within these facilities for consistency with the General Plan. The Planning Division also reviews for consistency with the General Plan those projects involving the acquisition and disposal of parks and recreation facilities.

II. EXISTING PARK AND RECREATION RESOURCES

A. INVENTORY OF PARK AND RECREATION FACILITIES

1. Public Sector Providers

a. Federal Park and Recreation Facilities

(1) San Francisco Bay National Wildlife Refuge

The San Francisco Bay National Wildlife Refuge, authorized to contain 23,000 acres, is owned by the Federal government and operated by the Fish and Wildlife Service of the U.S. Department of the Interior. The Refuge is located in the South Bay and contains lands located in San Mateo, Santa Clara and Alameda Counties. That portion within the County contains approximately 1,863 acres. The Refuge, comprised of marshes, mudflats and salt ponds, provides protective habitats for wildlife and offers environmental, educational and wildlife interpretation opportunities for visitors. The Refuge is also scheduled to provide accommodations for fishing activities. The Map of Existing Park and Recreation Facilities indicates the location of this facility.

(2) Golden Gate National Recreation Area

The Golden Gate National Recreation Area (GGNRA) was basically established to preserve for public use open space lands of significant natural, historic, scenic and recreational value. Approximately 23,000 acres of land in San Mateo County has been authorized for inclusion in this Federal government facility operated by the National Park Service of the U.S. Department of the Interior. Included with the new boundaries of the GGNRA

SAN MATEO COUNTY GENERAL PLAN

EXISTING PARK AND RECREATION FACILITIES

COUNTY

SPECIAL DISTRICT (MPROSD)

STATE

RECREATION EASEMENT

FEDERAL

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

THORNTON
SAN BRUNO MOUNTAIN
MILAGRA RIDGE
SHARP PARK
SWEENEY RIDGE SKYLINE
SWEENEY RIDGE
JUNIPERO SERRA
DISCOVERY SITE
PACIFICA
SANCHEZ ADOBE
McNEE RANCH
SAN PEDRO VALLEY
GRAY WHALE COVE
MONTARA
FITZGERALD
MID-COAST
COYOTE POINT
NATIONAL WILDLIFE REFUGE
BAYLANDS
FLOOD
HASSLER
EDGEWOOD
HUDDART
WOODSIDE STORE
PURISIMA CREEK REDWOODS
WUNDERLICH
THORNEWOOD
LA HONDA CREEK
WINDY HILL
COAL CREEK
LOS TRANCOS (portion of)
RUSSIAN RIDGE
SKYLINE RIDGE
SAM McDONALD
HERITAGE GROVE
MEMORIAL
LONG RIDGE
PORTOLA
PESCADERO CREEK
BUTANO
SAN GREGORIO
POMPONIO
PESCADERO
PESCADERO POINT
PEBBLE
BEAN HOLLOW
BOLSA POINT
PIGEON POINT
GAZOS CREEK
FRANKLIN POINT
ANO NUEVO
ANO NUEVO POINT

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

are certain public parks and beaches located in Pacifica, Daly City and Sweeney Ridge in unincorporated San Mateo County. Also included in the GGNRA are the watershed properties owned by the City and County of San Francisco. These properties are regulated by scenic and recreation easements, granted to the City and County of San Francisco, the State of California, the Federal government and San Mateo County. Most of the watershed lands, with the exception of approximately 4,000 acres, are under the terms and conditions of a scenic easement. The remaining 4,000 acres are under the terms and conditions of a scenic and recreation easement. The administration of these easements remains with the Department of the Interior, however, the function has now been transferred from the Heritage Recreation and Conservation Service to the National Park Service. Although Public Law 96-607 authorized the inclusion of these new lands into the GGNRA, the sites will remain under the jurisdiction of the particular locality until they have been donated and accepted by the National Park Service.

b. State Park and Recreation Facilities

The State Department of Parks and Recreation owns and operates 8,353 acres of recreational facilities in San Mateo County in the form of parks, beaches, and marine reserves. These facilities are located along the coast and in the southern portion of the County. Table 6.1 indicates State facilities and acreage, and the Map of Existing Park and Recreation Facilities illustrates their location.

c. County Park and Recreation Facilities

Through the Park and Recreation Division, the County maintains and operates a 14,122 acre system comprised of 20 facilities. These facilities generally are located in the southern end of the County; however, the recently approved Master Plans for Edgewood and San Bruno Mountain County Parks have created additional recreational opportunities toward the northern portion of the County.

The County park and recreation system is presently oriented toward the preservation of natural areas because the majority of the facilities are rural in nature, offering mostly low intensity types of activities. The system, however, in seeking to provide a balanced group of facilities, does feature some sites for more active types of recreation, such as Coyote Point Recreation Area. Table 6.2 lists the facilities and respective acreage of the County's system (also see Map of Existing Park and Recreation Facilities). A complete inventory may be found in Appendix A.

d. City Park and Recreation Facilities

Throughout the County, cities own and/or operate most of the facilities which provide for active types of recreation. The cities of Redwood City and Brisbane provide the Redwood City Marina and the

TABLE 6.1

STATE PARK AND RECREATION FACILITIES IN SAN MATEO COUNTY

NAME	ACREAGE
Thornton State Beach	50
San Bruno Mountain State & County Park	298
Pacifica State Beach	21
Grey Whale Cove State Beach	3
McNee Ranch	715
Montara State Beach	69
Half Moon Bay State Beaches	380
San Gregorio State Beach	172
South Coast Beaches	14
Pomponio State Beach	421
Pescadero State Beach	317
Portola State Park	2,049
Bean Hollow State Beach	440
Butano State Park	2,186
Gazos Creek Fishing Access	6
Ano Nuevo State Reserve	1,193
Montara and Pigeon Point Youth Hostels	19
TOTAL ACREAGE	8,353

Source: State Department of Parks and Recreation.

TABLE 6.2

SAN MATEO COUNTY PARKS AND RECREATION FACILITIES

NAME	ACREAGE[1]
Coyote Point (includes marina)	727
Edgewood[2]	467
Fitzgerald Marine Reserve	45
Flood	21
Heritage Grove	38
Huddart	974
Junipera Serra	108
Memorial	499
Mid-Coast Beaches	110
Milagra Ridge	232
Pescadero Creek	5,973
Sam McDonald	867
San Bruno Mountain State and County[3]	2,064
San Francisco Bay Discovery Site	20
San Mateo Fishing Pier	3
San Pedro Valley	975
Sanchez Adobe	6
Sweeney Ridge Skyline Preserve	58
Woodside Store	1
Wunderlich	934
TOTAL ACREAGE	14,122

Notes:
1. Acreage has been rounded to nearest whole acre.
2. MROSD has review authority of County development plans.
3. Jointly owned by San Mateo County and the State of California.

Sierra Point Marina, respectively. Municipalities also operate several golf courses, namely, the San Mateo Municipal Golf Course, Sharp Park Golf Course and Crystal Springs Golf Course. Most city parks, however, primarily serve individual neighborhoods.

The City and County of San Francisco is another municipality operating park and recreation resources in the County This agency owns the San Francisco State Fish and Game Refuge, a 23,000 acre major open space land, Sharp Park Golf Course and firing range.

e. Special Districts

(1) Park and Recreation Districts

Several special districts operate facilities within the County. Two special recreation and park districts, Ladera and Highland, primarily provide for active type recreation in urban unincorporated areas. The Ladera District in the unincorporated area between Menlo Park and Portola Valley provides tennis courts, swimming and wading pools, an outdoor volleyball court, and a children's play area. The Highland District in unincorporated San Mateo provides a recreation center, gymnasium, swimming pool, tennis courts, a play court, small picnic area, and a children's play area.

(2) San Mateo County Harbor District

The San Mateo County Harbor District currently has under its jurisdiction two facilities for boating activities, Pillar Point Harbor in Princeton and Oyster Point in South San Francisco. Pillar Point Harbor offers 440 boatslips to accommodate both commercial and recreational craft, a breakwater, a public pier, a fish processing building, a launching ramp, and some commercial development. Oyster Point offers 600 boatslips to accommodate primarily recreational craft, 150 dry storage spaces and a launching ramp.

(3) County Service Areas

County Service Area #6 in Princeton-by-the Sea maintains a 1.5 acre recreation facility. County Service Area #10, established to provide park and recreational services for Montara and Moss Beach, is non-functional as a tax rate to fund services was never established.

(4) Midpeninsula Regional Open Space District (MROSD)

The Midpeninsula Regional Open Space District owns and manages in San Mateo County approximately 7,109 acres of land contained in 13 open space preserves. These preserves, generally located in the southeastern portion of the County, are established to preserve the natural environment and to allow low intensity type

of activities such as hiking, nature study, horseback riding, and day camping. Table 6.3 indicates the name and acreage of each preserve, and the Map of Existing Park and Recreation Facilities illustrates the location of these lands.

(5) Peninsula Open Space Trust (POST)

The Peninsula Open Space Trust is a private organization devoted to preserving land for open space and farm purposes in San Mateo and Santa Clara Counties. Unlike the Midpeninsula Regional Open Space District, land preserved by the Trust is not necessarily used for park or recreation purposes.

2. Private Sector Providers

A number of private organizations own and operate recreational facilities throughout the County. A brief description of them is provided in the following section.

a. Camps

Several agencies and organizations provide facilities for camping activities. These sites, generally located in the southern portion of the County, are listed in Table 6.4.

b. Golf Courses

There are a number of private golf courses throughout the County. A listing of these facilities is provided in Table 6.5.

c. Marinas

Several private marinas on the Bayside provide facilities for recreational boating activities; specifically, these are Docktown, Oyster Cove, Peninsula Marina, and Pete's Harbor. There are no privately owned marinas on the coast.

d. Other Facilities

Marine World-Africa U.S.A. is a 65 acre theme park featuring land and marine animals. Because of a need to expand, with no additional land available, this facility will be relocating in the near future to another Bay Area site.

B. SAN MATEO COUNTY PARKS AND RECREATION SYSTEM CLASSIFICATIONS

Park and recreation facilities within the County system can be classified by one of the following categories: (1) park, (2) recreation area and trail, (3) natural preserve, (4) wild area, (5) linear park, and (6) historical site. Table 6.6 provides a description of each category.

TABLE 6.3

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT
OPEN SPACE PRESERVES IN SAN MATEO COUNTY

NAME OF PRESERVE	ACREAGE[1]
San Mateo County Baylands[2]	188
Thornewood	105
Windy Hill	677
Coal Creek	337
Russian Ridge	664
Los Trancos (portion of)	84
Skyline Ridge (portion of)[3]	961
Long Ridge	529
Edgewood Park	468
Montebello (portion of)	31
La Honda Creek	256
Hassler	298
Purisima Creek Redwoods	2,511
TOTAL ACREAGE	7,109

Source: Midpeninsula Regional Open Space District.

Notes:
1. Acreage has been rounded to nearest whole acre.
2. Includes a four-acre open space easement.
3. Included a 13 acre open space easement.

TABLE 6.4

PRIVATELY OWNED CAMPING FACILITIES

FACILITY	ACREAGE
Baptist Camp	125
Cutter Scout Reservation	760
Girl Scout Camp	142[1]
Oakland YMCA	100
San Francisco YMCA	715
TOTAL ACREAGE	1,842

Source: Skyline-Santa Cruz Mountain Area Study.

Note: 1. Assessors Parcel Map Book.

TABLE 6.5

PRIVATELY OWNED GOLF COURSES

NAME	LOCATION
Bay Meadows	San Mateo
Burlingame Country Club	Hillsborough
California Golf Club of San Francisco	S. San Francisco
Cypress Hills	Colma
Emerald Hills	Redwood City
Green Hill Country Club	Millbrae
Half Moon Bay Golf Links	Half Moon Bay
Lake Merced Golf and Country Club	Daly City
Menlo Country Club	Woodside
Olympic Country Club	Daly City
Peninsula Golf and Country Club	San Mateo
San Francisco Golf Club	Daly City
Sharon Heights Golf and Country Club	Menlo Park

Source: Thomas Bros., San Mateo County Popular Street Atlas.

TABLE 6.6

SAN MATEO COUNTY PARKS AND RECREATION SYSTEM CLASSIFICATIONS

CLASSIFICATION	DESCRIPTION
Park Areas	The Park classification is intended for areas of outstanding scenic and natural character, where outdoor recreation facilities can be provided and special natural areas, historic places or geologic exhibits can be set aside. Development within these facilities allows for recreational uses such as campground, trails, picnic areas, etc.
Recreation Areas	Recreation Area is a classification for facilities meant to withstand high amounts of public use. Alteration of the environment to enhance recreational opportunities is allowed in order to accommodate a variety of compatible forms of recreation.
Natural Preserve	Natural Preserve is a category intended to conserve natural areas in their native state. Development of these facilities is limited to that necessary for public health, safety and education, such as sanitary facilities, protective barriers, or interpretive centers.
Wild Areas	The Wild Area category is meant for isolated, undisturbed sites away from urban areas. Development within these facilities is limited to such uses as primitive restrooms, parking and water sources.
Linear Park and Trail	Linear Park and Trail is a classification for strips of land that act to connect park system units and other points of interest. These conduits are generally of a width necessary to protect them from nearby encroachments.
Historical Site	Historical Site is a category meant to preserve features of historical, archaeological and cultural significance. More detail on this category may be found in the Historical/Archaeological Resources Chapter of the General Plan.

C. PROJECTED RECREATION NEEDS

A Recreation Needs Assessment Study was conducted in 1976 by the County to determine where facilities will be needed most by 1985. For a more detailed description of the study methodology, see Appendix B. The results of the study were illustrated through a series of maps which show where park, recreation area, natural preserve and wild area facilities will be required.

D. ENVIRONMENTAL SUITABILITY STUDY

In conjunction with the study to determine where additional park and recreational facilities will be needed, a second study was done to determine which lands in the County can best accommodate these facilities. The findings illustrated through a series of generalized maps that lands located in the vicinity of the Santa Cruz Mountain are more suitable locations for park and natural preserve facilities; lands along the Bayside are more suitable sites for recreation areas; and finally, land in both the northwestern and southern portions of the County is suitable for wild area facilities.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING PARK AND RECREATION RESOURCES

There are several plans, policies and regulations which affect park and recreation facilities in the County. This section presents a brief description of each.

A. FEDERAL

1. Natural Wildlife Refuge

a. 1974 San Francisco Bay National Wildlife Refuge Master Plan

The 1974 Master Plan for the San Francisco Bay National Wildlife Refuge Area establishes land use classifications, based upon the degree of habitat sensitivity, which determine the amount of visitor access allowed in various parts of the Refuge. The Plan also outlines a series of development concepts for facility and circulation improvements for fourteen sites within the Refuge.

b. 1983 Recreational Fishing Plan for the San Francisco Bay National Wildlife Refuge

The 1983 Recreational Fishing Plan, also developed by the Fish and Wildlife Service, proposes to develop sites within the Refuge as public fishing areas. The plan calls for the conversion of portions of the closed old Dumbarton Bridge into fishing piers on both sides of the Bay. These piers would extend .25 miles across tidal bay mudflats. Each pier would be developed with benches, wind shelters, and fish cleaning stations. Parking for approximately 100 cars, bait and refreshment stands, drinking fountains and trail heads would also be provided at each pier.

c. Golden Gate National Recreation Area Land Use Protection Plan Draft

The 1983 draft Land Protection Plan for the Golden Gate National Recreation Area: describes land use management categories; describes the nonfederally-owned lands and their uses within the park boundary; identifies the method and total amount of land acquired by the Park service; discusses methods of protecting park resources; recommends that cooperative agreements be initiated for all public land within the boundary not administered by the Park Service, including the San Francisco Watershed and other public lands in the County which may be donated; and finally, lists land acquisition priorities.

B. STATE

1. California State Park System Plan 1980

The State Department of Parks and Recreation has developed a long-range plan to guide the development and management of ten planning districts throughout the State. San Mateo County falls within Planning District Number Four. For this district, the plan proposes some property acquisition, the development of camping facilities, the development of recreational trails, and the use of the lighthouses at Pigeon Point and Point Montara in conjunction with hostel programs.

2. San Mateo Coast Area General Plan

The 1979 San Mateo Coast Area General Plan, developed by the State Department of Recreation, is a long range plan for the acquisition, development and management of State beach facilities in the County (see State recreational resources). The plan seeks to: orient visitor access away from motor vehicles and toward mass transit and trail uses; develop State beach units in light of water and sewage disposal constraints; preserve historical facilities; and protect rare and/or endangered plant and animal species.

In adopting this plan, the State Park and Recreation Commission recognized that conflicts may arise between this General Plan and the Local Coastal Program for the County. In these instances, the Commission committed to review and, where possible, eliminate such conflicts.

3. Legislation

a. Subdivision Map Act

Section 66477 et seq. of the California Government Code permits the legislative body of a city or county to enact regulations which require the dedication of land, the payment of fees in lieu thereof, or a combination of both, for park or recreational purposes as a condition of approval of a final subdivision map or parcel map. The Map Act requires that specific guidelines are followed and that a

local ordinance requiring dedication of land or payment of fees be established.

b. Camp Act

Section 18897 et seq. of the California Health and Safety Code gives the State Director of Public Health jurisdiction over the regulation of organized camps and the protection of campers' health and safety. Local building codes which ordinarily affect construction standards are superseded by this statute. This authority, however, does not preempt the jurisdiction of the State Fire Marshal, nor does it preempt local enforcement of zoning ordinances.

C. REGIONAL

The 1978 Master Plan of the Midpeninsula Regional Park District contains policies which call for the acquisition of open space lands to: protect natural vegetation, agriculture and wildlife; provide for outdoor recreation; guide urban development; preserve scenic facilities; preserve unique sites and features; protect open space used in the production of minerals; protect the public from hazardous conditions; and, in exceptional cases, protect open space of regional significance in urban areas. The Plan also establishes an open space evaluation rating system based upon the following open space functions, each of which has been assigned a particular value: (1) protection of natural vegetation; (2) protection of wildlife; (3) outdoor recreation; (4) guiding urban form; (5) scenic preservation; and (6) protection of agriculture.

D. COUNTY

1. County General Plan Policies

a. Elements

(1) 1973 Conservation and Open Space Element

The 1973 Conservation and Open Space Element of the General Plan revised the park acquisition program, designated park and open space land uses, described four new open space categories, and identified significant sites of vacant land in single ownership which are relatively independent of surrounding development and for which planning has not yet been completed.

(2) 1978 Parks and Recreation Element

The 1978 Parks and Recreation Element of the General Plan identified and addressed key issues associated with park and recreation facilities. Specifically, the Element determined the role of the County in providing park and recreation facilities; developed a process to select potential sites; examined how the County should participate in cooperative agreements; examined techniques to acquire, operate and maintain the

system; and identified the role of citizens. Policies were also developed and implementation programs were recommended.

b. Area Plans

(1) Local Coastal Program (1980)

The Local Coastal Program is divided into 12 different components to address the many issues confronting San Mateo County's Coastal Zone. The three components that address recreation are the Shoreline Access Component, the Recreation/Visitor Serving Facilities Component, and the Commercial Fishing/Recreational Boating Component. For ease of discussion, the policies will be summarized by Component.

(a) Shoreline Access Component

The Shoreline Access Component seeks to protect and provide public access to the shoreline and along the coast through policies and regulations which require, as a condition of coastal development permit approval, some provision for shoreline access; establishes locational criteria and development standards for access routes; and, finally, assigns program responsibilities in acquiring, developing and maintaining public access.

(b) Recreation and Visitor Serving Facilities Component

The Recreation and Visitor Serving Facilities Component is designed to protect recreational use of the ocean-front and provide and protect support services for recreational visitors through policies and regulations that: regulate the types and locations of recreation and visitor serving facilities; establish development standards for public and private recreation facilities; and assign program responsibilities to the public and private sector in acquiring, developing and maintaining recreation and visitor serving facilities.

(c) Commercial Fishing/Recreational Boating Component

Through policies and statutes, the Commercial Fishing/ Recreational Boating Component addresses the need to provide additional recreational boating facilities along with protecting commercial fishing facilities by: reserving sewer and water capacity to promote additional small craft harbors; limiting the location of new facilities; protecting sensitive habitats; and assigning program responsibilities to the County Harbor District.

(2) North Fair Oaks Community Plan (1979)

The North Fair Oaks Community Plan contains policies designed to remedy the lack of any park facilities by: establishing a neighborhood park site; using the play areas of elementary schools and the Hetch-Hetchy right-of-way for recreational opportunities; entering into a joint powers agreement with Redwood City to maintain and operate a facility; and, finally, creating a special district to finance such facilities.

(3) Montara-Moss Beach-El Granada Community Plan (1978)

The Montara-Moss Beach-El Granada Community Plan includes policies which seek to provide additional park facilities for use by local residents by: establishing a special district to finance facilities; developing a community center; using school playfields, riparian corridors and drainage channels through urbanized areas to provide more recreation opportunities; and developing a pedestrian crossing for safe access to Montara Beach.

(4) Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan includes policies which seek to remedy the lack of any public open space or parklands by: acquiring at least 22 acres of land for public recreation; establishing a mechanism to acquire and maintain public open space; and developing acquired open space to accommodate only low intensity type activities.

(5) San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment includes policies basically to guide the preparation of specific plans for development of the area. Generally, the policies seek to: establish how and where in the proposed developments park and recreation facilities will be provided; assign the types of facilities a developer will construct and dedicate; determine recreation uses for land over and under 30% in slope; and guide the location and type of facilities for public recreation centers. These policies may be used in conjunction with the previously described San Bruno Mountain State and County Park Plan.

2. Other County Plans and Policies

a. County Park and Recreation Master Plans

To date Master Plans to guide the development of facilities within the County system have been approved for eight sites. These are: (1) San Bruno Mountain County and State Park; (2) San Pedro Valley County Park; (3) Junipera Serra County Park; (4) Coyote Point Recreation Area; (5) Huddart County Park; (6) Edgewood County Park;

(7) Pescadero Creek County Park (includes Memorial and Sam McDonald County Parks); and (8) Flood County Park.

b. Trail Acquisition Program

In 1977 a trail acquisition program to provide riding and hiking trails was approved in concept by the Board of Supervisors. Fourteen generalized routes were outlined and for five of them the Parks and Recreation Division was assigned the responsibility of acquisition, maintenance, and operation. These five routes are: (1) Route 1: Milagra Ridge to Huddart Park; (2) Route 2: Huddart Park to Wunderlich Park; (3) Route 3: Thornton State Beach to Milagra Ridge; (4) Route 5: Fassler Avenue (Pacifica) to San Pedro Valley Park; and (5) Route 10: San Pedro Valley Park to Montara State Beach. The remaining nine routes require additional study by the Parks and Recreation Division prior to acquisition.

c. Pillar Point Harbor Development Plan

The 1980 development plan for Pillar Point Harbor calls for the construction of an inner breakwater system, which was recently completed; single tie boat slips, 220 for commercial craft and 220 for recreation craft; a fish processing building; a new launching facility to replace the existing one; and the development of two parcels by private concessions for use as a restaurant, a chandlery, a boat repair yard, and a dry storage area.

3. County Ordinances

a. Zoning Ordinances

(1) Zoning Regulations Within the Coastal Zone

The regulations enacted to protect and control the development for park and/or recreation purposes within the Coastal Zone are listed in Table 6.7. State and local agencies which undertake park development are not exempt from the requirements in effect in this area.

(2) Zoning Regulations Outside of the Coastal Zone

Described in Table 6.8 are the regulations in effect which apply to park and recreation facilities outside of the Coastal Zone. State and local agencies are generally exempt from County zoning and building regulations outside of the Coastal Zone.

TABLE 6.7

ZONING REGULATIONS WITHIN THE COASTAL ZONE AFFECTING PARK AND RECREATION FACILITIES

ZONING REGULATIONS	FUNCTION
Coastal Development District (CD)	The CD District implements the Coastal Act of 1976 in accordance with the Local Coastal Plan. Basically, this overlay district incorporates all the components of the Local Coastal Program as standards for review of development projects. The CD district also establishes the requirement that State or local governmental agencies wishing to undertake a project must obtain a Coastal Development Permit.
Coastside Commercial Recreation District (CCR)	The CCR District is intended to control the use and development of land near or along the shoreline which is developed to visitor-oriented commercial facilities. The ordinance: (1) defines which uses are permitted and requires all uses to obtain a Use Permit in addition to a Coastal Development Permit; (2) limits uses adjacent to the shoreline; (3) requires design review of all development; and (4) establishes standards.
Community Open Space Conservation District (COSC)	The COSC Zoning District is intended to protect areas designated for General Open Space in adopted community plans by providing for planned low intensity development, which preserves the visual and open characteristics of the land. The District defines permitted uses which include public recreation and commercial recreation facilities (the latter requires a Use Permit) and establishes development standards.
Planned Agricultural District (PAD)	The PAD is intended to preserve and foster existing and future agricultural operations. The Ordinance: (1) defines which uses are permitted and allows public recreation and shoreline access trails on prime agricultural lands if certain conditions are met, and commercial recreation on lands suitable for agriculture and on other lands; and (2) regulates the intensity of public and commercial recreation based on the amount of water the uses consume.

TABLE 6.7 (continued)

ZONING REGULATIONS WITHIN THE COASTAL ZONE AFFECTING PARK AND RECREATION FACILITIES

ZONING REGULATIONS	FUNCTION
Resource Management/Coastal Zone District (RM/CZ)	The RM District Ordinances include public recreation and commercial recreation as permitted uses. The latter use is subject to a use permit. The RM/CZ also regulates the intensity of public and commercial recreation based on the amount of water the uses consume. All permitted uses within the Coastal Zone require a Coastal Development Permit, in addition to any other permit and environmental reviews.

TABLE 6.8

ZONING REGULATIONS OUTSIDE OF THE COASTAL ZONE AFFECTING PARK AND RECREATION FACILITIES

ZONING REGULATIONS	FUNCTION
Resource Management District (RM)	The RM Zoning District includes public and commercial recreation as permitted uses in this District. The latter use is subject to a use permit. In addition to establishing development review and site design criteria, the District also establishes supplementary review criteria for primary resource areas including the ocean shoreline. The shoreline criteria primarily addresses: (1) providing public access from state or local roads or trails to the shoreline; and (2) dedicating public access easements in subdivisions and planned unit developments.
Community Open Space Conservation District (COSC)	This district is also in effect in the Coastal Zone. See Table 6.7 for a description of its functions.
Other Zones Which Permit Park & Recreation Uses	Park and Recreation uses are generally permitted in Residential and Agricultural Districts. Golf courses are also permitted in these zones, however, a use permit is required. Recreation uses are also allowed in General Commercial (C-2), Entertainment (E), Light Industrial (M-1), and Timberland Preserve (TPZ) Zoning Districts.

b. Other Ordinances

(1) Division 2 - Administrative Provisions

Article 20, Section 2460 et seq. of the Ordinance Code establishes the administrative provisions for the Parks and Recreation Commission and empowers this body to: supervise and operate all County recreation facilities; and make recommendations to the County Manager on the acquisition of funds necessary for recreational projects.

(2) Division 3 - Public Safety, Morals and Welfare - Public Safety Provisions

Chapter 10, Section 3385 et seq. of the Ordinance Code regulates all County park and recreation facilities under the jurisdiction of the Parks and Recreation Commission by: (1) establishing definitions which include hiking and riding trails and recreation areas; (2) establishing the right to charge fees for picnicking and camping; (3) establishing camp regulations; (4) regulating fires; (5) establishing a series of protective regulations which include reserves and preserves, historical features and wildlife; (6) regulating motor vehicles, parking, and speed limits; (7) regulating noise and dangerous activities; (8) regulating the use of trails; and finally (9) regulating the use of alcohol.

(3) Division 5 - Business Regulations - Part II - Special Business Regulations

Chapter 8, Section 5580.1 et seq. of the Ordinance Code establishes definitions and sets forth requirements and procedures for licensing camp uses.

(4) Division 6 - Planning - Part IV - Miscellaneous Provisions

Chapter 1, Section 7700.0 et seq. of the Ordinance Code regulates stables and includes in Section 7700.11 supplemental provisions for commercial stables. In addition to the general provisions established which are applicable to all stables, i.e., permit requirements and procedures, location and area provisions, building construction and maintenance requirements, requirements provided for minimum lot sizes, location requirements, number of horses per acre, and type of supervision needed.

(5) Subdivision Ordinance

Section 7.1 of the County Subdivision Ordinance (#595) permits the Planning Commission to suggest rather than require the dedication of land for park and recreation uses in cases of large subdivisions.

E. CITIES

Each of the 20 cities in San Mateo County has developed and implemented land use plans which identify and address the park and recreation needs of that particular locality. Since the authority of the County does not extend to these municipalities and because of the number of plans involved, summaries are not included in this Chapter of the General Plan. Each plan, however, is on file with the County and reviewed to ensure coordination of projects which may cross jurisdictional boundaries.

PARK AND RECREATION RESOURCES ISSUES

I. IMPORTANCE OF RECREATION

A. BENEFITS OF RECREATIONAL OPPORTUNITIES

Recreational opportunities found in San Mateo County contribute significantly to the quality of life of both residents and others who use these facilities. Escape from urban centers to these areas provides mental and physical relief from the pressures created by noise, pollution and the other stresses of dense urban living. Further, recreation areas can accommodate a variety of activities such as picnicking, camping and hunting, as well as providing unique experiences to learn about the environment and accompanying ecosystems. These are but a few of the many benefits that recreation facilities provide and they must be protected and preserved for use by this and future generations.

B. ADEQUACY OF EXISTING PARK AND RECREATION FACILITIES TO ACCOMMODATE DEMAND

The current supply of parks and recreation facilities provided by both the public sector, i.e., all levels of government and special districts and the private sector is not enough to meet the demand. As projected through the year 1985 by the Recreation Needs Assessment Study, recreation demand clearly exceeds the capability of the existing system of facilities. Further the Study Maps illustrate the demand for additional facilities is greater in some areas of the County than in others.

II. OPPORTUNITIES AND CONSTRAINTS AFFECTING PARK AND RECREATION FACILITIES

A. PUBLIC SECTOR

While providing park and recreation facilities on the basis of need is an essential planning consideration in the development of a balanced system, the ability of the public sector to supply these facilities is often hindered by environmental, service, competing land use, fiscal and organizational constraints.

1. Environmental Considerations

Many times, unique and sensitive natural areas which are most easily destroyed by inappropriate uses are often the most attractive areas for park and recreation facilities. Consequently an inherent conflict between parks and recreation development and the natural environment is created. Golf course development is a recreational use that benefits from a location in a natural area. Such areas offer both the large expanses of land necessary for the construction of a course, as well as the scenic environment golfers enjoy playing in. However, construction of greens, tees and fairways requires recontouring of the land and major vegetative removal in order to plant turf. Such development may

adversely impact animal or marine habitats which are fragile and highly susceptible to damage as well as native vegetation.

Beaches are another recreational use which can create a conflict with the environment. By themselves, beaches are naturally occurring elements of nature, however, facilities developed to enhance the enjoyment of the beach, such as parking lots or shoreline access routes, can have an adverse effect. Paving over an area in order to develop a parking lot or allowing unrestricted access to the shoreline can effectively eliminate or significantly degrade existing sensitive habitats. When recreation uses are permitted in sensitive natural areas, it is essential that they be designed so that the recreational activities and development occur in a fashion which protects prime natural resources.

2. Services

The availability of services, i.e., transportation, potable water and sewage disposal, is an additional constraint which affects the provision of park and recreation facilities. An important consideration in meeting the demand for park and recreation facilities is the availability of transportation. Over the years, many of the County's parks have been located in the mountainous southern end of the County, far from population centers. These sites are accessible only by automobile, and they require long travel times. Since providing public transportation to these areas is often precluded by fiscal constraints, senior citizens, young people, and disadvantaged groups may find it difficult to use these facilities. Furthermore, energy conservation discourages people from traveling long distances to get to public recreation facilities. Expansion of the County park and recreation system necessitates providing parks closer to urban areas. It also requires that modes of transportation other than the private automobile need to be provided. Ideally, all residents of the County ought to be within desired travel times of each type of County park and recreation facility.

Another constraint is the availability of water and sewage disposal services. These services directly affect the type of park and recreation facilities provided. Areas acquired in response to a demand for recreational type activities need water and waste disposal services in order to provide such facilities as playfields, swimming pools, and golf courses. Generally, these services don't exist outside of urban areas.

The availability of water and sewage disposal services is less of a constraint for areas acquired in order to provide more passive recreational activities such as camping and hiking. For these facilities, services can be limited to a level comparable to the activity. A potable water source and primitive restrooms or septic systems are adequate services in these instances. Basically, park and recreation facilities need to be developed to a level compatible with the range of available services.

3. Competing Land Uses

Competing land uses is a third constraint which affects the acquisition and development of adequate park and recreation facilities. In both urban and rural areas, park and recreation facilities often compete for the same pieces of land with other uses, such as urban development, agricultural production and timber harvesting. Further, existing park and recreation facilities must guard against other land uses, such as resource extraction operations and infrastructure projects, which have the ability to damage parkland.

a. Urban Development

Competition for the use of scarce vacant sites in urban areas creates a conflict between residential and economic development and park and recreation facilities. More often than not, these sites are developed with uses that will provide housing and jobs instead of recreational opportunities. This pattern of development effectively limits the number of park and recreation facilities and does little to address the demand in these areas for additional facilities.

b. Agricultural Conflicts

Conflicts between agriculture and recreation uses can occur in a number of cases: when trespassers intrude upon agricultural uses while engaging in recreational activities or while en route to shoreline destinations; from the noise and dust of farm machinery; or from the unhealthy effects that noxious pesticides have upon the recreational experience. Such conflicts need to be mitigated to ensure the enjoyment of adjacent parklands.

c. Timber Harvesting

Park and recreation facilities in rural areas can be adversely affected by yet another land use, timber harvesting. Improper logging practices which remove large areas of forest cover can create a range of environmental and aesthetic problems. Denuded areas become highly susceptible to erosion which in turn creates silt and gravel deposits in nearby streams and rivers which creates still more environmental problems. Timber harvesting also affects the beauty of parkland. The very nature of the work creates unsightly, blank patches in the landscape fabric, and logging trails and roads mar the visual integrity of many natural areas. Further, inappropriate logging techniques can also destroy nest sites and other wildlife habitats. Parkland needs to be protected from the adverse impacts of logging in order to preserve the area for future enjoyment.

d. Infrastructure and Resource Extraction Projects

Land used for park and recreation purposes can conflict with various infrastructure projects such as: the widening of existing roads or highways to implement road safety standards; easements granted to provide access to either private dwellings or to utility companies to construct power lines or pipelines; or from operations extracting minerals from sites immediately adjacent to parkland and the operation has significantly degraded the facility. Land that has been designated and acquired for use as a park and recreation facility needs to be protected when possible from encroachment by non-recreation uses.

4. Fiscal

Limited governmental revenues continue to hinder the ability of the public sector to develop, maintain and operate park and recreation facilities. In response to recent citizen concern about public expenditures, Federal program budgets, including those for park and recreation programs, have decreased. The reduced availability of Federal funding, coupled with Proposition 13, has also had a significant impact on all levels of State government. The State Department of Parks and Recreation, constrained by less money from grants and bonds to acquire, develop, maintain and operate its facilities, must cut back at a time when the demand for new facilities and services is increasing. The County, whose special ten-year Park and Open Space Acquisition and Development Fund was suspended and later reinstated at reduced levels until its expiration in 1983, must rely upon general fund dollars to acquire, operate, and maintain its facilities. Cities are also faced with the issue of the rising cost of providing park and recreation services. With less revenue from Federal and State sources, the cities are finding it increasingly difficult to offer adequate levels of service. And finally, special districts providing park and recreation programs must supplement funding from special taxes with available grant money, private donations, and bargain land sales. In order to continue to supply park and recreation facilities, additional sources of funding need to be developed.

5. Organizational

The Federal government, the State, the County, twenty cities, and several special districts all provide park and recreation facilities in the County. There are, however, no clear jurisdictional roles or responsibilities in the provision of park and recreation facilities, which often results in duplication of services. For example, both the County and the State own contiguous coastal beaches which provide similar services. Because of their regional importance and unique environmental conditions, the development and operation of beaches along the coast by the State or Federal government is necessary. It has been recommended that the County needs to deed, sell or trade its beach properties to the State so that County and State land could be consolidated under one efficient management system. To aid the implementation

of this system, the Local Coastal Program has designated the State Department of Parks and Recreation as the lead agency in the acquisition, development and maintenance of coastal recreation facilities.

Although it is difficult to coordinate the actions of these various public agencies, efficient and effective services cannot be delivered to County residents unless concerted cooperative efforts are made to assign jurisdictional roles of responsibility to meet identified needs and to avoid duplication. Furthermore, coordination with private enterprise is essential and offers several economic advantages. Necessary resources can be provided at no public cost. In fact, taxes paid on the land and business help offset the public services. Where adequate facilities are provided by the private sector, public agencies need not duplicate them.

B. PRIVATE SECTOR

The same environmental, service and competing land use constraints which affect the ability of the public sector to provide park and recreation facilities also impact those facilities provided by the private sector. Commercial park and recreation facilities and services also need to be designed and developed so that: prime natural resources are protected; transportation, water and sewage disposal services are provided on a level consistent with the intended function of the area; and, finally, conflicts arising from competing land uses are minimized.

The private sector is also hindered by a need to make a profit. The profit, however, can be affected by the seasonal nature of many recreation activities. Camping, for instance, can experience peak use periods where facilities are overtaxed, as well as periods where campgrounds are hardly used. This type of use pattern can significantly affect the profitability of a commercial venture.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING PARK AND RECREATION FACILITIES

Plans, policies and regulations in effect are designed as coordinated measures and actions to implement existing General Plan policy. This section will discuss the adequacy of these measures to address the constraints identified in the previous section.

A. ENVIRONMENTAL CONSIDERATIONS

The problem of developing park and recreation facilities in sensitive natural areas while protecting prime natural resources is adequately addressed through the provisions of the Resource Management Zoning District within and outside the Coastal Zone. All park and recreation facilities proposed for location within this district, where lands are predominately rural, must be reviewed for impacts upon environmental quality. Further, any adverse impacts upon vegetation, trees, topography and similar resources must be mitigated.

The remaining zoning classification used predominately in rural areas, the Planned Agricultural District, allows park and recreation development yet provides less protection for environmentally sensitive areas. Vegetation and tree removal, marine resources and alterations to topography are not addressed. However, when this district is combined with the Coastal Development District, environmental protection for affected lands is adequate.

The protection of natural resources during the development of park and recreation facilities in urban areas is of less concern. Many of these resources have given way to urban development, and the County has no jurisdiction over facilities developed in incorporated areas.

B. SERVICES

The issue of remotely located park and recreation facilities and the availability of public transportation appears adequately addressed through the recent development of Edgewood and San Bruno Mountain County Parks. These facilities, close to urban areas, minimize travel times and maximize access by users of public transit and other modes of transportation. To ensure that sites close to urban areas continue to receive consideration for park and recreation facilities, locations close to population centers need to become a criterion against which the provision of future park and recreation facilities is assessed.

Ensuring that the development of park and recreation facilities occurs on a level commensurate with the range of potable water and sewage disposal services available is a problem not adequately addressed by existing implementation measures. Although policy direction in the Parks and Recreation Element of the General Plan recommends establishing a process to evaluate the acquisition of future sites, the process fails to include the availability of services as a criterion. Further, the site evaluation process, as recommended, was never implemented.

C. COMPETING LAND USES

The inherent competition between park and recreation facilities and residential and economic uses for the development of vacant sites can be minimized through better use of the Subdivision Ordinance. The dedication authority given the County through the Map Act allows the Planning Commission to require that park and recreation facilities be provided in new residential subdivisions. However, the present Subdivision Ordinance provisions permit the Commission to suggest rather than require that land be dedicated for park and recreation purposes. Such weak provisions severely limit the effectiveness of the ordinance.

Recognizing that conflicts between recreational uses and agriculture or timber harvesting cannot be completely eliminated, the current implementation measures appear adequate to minimize them. Both the shoreline access and the recreation visitor serving policies of the Local Coastal Program seem suitable to reduce adverse impacts. The Timber Ordinance

provisions also appear adequate to lessen the damaging effects of timber harvesting operations.

The issue of encroachment in parkland by road projects and resource development operations is addressed by the 1978 Parks and Recreation Element of the General Plan, the Creative Road Design Guide, and the Surface Mining and Reclamation Ordinance. Although the 1978 Element policy on construction of roadways in or near park and recreation facilities addresses the need for modification to minimize adverse impacts, the policy could be stronger and require rather than consider modification where warranted. While the Creative Road Design adequately addresses the modification of road standards to protect natural environments such as parkland, the guide does not set forth procedures detailing when and where to apply modified standards. The provisions of the Surface Mining and Reclamation Ordinance adequately address the restoration of areas, including parkland, adversely affected by resource development operations.

However, where parkland has been degraded by infrastructure projects to the extent that it is no longer feasible for continued use as such, there are no clear guidelines to govern its disposal.

D. FINANCIAL

Several measures are in effect to help lower the cost of providing park and recreation facilities. These include property transfers, gifts, user fees, private concessions, State grants, and cooperative agreements. A review of 1981-82 and 1982-83 budget figures indicates that revenue generated by user fees, private concessionaires, gifts and grants has increased each year. However, salaries, construction, operation and maintenance costs have also escalated - thus, affecting the increase.

Use of cooperative agreements with other public agencies to acquire facilities appear to be a successful technique. For example, the State and the County cooperated to provide San Bruno Mountain Park; Midpeninsula Regional Open Space District and the County cooperated to provide Edgewood Park; and the City of Redwood City and the County collaborated to provide the Hoover School site. Clearly, these revenue-generating and acquisition techniques need to be continued and other sources of revenue need to be pursued.

E. ORGANIZATIONAL

The issue of clearly defined roles of responsibility in providing park and recreation facilities is only partially addressed by the 1978 Parks and Recreation Element. While the Element contains policies delineating the responsibilities of the County, the role of other public providers, as well as private providers, is not clear. The Local Coastal Program goes a step further and assigns clear roles for the County, the State, and the private sector in providing park and recreation facilities; however, these roles are only applicable within the Coastal Zone.

In addition to clearly defining the jurisdictional responsibilities of park and recreation providers, the various types of park and recreation facilities also need clear descriptions. The Ordinance Code, however, defines facilities differently than the Parks and Recreation Element of the General Plan. For example, Section 3385 of the Code defines a park as "any park, recreation area, reserve or preserve, historical site, or any other facility operated by the San Mateo County Park and Recreation Department." Yet, the Element defines a park as, "a spacious area of outstanding scenic and natural character where outdoor recreation opportunities and facilities may be provided for public convenience and enjoyment, and within which special natural areas, geologic exhibits, or historic places can be set aside." The establishment of consistent definitions for park and recreation facilities reduces confusion and aids the planning and management of the system.

F. SUMMARY OF PROBLEMS

The following is a summary listing of the inadequacies of existing policies, plans, and regulations to address those issues which hinder the provision of park facilities:

1. Need for the establishment of a site selection process which also includes location and the availability of services as criteria.

2. Need for a park dedication ordinance.

3. Need for a stronger policy directive concerning the modification of roadway standards when constructed in or near park and recreation facilities, and the need for clear procedures governing the use of the Creative Road Design Guide.

4. Need for guidelines concerning the disposal of parkland.

5. Need to pursue additional revenue sources.

6. Need for clearly defined roles of jurisdictional responsibilities.

7. Need for consistent definitions of park and recreation facilities.

IV. ALTERNATIVES

This section examines some alternative techniques to address those inadequacies described in the previous section which hinder the provision of park and recreation facilities.

A. PLANNING THE LOCATION AND DEVELOPMENT OF PARK AND RECREATION FACILITIES

1. Choosing Suitable Facilities for Urban and Rural Areas

Providing certain types of park and recreation facilities is based to a large extent upon the amount of land, availability of services and user preference. The specific geographical boundaries of an urban area limit

the amount of land available for park and recreation facilities thus influencing the types of facilities which can be provided. The presence of services, i.e., water, waste disposal, electricity and gas, also influences the level of development facilities have. And finally, the intended users of these facilities, generally limited to those within a particular center of population, affects the sort of facilities provided.

While rural areas have more land available, the presence of extensive vegetation, sensitive habitats, topographic features and riparian corridors make it much more environmentally sensitive, thus directly affecting the types of facilities provided. A general lack of services also influences the development of facilities. Further, intended users of these facilities are not limited to a particular geographic area. For these reasons, rural areas are better suited for park and recreation facilities that take advantage of the environment and are within reach of various population centers.

2. Establishing a Site Selection Process for County-Owned Facilities

An alternative to aid in planning the location and development of park and recreation facilities is the establishment of a site selection procedure. While some criteria have been used in developing past acquisition and development programs, they were not structured into a formal evaluation system that could assess the benefits of proposed park and recreation sites. Future decisions about expanding the County's system of facilities need to be made using a more systematic evaluation process which includes but is not limited to the following criteria: meeting recreation needs, environmental suitability of the site, location of the site, and the availability of services.

3. Establishing a Park Dedication Ordinance

The establishment of a park dedication ordinance would require developers to provide both dwellings and park and recreation facilities in new developments. Such a tool could require, as a condition of final subdivision map approval, the dedication of land, the payment of in-lieu fees or a combination of both to provide new facilities.

B. PROTECTING EXISTING PARK AND RECREATION FACILITIES

In addition to planning for the location and development of park and recreation facilities, it is also necessary to plan for their protection. Remedies to mitigate the problems caused by encroachment from roadway projects could require the use of the Creative Road Design Guide to minimize the impacts to the environment. Adverse impacts from access easements could be lessened by requiring their development routes to be in accordance with guidelines established by the Park and Recreation Division.

Adverse impacts created by easements granted to utility companies could be mitigated by requiring the undergrounding of all utility and power lines and pipelines within parks. For those utilities which cannot be placed underground, the design needs to be such that it blends well with the environment.

Intrusion into parkland by resource development operations may be mitigated by requiring the complete restoration of the area degraded by the project. Or, if the operation is such that restoration is not feasible, then disposal of the site for just compensation might be investigated.

If disposal of a park and recreation facility is proposed, it would be appropriate for the Park and Recreation Commission, who supervises and operates all County-owned facilities, to review future parkland disposal projects. This review could include a determination of whether a site is undesirable to maintain as a park and recreation resource, if the site should be declared surplus property, the extent to which future development of the site can be regulated, and finally, how proceeds of a sale may be used in conjunction with other park and recreation facilities.

C. FINANCING THE ACQUISITION, DEVELOPMENT, MAINTENANCE AND OPERATION OF PARK AND RECREATION FACILITIES

1. Alternative Sources of Funding

Over the years, the County has pursued funds from Federal and State grant and bond programs to acquire and develop park and recreation facilities. The County needs to continue to pursue all funding sources, including private corporations and foundations. Further, the County needs to continue its program of charging user fees, and study how the effectiveness of this program could be improved. In addition, the County needs to lobby on the State level for legislation which would provide maintenance and operation assistance to local jurisdictions.

2. Acquisition and Development

The County needs to continue to explore opportunities for establishing cooperative agreements with other public agencies and the private sector as a way of sharing acquisition costs. Cost savings could also be achieved by seeking ways of acquiring sites other than by fee simple purchase. By continuing to encourage gifts, life estates or other appropriate exchanges of properties, such as unused school district properties, additional park and recreation lands may be acquired at no cost. Furthermore, savings might be realized by consolidating park and recreation facilities on certain sites, an action which could potentially result in the need for fewer new acquisitions. Once a new acquisition and development program is established, the sites that need to be purchased first are those whose annual market value will appreciate rapidly. The cost of these lands will eventually be prohibitive if they are not acquired at the earliest possible date. These lands could be landbanked and maintained by the County for a number of years

until such time that it is appropriate to develop them. Or they could be leased back to the original owners in the interim period.

In developing park and recreation facilities, the County needs to continue contracting with private concessionaires to build and operate accommodations. Further, the County needs to study its current system of contracting with concessionaires in order to determine how it could be improved. In addition, the County needs to reduce costs for replacing existing facilities by designing them to adapt flexibly to changing conditions and recreation needs. Development within facilities needs to be constructed of durable materials and designed for inexpensive maintenance.

3. Maintenance/Operation

The County also needs to find ways to reduce the ever-increasing costs of maintaining and operating its system. Encouraging volunteer groups to continue to support County staff in building trails, providing nature interpretation programs, or furnishing park clean-up services is an effective way to reduce costs. Another way is to employ development standards which minimize maintenance and operation costs. Utility systems for park and recreation can also be designed to minimize maintenance and operation costs. The opportunity to develop solar and wind energy systems needs to be explored and on-site ground water supplies could be tapped.

Lastly, cost savings could be realized by transferring certain park and recreation facilities to other agencies which could more efficiently and effectively operate them. County facilities which primarily duplicate the services provided by other jurisdictions need to be considered for transfer to the most appropriate agency.

D. MULTI-JURISDICTIONAL COORDINATION AND COOPERATION

1. Defining Roles for Public Sector Providers

Not only is the establishment of a comprehensive planning process vital to the provision of a well-balanced system of park and recreation facilities, but coordination and cooperation among providers is essential in order to avoid duplication and inefficient services. This can best be accomplished by clearly defining the jurisdictional roles and responsibilities of various public providers.

a. Federal

Since the Federal government has within its jurisdiction vast holdings of land which contain resources not generally found in most States throughout the country, it is better suited to provide park and recreation facilities of national significance.

b. State

California's abundant and diverse natural resources place it in a similar position as the Federal government. Within its jurisdiction are sizeable holdings of land with resources not found in every county in the State. Beaches, forests and important wildlife habitats are examples of resources that attract people from all parts of the State. Therefore, the State is best suited to provide park and recreation facilities of statewide significance.

c. County

The types of facilities provided by the County are primarily influenced by what municipalities cannot provide. The many thousands of acres under the jurisdiction of the County enables it to provide recreational opportunities difficult to accommodate in urban settings due to spatial and fiscal limitations. However, fiscal constraints make the County unable to provide park and recreation facilities for every city. Therefore, County facilities must serve more than one city or unincorporated community. County facilities, though, cannot serve a statewide population. The County then is better suited to provide facilities which bridge the gap in services left by municipalities and serve the needs of the County-wide population.

d. City

Cities are well suited to provide intense, active park and recreation facilities for their residents. Such facilities take advantage of the available urban services and infrastructure systems and the large number of recreational users in the immediate vicinity of the facility.

e. Special Districts

Like cities, recreation districts are faced with similar circumstances which affect the provision of park and recreation facilities. Since the service infrastructure is readily available and facilities must serve a population within a given area, recreation districts are well suited to provide for more intense activities.

Regional open space districts, responding to voter mandates, provide facilities in accordance with the particular charge given by the people. The Midpeninsula Regional Open Space District (MROSD), for example, devotes its efforts toward acquiring and preserving open space outside of urban areas. The MROSD is suited to provide undeveloped open space lands which allow limited, passive recreational activity.

2. Defining a Role for the Private Sector

As the other half of the partnership in providing park and recreation facilities, the private sector has a certain influence which affects the

types of facilities it provides. The need to provide a service and make a profit are the primary factors affecting the supply of facilities. The ability to fill a demand for activities too specialized for mass appeal or provide visitor serving services to enhance public recreation facilities are some of the capabilities which help to establish the private sector role. The private sector is best suited to provide park and recreation facilities that the public sector cannot.

E. ESTABLISHING A CLASSIFICATION SYSTEM AND DEVELOPMENT STANDARDS FOR STATE, COUNTY, AND PRIVATE PARK AND RECREATION FACILITIES

To help the County evaluate all components of the present system, including facilities supplied by other levels of government and the private sector and plan for the balanced development of new facilities, a consistent method of categorizing the various facilities is necessary. Such a classification system was developed in order to present findings of the Needs Assessment and Environmental Suitability Studies. Each type of facility is defined along with appropriate development standards and management guidelines. The classifications are: (1) Park, (2) Recreation Area, (3) Natural Preserve, (4) Wild Area, (5) Linear Park and Trail, and (6) Historic Site. This organization will provide additional direction for the management and expansion of the system.

The location and intensity of development for private recreation facilities needs to conform to the particular constraints imposed by either a rural or urban setting. In addition, these facilities need to conform to the development standards established for the zoning district regulating the use of the site, and/or appropriate General Plan policies.

F. PUBLIC PARTICIPATION

Planning for the County's park and recreation system needs to be undertaken with the full cooperation and participation of citizens, civic groups and organizations. Public participation is essential in order to obtain expression of need and desire from those who will use the facilities of the park and recreation system. It can also ensure that the concerns of affected property owners and local jurisdictions will be considered.

Public participation in the operation of the County's system can save tax dollars. Over the years, volunteer and docent programs have been of great service to the County in expanding its source of services without incurring significant costs. These types of programs can result in providing better services to County residents and in reducing maintenance and operation costs.

PARK AND RECREATION RESOURCES
APPENDICES

APPENDIX A

INVENTORY OF COUNTY FACILITIES

I. LIST OF CLASSIFICATION DEFINITIONS

A. HISTORIC SITE

An area, site or structure set aside to protect archaeological, historical or cultural features which are available for the enjoyment and education of the public.

B. LINEAR PARK AND TRAIL

A linear strip of land established for purposes of walking, hiking, bicycling, horseback riding and boating, and comprising a natural or man-made linear resource such as stream drainage, bluffline, ridge, utility right-of-way or service road.

C. NATURAL PRESERVE

A scenic and natural area where outstanding features as well as significant wildlife habitats are preserved in their present state for the enjoyment, education and well-being of the public.

D. PARK

A spacious area of outstanding scenic and natural character where outdoor recreation opportunities and facilities may be provided for public convenience and enjoyment, and within which special natural areas, geologic exhibits or historic places can be set aside.

E. RECREATION AREA

An area developed for a variety of outdoor recreation uses, including areas that will provide for public use of natural and man-made water features, as well as for special recreation activities compatible with specified land uses. It may be designed to accommodate one or a variety of recreation activities.

F. WILD AREA

A spacious area isolated from the urban scene in a setting where natural qualities and forces are dominant and the intrusion of man has been minimized. Through appropriate management practices, there may be a high potential for complete restoration to a pristine state.

II. INVENTORY OF FACILITIES

FACILITY: Sanchez Adobe.

ACREAGE: 5.5

DESCRIPTION OF FACILITIES: Along with a restored adobe residence of the 1848 period furnished with period pieces, the area also contains the archaeological evidence of the Mission Dolores Outpost, as well as remains of native Americans.

FACILITY: San Francisco Bay Discovery Site.

ACREAGE: 20

DESCRIPTION OF FACILITIES: Located on Sweeney Ridge between Pacifica and San Bruno, this is the site from which Gaspar de Portola, in 1769, first observed San Francisco Bay. A monument commemorating this event sits on the ridge, and outstanding views of the Bay Area and Pacific Ocean are evident.

FACILITY: Woodside Store.

ACREAGE: 1.18

DESCRIPTION OF FACILITIES: This area contains the fully restored wooden structure once used by Dr. Tripp as a general store, post office and dental office in the heyday of the redwood lumber industry in Woodside. The store is also a house museum containing artifacts of the period displayed in the fashion of the times.

FACILITY: Martin's Beach to Huddart County Park Trail

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects Martin's Beach via the Lobitos Creek cut off and Tunitas Creek Road to Huddart County Park.

FACILITY: Purisima Creek to Huddart County Park Trail.

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects Route 1 via Purisima Creek Road to the Gregorio Trail from Huddart County Park.

FACILITY: Half Moon Bay to Huddart Park Trail.

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects Half Moon Bay State Beach via Higgins Road to the Gregorio Trail from Huddart County Park.

FACILITY: Montara Gulch Trail.

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects Point Montara Lighthouse to the San Gregorio Trail between Montara State Beach and San Pedro Park near the McNee Ranch.

FACILITY: San Gregorio State Beach to Town of Pescadero Trail.

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects San Gregorio State Beach to the communities of San Gregorio and Pescadero via La Honda Road and Stage Road.

FACILITY: Gazos Creek Coastal access to Butano State Park Trail.

ACREAGE: Not applicable.

DESCRIPTION OF FACILITIES: Connects Gazos Creek coastal access to Butano State Park via Gazos Creek access road.

FACILITY: Sawyer Camp Trail

ACREAGE: 32

DESCRIPTION OF FACILITIES: A scenic linear park located in the San Francisco Watershed between Hillcrest Boulevard, Millbrae and Crystal Springs Road, San Mateo. This is a 6.2-mile surfaced trail with rest areas for bicyclists, hikers, joggers and equestrians.

FACILITY: Fitzgerald Marine Reserve.

ACREAGE: 45

DESCRIPTION OF FACILITIES: An outstanding area of tidal reefs located between Moss Beach and Pillar Point, the Fitzgerald Marine Reserve is maintained for the preservation of a marine life habitat which is important in its scope and variety as an educational feature. The Reserve has 49 species of intertidal plants and animals, and is the home of three (3) endemic invertebrates. A small picnic area, restroom, interpretive center and parking area are located at the end of California Street, the principal access point.

FACILITY: Heritage Grove (part of Pescadero Creek Park).

ACREAGE: 38

DESCRIPTION OF FACILITIES: A magnificent old growth redwood forest on Alpine Creek, the area provides a network of trails through the grove and into Pescadero Creek Park.

FACILITY: Sweeney Ridge Skyline Preserve.

ACREAGE: 58

DESCRIPTION OF FACILITIES: This area was acquired from the Federal Government as surplus property to preserve the skyline between Pacifica and San Bruno. The marvelous viewing point enables the visitor to get a 360 degree panorama of the Ocean and the Bay. A trail to the ridge is provided. No facilities exist.

FACILITY: Edgewood County Park.

ACREAGE: 467

DESCRIPTION OF FACILITIES: Close to urban centers, this area is composed of rolling terrain, with large expanses of grassland, chaparral and pockets of oak woodland. The hiker can experience seasonal wild flower displays, interesting rock outcrops and several kinds of plant communities supporting a variety of wildlife. No facilities exist except trails.

FACILITY: Huddart County Park.

ACREAGE: 974

DESCRIPTION OF FACILITIES: A hillside area of redwood forest adjacent to the Town of Woodside, providing facilities for picnics, horseback riding and hiking, with trails and grass meadows. It connects to the Crystal Springs Riding and Hiking Trail on the north and to Wunderlich Park via the Skyline Trail on the south.

FACILITY: Memorial County Park (Part of Pescadero Creek Park).

ACREAGE: 499

DESCRIPTION OF FACILITIES: The oldest park in the County Park system, this area provides an opportunity to view outstanding virgin redwoods. The park also provides family campsites, picnic facilities, a visitor center, camp store, creek swimming area, campfire programs, group areas and trails connecting to Pescadero Creek and Sam McDonald County Parks and Portola State Park.

FACILITY: Pescadero Creek County Park.

ACREAGE: 5,973 acres.

DESCRIPTION OF FACILITIES: This vast parkland embraces the upper watershed of Pescadero Creek. This creek, which flows year round, is a major Steelhead spawning stream in San Mateo County. Facilities include a network of developed trails and hike-in trail camps. The Pomponio Trail, for hikers only, which connects Portola State Park with Memorial Park, passes through the length of the park.

FACILITY: Sam McDonald County Park (part of Pescadero Creek Park).

ACREAGE: 867

DESCRIPTION OF FACILITIES: A view of beautiful rolling grasslands, the Pacific Ocean, majestic old growth Redwoods and Douglas Firs are provided in this area. Facilities include camps for organized youth groups by reservation, the Jack Brook Horsecamp and the Hiker's Hut. In addition, a network of developed trails connects this park with Portola State Park, Memorial and Pescadero Creek County Parks.

FACILITY: San Bruno Mountain State and County Park.

ACREAGE: 2,064

DESCRIPTION OF FACILITIES: A rugged landscape of 2,064 acres, located in Northern San Mateo County adjacent to the southern boundary of San Francisco, this open space area includes species of rare and endangered plant life as well as rare and endangered butterflies. In addition, trails to the summit provide outstanding views of San Francisco and the Bay Area. Riding and hiking trails are available.

FACILITY: San Pedro Valley County Park.

ACREAGE: 975

DESCRIPTION OF FACILITIES: A vast area of coastal brush embracing the middle and south forks of San Pedro Creek which are Steelhead spawning grounds, this park is adjacent to the Linda Mar area of Pacifica and the San Francisco Watershed. It provides family and group picnic areas, a visitor center and trails.

FACILITY: Wunderlich County Park.

ACREAGE: 934

DESCRIPTION OF FACILITIES: A hillside area of redwood forest, open meadows and beautiful Oaks and Madrones adjacent to Woodside, this area was once the ranch of the Folger family, given to the County by Martin Wunderlich. Largely open space, a system of beautiful trails for both riding and hiking is available.

FACILITY: Coyote Point Recreation Area

ACREAGE: 727

DESCRIPTION OF FACILITIES: A large recreation complex fronting on San Francisco Bay in the City of San Mateo, this park provides swimming, fishing, picnic facilities, playgrounds, a firing range, marina, boat launching ramp, environmental science museum, animal center and other facilities readily accessible from the Bayshore Freeway in San Mateo.

FACILITY: Flood County Park

ACREAGE: 21

DESCRIPTION OF FACILITIES: A part of the old Flood Estate located within the city limits of Menlo Park, it is famous for its large native Oaks and Bay trees. The park provides facilities for large group picnics, baseball, softball, tennis, a playground and other sports.

FACILITY: Junipero Serra County Park

ACREAGE: 108

DESCRIPTION OF FACILITIES: A foothill park adjacent to the Cities of San Bruno and Millbrae, this area provides family and group picnicking, playgrounds, hiking and nature trails and youth day-camping, as well as views of San Francisco Bay and the San Francisco Airport.

FACILITY: Milagra Ridge

ACREAGE: 232

DESCRIPTION OF FACILITIES: This area was acquired from the Federal Government as surplus property to preserve the magnificent view of the Pacific Ocean and the open space backdrop of the City of Pacifica. Formerly, a Nike Missile Site and a World War II Coastal defense battery, no formal facilities exist. It is open for hiking and informal activities.

FACILITY: San Mateo Fishing Pier

ACREAGE: 3

DESCRIPTION OF FACILITIES: A portion of the old San Mateo Bridge turned into a fishing pier, it lies southerly of the existing San Mateo Bridge and is accessible from Foster City.

FACILITY: Mid-Coast Beaches

ACREAGE: 110

DESCRIPTION OF FACILITIES: These beaches lie just south of Half Moon Bay. This wide stretch of sandy beach is undeveloped (no facilities are provided) and has poor access. It has been proposed that the State take over authority for these beaches.

APPENDIX B

RECREATION NEEDS ASSESSMENT STUDY METHODOLOGY

RECREATION NEEDS ASSESSMENT STUDY

A study to determine where in the city additional recreational facilities will be needed most by 1985 was conducted by the Planning Department in 1976. The results of the study were used to aid the County in planning its future parks and recreation system.

1. Telephone Survey

   An in-depth telephone survey was conducted of 917 persons through the County by the Tyler Research Association to determine their views about 15 different popular recreation activities. The respondents were asked which of the recreation activities they did, how often they did them, and whether they would do them more often if better facilities were available. They were also asked their opinion of the County's present recreation system and what improvements should be made. The responses were then tabulated by age, sex, income and geographic location.

2. Site Analysis

   To determine how many people could participate in the survey's basic 15 activities at existing park and recreation sites, an inspection of all the regionally significant (serving two or more cities or communities) park and recreation facilities was conducted.

3. Park User Survey

   To augment the results of the telephone survey, people in the parks were also interviewed to determine how far they traveled to use the parks to get a sense of how many people outside of San Mateo City use its facilities, what activities they enjoy there, and how they thought the parks should be improved.

4. Recreation Demand Projections

   Future recreation demand was calculated by computer analysis of the telephone survey responses to find out which recreation activities are preferred by different groups of people living in different parts of the County. These results were then assigned to each census tract in the County.

   The computer analysis, done with the help of Santa Clara County Center of Urban Analysis, also studied differences in the amount of recreation done (participation rate) by men and women of different age and income groups. It also studied differences in recreation needs and desires among people living in the North County, Mid-Bayside, South Bayside and Coastside sections of San Mateo. These participation rates were compared with

the County's anticipated 1985 population to determine future recreation demand levels.

5. 1985 Facility Demand

To find out how many people would participate in each of the basic 15 activities at each of the city's available facilities on the heaviest day of use in 1985, additional computer analysis was done. Assumptions included in this analysis were:

(a) that 5% of the people will use public transit to get to the recreation sites in 1985;

(b) that people's recreational needs and desires in 1985 will be the same as they are today; and

(c) that absolutely no changes will occur in today's recreation system between now and 1985.

Data supplied to the computer included the average amounts of time people spend traveling to enjoy different activities and appraisals of desirability of the site for recreation at each facility. (Desirability was based on the relative size of facilities.) Data and the desirability of other sites located outside of the County was also factored in.

6. Park Deficiency Analysis

To show how many more people will want to use a facility than the facility can handle in 1985, a deficiency ratio was established:

$$\frac{\text{DEMAND}}{\text{CAPACITY}} = \text{DEFICIENCY RATIO}$$

Demand represented people's future desire to do the basic 15 activities and capacity represented the ability of the various facilities to accommodate these activities. For instance, if 1,000 people are expected to use a picnic site on a busy day in 1985, and the number of people it can accommodate is 500, then the Deficiency Ratio is 1,000 divided by 500, or 2. This means that the park will have twice as many picnickers as it can comfortably and safely accommodate.

7. Relative Needs Analysis

To compare how crowded each facility will be in 1985 for those activities it can accommodate, and to see which areas of the County will be relatively better served than others, additional calculations were made.

Deficiency ratios for each facility were recorded on a map for each of the basic 15 activities. Based on recommendations from the Citizens Advisory Committee, desired travel times (the convenient amount of time for residents to travel from their homes to facilities) were determined for each

activity. A facility within the desired travel time of a study zone (a grouping of census tracts) was assumed to serve that zone and provide a service level that was equal to its deficiency ratio. If more than one facility served a study zone, the average deficiency ratio of all those facilities was used as that study zone's service level value.

Service level values for the study zones were ranked from high to low. Zones with high deficiency ratios were designated as having a greater relative need for more facilities than those with lower ratios. Zones which did not have a facility within a desired travel time were considered to have the greatest need for more facilities.

APPENDIX C

ENVIRONMENTAL SUITABILITY STUDY METHODOLOGY

ENVIRONMENT SUITABILITY STUDY

In conjunction with the study to determine where in the County additional park and recreational facilities will be needed, a second study was done to determine which lands in the County can best accommodate these facilities. A wide variety of environmental factors were considered in the process specifically: (1) slope, (2) landslide susceptibility, (3) vegetation, (4) wildlife habitats, (5) access, (6) land ownership, (7) flood plain, (8) surface hydrology, (9) groundwater potential, (10) fog and rain, (11) scenic corridors, (12) wind and temperature, (13) view exposure, and (14) visual importance. The methodology of the study is described below:

1. Methodology

   a. Facility Analysis

      The first task was to analyze and list the space and use requirements for each kind of County park and recreation facility according to the following classification system:

      · Park Areas

      · Recreation Areas

      · Natural Preserve

      · Wild Area

      · Linear Park and Trail

      · Historical Site

   b. Environmental Factors

      The second task was to decide which environmental factors are important in determining the suitability of an area to accommodate each type of facility. Factors which might be important for a recreation area, for example, might not be important for a natural preserve. On the basis of data available to the Planning Division, 8 to 14 environmental factors were selected to be evaluated for each facility classification. These environmental factors are listed below:

      (1) Slope

      (2) Landslide Susceptibility

      (3) Vegetation

(4) Wildlife Habitats

(5) Access

(6) Land Ownership

(7) Flood Plain

(8) Surface Hydrology

(9) Groundwater Potential

(10) Fog and Rain

(11) Scenic Corridors

(12) Wind and Temperature

(13) View Exposure

(14) Visual Importance

c. Ranking

The next task was to rank environmental factors in order of importance for each facility type. Factors were ranked on a scale of 1 to 9, with the most important factor receiving the highest score.

d. Scoring System

The fourth task was to determine how each aspect of an environmental factor affects a site's suitability for use. For instance, it was determined that land with a slope of 30% (3 foot vertical rise for every 10 horizontal feet) cannot as easily accommodate a recreation area as land with a less steep slope. Each aspect of the environmental factors was evaluated and assigned a score based on its ability to accommodate a particular type of recreation facility. These scores were adjusted in accordance with the relative weight of the factor.

e. Land Suitability Ranking

The last task was to place an hexagonal grid over of each of the 14 environmental factor maps. For each kind of facility, every grid cell was scored according to the value assigned to the environmental aspect present (dominant) in the cell. The scores in each cell were then totalled and the accumulative values were ranked from highest to lowest. Those cells with the highest scores were designated as being more environmentally suitable than those with lower scores. The Environmental Suitability Maps for each park type in Chapter 4 are color coded representations of the results of this analysis.

APPENDIX D

PARK AND RECREATION FACILITY CLASSIFICATION DEVELOPMENT STANDARDS AND PLANNING AND MANAGEMENT GUIDELINES

PARK

DEFINITION

A spacious area of outstanding scenic and natural character where outdoor recreation opportunities and facilities may be provided for public convenience and enjoyment and within which special natural areas, geologic exhibits or historic places can be set aside.

STANDARDS

1. The major portion of a park should include (or potentially include) an area of outstanding scenic and natural character. This area should be designated as a Natural Area for planning and management purposes.

2. A smaller portion(s) of a park should be suitable for accommodating a variety of recreation activities. The area(s) should be designated as a Facilities Cluster(s) for planning and management purposes.

PLANNING AND MANAGEMENT GUIDELINES

1. Emphasis should be placed on locating County parks within 15 minutes of urban areas.

Natural Areas

2. The purpose of Natural Areas is to assure the protection of the natural environment within a significant portion of a County park.

3. The most important management objective is to determine the prime resource of the park and to protect and enhance it.

4. Only those recreation activities compatible with this primary management objective should be allowed.

5. Development of recreation facilities should be limited to those which make the unit available for public enjoyment and convenience in a manner which is consistent with the protection and enhancement of the prime resource. Development may include facilities for nature interpretation, hiking and horseback riding trails. Access should be controlled.

6. Resource management techniques such as tree cutting, controlled burning, reforestation and planting may be used to preserve, maintain or recreate the desired environmental setting. Preference should be given to planting native species.

Facilities Cluster

7. Facilities Clusters should contain substantially all of the recreation development that is provided within a County park.

8. Development in a facilities cluster should be limited to those facilities which are consistent with the protection and enhancement of the primary resource. Development may include campgrounds, youth group camps, picnic areas, commercial concessions, nature interpretive facilities, nature, hiking and horseback riding trails and equestrian facilities. Access should be controlled.

9. All developed facilities should be designed, landscaped and managed to harmonize visually with the surrounding natural environment.

RECREATION AREA

DEFINITION

An area developed for a variety of outdoor recreation uses, including areas that will provide for public use of natural man-made water features, as well as for special recreation activities compatible with specific land uses. It may be designed to accommodate one or a variety of recreation activities.

STANDARDS

1. A County Recreation Area should be capable (or potentially capable) of withstanding the impacts of high public use.

2. Development should be compatible with the surrounding environmental setting.

3. Public facilities can be such that intensive public use is accommodated and special made-made features can dominate.

PLANNING AND MANAGEMENT GUIDELINES

1. The prime objective should be the accommodation of a variety of compatible forms of recreation. Alteration of the environment and extensive maintenance may be necessary to handle intensive public use.

2. Emphasis should be placed on locating recreation areas within 15 minutes of urban areas.

3. Nature interpretive facilities could be provided where opportunities exist. Marshes, habitats, areas, ponds and other similar facilities could be artificially created for this purpose.

4. Development of park user facilities should receive prime consideration and may include swimming pools and beaches, marinas, picnic areas, lakes, playfields, playgrounds, golf courses and aquatic facility complexes. Access should be controlled.

NATURAL PRESERVE

DEFINITION

A scenic and natural area where outstanding features as well as significant wildlife habitats are preserved in their present state for the enjoyment, education and well-being of the public.

STANDARDS

1. A County Natural Preserve should be of outstanding scenic and natural character.

2. Primary resources typically should consist of woodlands, meadows, hillsides, canyons, creeks, lakes, ridgelines, shorelines, visually sensitive or prominent landscape features and rare, endangered or unusual natural resources.

3. Public facilities should be limited to those necessary for public health, safety and education.

PLANNING AND MANAGEMENT GUIDELINES

1. The prime resource of the area should be determined. Preservation and enhancement of the prime resource should be the most important management objective. Interpretation and enjoyment should be secondary management objectives.

2. Development should be limited to foot trails, protective barriers, regeneration of indigenous vegetation, overlooks, signs, sanitary facilities, parking areas, interpretative center and other minimal service facilities as may be required.

3. Emphasis should be placed on the protection of rare, endangered, unusual or educationally important natural resources.

4. Emphasis should be placed on locating natural preserves within 15 minutes of urban areas.

5. Access should be controlled to provide adequate resource protection, and sufficient buffers from adjacent environment should be provided within its boundaries.

6. A natural preserve may be a separate unit of the County park system or be contained within a County park.

LINEAR PARK AND TRAIL

DEFINITION

A linear strip of land established for purposes of walking, hiking, bicycling, horseback riding and boating, and comprising a natural or man-made linear resource such as a stream drainage, bluffline, ridge, utility right-of-way or service road.

STANDARDS

1. County Linear Parks and Trails should be of sufficient width to protect them from adjacent infringements.

2. They should connect established units of city, county or state park systems.

3. They should connect to important points of interest within the County such as historic sites, geological formations, or geographic landmarks and features.

PLANNING AND MANAGEMENT GUIDELINES

1. Trail types should be consolidated within the same corridor wherever possible, depending on steepness, slope and natural cover.

2. Where consolidation cannot be accommodated, trail types may be separated, although they should remain in the same corridor.

3. Where linear parkland is within a natural drainage area, the environmental integrity of the natural drainage must be maintained.

4. Trailheads should be located at appropriate points along trails to accommodate sanitary facilities, minor parking and rest facilities.

5. Access should be controlled to protect adjacent properties.

WILD AREA

DEFINITION

A spacious area isolated from the urban scene in a setting where natural qualities and forces are dominant and the intrusion of man has been minimized. Through appropriate management practices, there may be a high potential for complete restoration to a pristine state.

STANDARDS

1. A County Wild area should be large and remote enough to provide isolation from man-made development.

2. A County Wild area should generally be undisturbed, natural and roadless.

PLANNING AND MANAGEMENT GUIDELINES

1. The prime resource should be determined. The management objective should be the preservation and enhancement of the prime resource to the greatest extent possible, allowing natural environmental processes to return the area to a natural state.

2. Minimal necessary public facilities should be located at the perimeter of these areas. These "staging facilities" may include primitive restrooms, a water source and trailhead parking.

3. Emphasis should be placed on locating wild areas within one hour of urban areas.

4. Access should be controlled and consist of riding and hiking trails and minor service roads for emergency and maintenance equipment.

5. Management practices should not include logging, grazing, controlled burning or reforestation, except where it is specifically determined that such practices would enhance the resource.

6. A Wild Area may be used to enhance interpretive programs, but no specific interpretive facilities should be maintained.

HISTORIC SITE

DEFINITION

An area, site or structure set aside to protect archaeological, historical or cultural features which are available for the enjoyment and education of the public.

STANDARDS

1. A County Historical Site should consist of significant historical, traditional or cultural resources of the County.

2. Sufficient area should be provided for reasonable protection of the site.

PLANNING AND MANAGEMENT GUIDELINES

1. The prime resource of the site should be determined.

2. The management objective should be the preservation of the prime resource to the exclusion of all unrelated development.

3. Public facilities should be harmonious in appearance with the style of construction associated with the site's historical period. Vehicle access should be controlled.

4. Commercial uses such as crafts, stores, bookshops and art shops may be permitted if they preserve and enhance the resource and are compatible with the site's architectural style.

5 A County Historical Site may be a separate site or may be contained within a County Park or within a County Natural Preserve.

APPENDIX E

SUPPLEMENTAL ISSUE STATEMENT AND BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on January 4, 1985, the following Issue Statement was been added to the Park and Recreation Resources Chapter.

I. TRAFFIC AND PARKING IMPACTS - ISSUES

The adverse impact that park and recreation facilities, particularly in coastal and rural areas, create for adjacent residential land uses is an issue. Congested roads and highways, insufficient parking facilities, litter and fire hazards are some of the problems experienced by nearby residents. As many parks are located either along the coast or in the more remote rural portions of the County, the roads and highways providing access, such as Highways 92 or 35, often become congested with recreationists en route to these destinations. This traffic congestion is frustrating for both the recreationist and the area residents.

Once the park or beach is reached, then parking becomes a problem. Frequently, on-site parking facilities are full and recreationists then use the side or shoulder of the road for parking. While this practice is convenient, it is also extremely hazardous to both the motorist and the parked vehicle.

Litter is another problem. Often trash and garbage generated by recreationists is not disposed of properly and remains an eyesore unless removed. Unfortunately, litter disposal has become a task performed by adjacent residents.

Finally, fires are yet another problem affecting residents adjacent to park facilities. Man-made fires are a constant threat in rural parks with heavily vegetated areas, particularly during the critical fire season. The danger, however, increases because of either the lack or neglect of fire breaks and access roads for fire equipment in park areas. For more information on fire hazards, please see the Natural Hazards Chapter.

To lessen the effect of these problems, transportation and public education programs could be used. Park and Ride programs could be effective in reducing traffic and parking problems. Also, more refuse containers and public education litter programs could be developed.

II. SUPPLEMENTAL BACKGROUND INFORMATION ON COUNTY PARK AND RECREATION FACILITIES

A. USE OF CONCESSIONAIRES IN PARK OPERATIONS

1. Concessions in the County Park System are employed to provide services to park visitors, not ordinarily provided by the County, such as restaurants, snack bars, camp stores, boat sales, equipment rental, or operation of special facilities such as a golf course.

2. Current Concessions

   a. Specialty Restaurants operate the Castaways Restaurant at Coyote Point Park--200 tables, bar, and banquet facilities.

   b. The Canteen Company operates the snack bar at Coyote Point Beach Center--a counter service operation providing hamburgers, hot dogs, soft drinks, and snacks.

   c. Bruce and Lorraine Webb operate the Memorial Park Camp Store--camping supplies, snacks, ice cream, soft drinks, candy and firewood.

   d. Eagle Yacht Sales operates a boat sales dock and sells gasoline at Coyote Point Marina.

   e. Patricia Holmes boards horses at Wunderlich Park.

3. Procedures for Granting Concession Contracts

   a. The prospective concessionaire contacts the Parks and Recreation Division and makes a preliminary proposal.

   b. The proposal is reviewed by the Parks and Recreation Commission.

   c. With the Commission's approval, Real Properties Management Division of General Services is requested to prepare a Request for Proposal, which is sent to a number of potential bidders.

   d. Proposals are reviewed by General Services and referred to Parks and Recreation for concurrence as to successful bidder.

   e. General Services is requested to prepare a contract for the successful bidder.

   f. The contract is reviewed by the Parks and Recreation Commission and recommended to the Board of Supervisors for approval.

   g. The Board approves contract and awards to successful bidder.

   h. General Services manages contract for the Parks and Recreation Division.

4. Types of Concessions Which are Discouraged

   a. All types of concessions which do not supply a definite service or need to the park visitor, to enhance his park experience, are discouraged. These include: electronic or pinball games, souvenirs, direct beer, liquor or wine sales, games of chance, thrill rides, and special foods such as snow cones, popcorn, taffy, etc.

   b. Horse rentals, while they could possible enhance a park visitor's experience, are discouraged because it is the type of service which can be more effectively supplied by private enterprise outside of park areas. Horse boarding is also discouraged because it requires the use of large spaces for a specialized few users. An exception is Wunderlich Park where a horse boarding concession is allowed for purposes of overseeing existing buildings on the property.

5. Description in Text of Timber Harvesting

   A local timber operator has suggested the Park and Recreation Resources Chapter misrepresents timber harvesting in San Mateo County. In response, it should be emphasized that the chapter describes a range of possible impacts from timber harvesting activities which should be considered when developing General Plan policy. To allay these concerns, revisions to the Park and Recreation Resources Chapter submitted by the respondent are included as follows:

   Timber Harvesting

   Parks and recreation facilities in rural areas can be adversely affected by uncontrolled timber harvesting. If large areas of forest cover are allowed to be removed, the denuded hillsides can create a whole range of environmental and aesthetic problems. Denuded areas are highly susceptible to erosion that can create sedimentation in nearby streams. A denuded landscape or obtrusive logging roads and tractor trails can mar the viewshed. Insensitive logging also can destroy nesting sites and other wildlife habitat. Parklands need to be protected to preserve them for future enjoyment.

B. COUNTY PARK AND RECREATION FACILITY FEATURES

A listing of facilities available at County parks and numbers of employees is provided in the following table:

COUNTY PARK AND RECREATION FACILITY FEATURES

UNIT	PICNIC TABLES	PARKING SPACES	RESTROOMS	TYPE	HOURS	EMPLOYEES PERMANENT	EMPLOYEES SEASONAL	(#) HIGH INTENSITY FACILITIES
Coyote Point	364	1547	9	Flush	8:00 a.m. to Sunset	16	10	Volleyball (2) Swimming beach Playground (3)
Edgewood Park	0	50[1]	1[1]	Flush	"	2	0	None
Marine Reserve	5	40 (80)[1]	1 (1)	Flush	"	2	1	None
Flood Park	146	420	4	Flush	"	4	3	Baseball (1) Tennis (4) Volleyball (2) Softball (1) Playground (1)
Huddart Park	273	400	10	Flush	"	6	2	Playground (1)
Junipero Serra	168	206	5	Flush	"	5	2	Volleyball (2) Playground (2)
Memorial Park	515	675	12	Flush (Showers)	"	6	0	None
Midcoast Beach	0	0	0	N/A	No hours	0	0	None
Pescadero Creek	0	50	2	Pit	8:00 a.m. to Sunset	4	2	None
Sam McDonald Park	39	75	4	Flush (Showers)	"	4	2	None
San Bruno Mountain	25	60	1[1]	Flush	"	3	2	None

COUNTY PARK AND RECREATION FACILITY FEATURES (Continued)

UNIT	PICNIC TABLES	PARKING SPACES	RESTROOMS	TYPE	HOURS	EMPLOYEES PERMANENT	EMPLOYEES SEASONAL	(#) HIGH INTENSITY FACILITIES
S.F. Bay Discovery Historial Site	0	0	0	N/A	No hours	0	0	None
San Mateo Fishing Pier	0	100	1	Flush	8:00 a.m. to Sunset	0	1	None
San Pedro Valley	48	85	2	Flush	"	3	2	Volleyball
Sanchez Adobe Historical Site	0	24	1	Flush	Tues & Sun 1:00-5:00	1[2]	0	None
Sawyer Camp Trail	10	0	6	Chemical	8:00 a.m. to Sunset	1	0	Bicycle Trail Jogging Trail
Sweeney Ridge Skyline Preserve	0	0	0	N/A	No hours	0	0	None
Woodside Store Historical Site	0	10	1	Flush	Wed-Sun 10 to 4:30	1[2]	0	None
Wunderlich Park	0	50	1	Chemical	8:00 a.m. to Sunset	1	1	None
Milagra Ridge	0	0	0	N/A	No hours	0	0	None

NOTES:

1. Planned facility.
2. Contract with San Mateo County Historical Association.

APPENDIX F

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Park and Recreation Resources Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

1. Consider planning for and establishing a park district in the Mid-Coast.

2. Consider planning for the McNee Ranch to preserve its integrity and consider examining methods to provide more local parks.

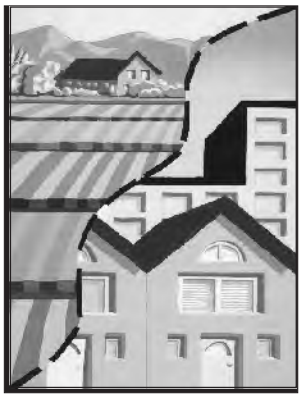
3. Consider examining the economic impact of additional facilities and public access requirements within the Coastal Zone.

4. Consider updating plans affecting the Mid-Coast, Emerald Lake Hills and San Bruno Mountain Areas.

7

General Land Use

Background ▪ Issues



GENERAL LAND USE BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

This General Land Use Chapter of the General Plan guides the future physical development of the unincorporated areas of the County by: (1) establishing a boundary which designates urban and rural areas, and (2) prescribing appropriate urban and rural land uses and densities. The Urban and Rural Land Use Chapters which follow provide in more detail a specific land use plan which shows how land in the County should be used. This chapter also attempts to provide for closer coordination of land use planning with LAFCo's sphere of influence program.

The Background section describes all existing land uses in the County in a very general way. The Issues section identifies and analyzes the opportunities and constraints which determine where and how the County should plan for unincorporated urban and rural areas, analyzes existing regulations to see how well they address these opportunities and constraints, develops alternatives for actually designating urban and rural areas and assigns appropriate land uses and densities. Based on analysis and evaluation of these alternatives, the Policies section provides courses of action which specify where urban and rural areas should be designated and how these areas should be used. These policies, which apply only to unincorporated areas, are implemented through other general plan and area plan policies, land use controls, such as the zoning and subdivision ordinances, and the provision or withholding of public services and facilities.

B. STATE PLANNING LAW

State law requires every city and county to formulate and adopt a land use element which, through the development of policies, plans, and standards, shows the proposed general distribution, location, density, and intensity of land uses for all parts of the jurisdiction. Section 65302(a) of the California Government Code reads: "A land use element shall designate the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The land use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas."

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. Master Plan, 1990

The Land Use Chapters of the General Plan completely replace the County's existing Land Use Element, entitled Master Plan, 1990, which was adopted in 1960. The Element's principles and standards, which are very general, have been reviewed and incorporated into this document where still relevant.

The 1960 Land Use Element was effectively superseded in 1973 by the Conservation and Open Space Element and subsequently by several area plans. In fact, the plan map has been superseded by so many other documents that it is applicable to only urban unincorporated neighborhoods and single use areas, which comprise probably no more than 10% of the County.

In addition, the Element's land use designation categories do not correspond to any of the categories which have been developed in subsequent area plans. While the Element presented designations by population densities (persons/acre), the area plans presented them by development density (units/acre). This has made it impossible to compare designations to see if they are consistent with one another. Also, when designations are presented by population density, it is impossible to tell whether or not zoning is consistent with the General Plan.

b. Conservation and Open Space Element

The Land Use Chapters also replace the Parks and Open Space Plan Map contained in the Conservation and Open Space Element. This map designated land uses primarily in the rural parts of the County. It is being replaced because it has been superseded by the Local Coastal Program (LCP) and the Skyline Area General Plan Amendment.

c. Area Plans

Because many land use issues have been recently resolved by the adoption of area plans, the Land Use Chapters will not replace these documents. They will, instead, provide General Plan policy which will continue to support and justify the major land use decisions made during the development of these area plans. Final adoption of the Land Use Chapters may, however, require some modifications to area plans, but actual amendments will not occur until after the General Plan is approved.

2. Other Chapters of the General Plan

The Land Use Chapters of the General Plan translate the policies from the other chapters into a comprehensive land use plan which guides the future development of the unincorporated areas of the County. Specifically, the Land Use Chapters consider the opportunities which induce and accommodate development and the constraints which limit or preclude it, as identified in other chapters, and formulate a plan for the future use of land in the County.

II. EXISTING LAND USE

A. GENERAL INVENTORY OF LAND USES

Ranging from urban to rural, land is used in San Mateo County for many different purposes. Along San Francisco Bay, suburban cities and towns cover the land with primarily residential, commercial, and industrial uses, while in the redwood forests of the Santa Cruz Mountains, land is used for timber harvesting and recreation, and on the Coastside for agriculture and general open space.

As a whole, the County is relatively undeveloped. Although located in the San Francisco Bay Area, one of the most populated urban areas in the nation, just 20% of the County is urbanized, while the other 80% is used for agriculture, timber harvesting, recreation, or general open space. The amount of land in each major land use category in the County is summarized in Table 7.1.

Geographically, the County can be divided into distinctive urban and rural subregions: (1) the urban Bayside, (2) the rural Skyline area, and (3) the rural Coastside. Land uses in each of these subregions is described below.

1. Bayside

a. Population

Approximately 566,600 people live on the Bayside in urbanized areas which are both incorporated and unincorporated. Cities range in size from Daly City (79,261) to Colma (731), while the unincorporated, developed areas range in size from North Fair Oaks (10,308) to very small geographic areas with only a few residents.

b. Predominant Land Uses

Running from San Francisco southward to Palo Alto, the Bayside consists of a contiguous series of 18 suburban cities and towns, and several unincorporated urbanized areas. This area contains 96% of the urbanized land in the County and is developed with a wide variety of land uses. Most cities contain a proportional mix of principal urban land uses, but some are devoted more to one particular use than others. During the last two decades, urbanization

TABLE 7.1

GENERAL LAND USES
SAN MATEO COUNTY
1983

	ACRES	% OF TOTAL
Urbanized	62,794	21%
Residential[1]	(34,384)	(12%)
Local Serving Employment[2]	(6,598)	(2%)
Basic Employment[3]	(6,154)	(2%)
Streets and Highways	(15,658)	(5%)
Remainder	234,819	79%
TOTAL	297,613	100%

Source: Association of Bay Area Governments, Projections '83.

Notes:

1. Residential land uses are occupied by single and multiple family homes including mobilehomes.

2. Local Serving Employment land uses are occupied by local serving industries and businesses including: (1) retail trade offices, (2) churches, (3) schools below the state level, (4) hospitals, (5) local and rapid transit, (6) communications and utilities, (7) restaurants, (8) banks, credit agencies, insurance brokers and agents' offices, and real estate offices, and (9) local government facilities.

3. Basic Employment land uses are occupied by manufacturing industries and those which export products or act as suppliers to other regional industries including: (1) heavy industry, (2) food processing, (3) high technology manufacturing, (4) miscellaneous manufacturing, (5) long distance transportation, (6) wholesale trade, (7) finance and insurance (security and commodity brokers, exchanges, and services; insurance carriers; holding and other investment companies), (8) business services, (9) schools at the state level (4-year colleges and universities) and museums, and (10) Federal and State governments.

has steadily moved westward from the flat baylands into foothills overlooking San Francisco Bay. This elongated corridor of cities and towns is strung together by a network of major transportation routes which link the County directly to employment centers in San Francisco and Santa Clara Counties.

(1) Residential

Although the situation is slowly changing, San Mateo County has always been comprised of "bedroom communities" populated by a commuter work force. At least 40% of the work force still commutes out each day, primarily to San Francisco and Santa Clara Counties. It is not surprising then, that the Bayside is predominantly developed with residential land uses. Although land is used in Bayside towns and cities for a wide variety of purposes, residential uses, in fact, cover over half of the total developed area (approximately 34,000 acres). When streets and highways are included, the percentage is even higher. In comparison, residential uses in San Francisco cover only 39% of the city, a figure which is the average for large, American, central cities.

Residential uses are dispersed throughout the Bayside, although at substantially different densities. Densities are much higher in the northern cities of the County, particularly Daly City which, like adjoining San Francisco neighborhoods, is developed at densities of 17.4 dwelling units/net acre or greater. On the other hand, cities at the southern end of the Bayside, which are much more suburban in appearance, tend to be less densely developed and in some cases, like Atherton, Woodside, and Portola Valley (average 1 dwelling unit/net acre), quite open, spacious, and rustic.

(2) Commercial

Commercial uses consume only about 11% of the developed land in the County. Commercial uses are found in the historic central business districts of each city, which usually lie between El Camino Real and the Bayshore Freeway, and in a narrow business strip which runs the full length of El Camino Real, the County's major north-south thoroughfare tying all of these commercial centers together. Recently, major regional shopping centers have been built outside of these areas in Daly City (Serramonte) and in San Mateo (Fashion Island).

(3) Industrial

Industrial uses also cover about 11% of developed land. Industrial uses are concentrated in a few industrial parks: Crocker Industrial Park (Brisbane), Cabot, Cabot and Forbes Industrial Park (South San Francisco), San Francisco International Airport, Harbor Industrial Park (Belmont-San Carlos), industrial areas in Redwood City,

Bohannon Industrial Park (Menlo Park), and the industrial area of East Palo Alto. By and large, these areas lie between or near Highway 101 and El Camino Real. The industries in these areas are predominantly light and relatively clean, and these areas generally include warehouses, distribution facilities, assembling and processing plants, and offices. The only noxious industries in the County are chemical plants located in South San Francisco, Redwood City and East Palo Alto, a few mineral extraction operations, such as salt evaporation ponds, and auto wrecking facilities.

2. Skyline Area

a. Population

A sparse and dispersed population of approximately 3,000 people lives in the mountainous Skyline Area. Most of this population is concentrated in small, isolated, subdivided areas strung along Skyline Boulevard, La Honda Road, or Pescadero Road.

b. Predominant Land Uses

The rural Skyline Area is used predominantly for recreation, timber harvesting, grazing, or general open space.

(1) Recreation

Because of the Skyline Area's rugged mountainous beauty, abundant streams and redwood forests, and because it is so close to urban areas, the State, County, and Midpeninsula Regional Open Space District (MROSD) have over the years purchased land in the area for recreation and open space uses. At present, the combined acreage of all these public recreation facilities exceeds 12,000 acres. While in recent years the State and County have not greatly expanded their holdings in the area, MROSD has embarked on an aggressive acquisition program. The District now owns about 3,000 acres.

(2) Timber Harvesting

Timber harvesting is another major land use in the Skyline Area. The mountain redwood forests hold a substantial economic value. At present, some 3,500 acres are being harvested, and a total of 21,500 acres is zoned for timber harvesting.

3. Coastside

a. Population

Roughly 17,600 people live on the Coastside. Most of the population is concentrated in the City of Half Moon Bay and in the urban Mid-Coast communities of Montara, Moss Beach, and El Granada to the north. Only 1,500 people live in the sparsely settled South Coast, primarily in and around San Gregorio and Pescadero.

b. Predominant Land Uses

The Coastside is predominantly rural and devoted to agricultural, recreational, or open space uses. Development is concentrated in a collection of small urban communities, stretching 10 miles along the Pacific Ocean from Montara in the north to Half Moon Bay in the south.

(1) Residential

There are 6,770 dwelling units on the Coastside. The number increased by 3,330 (97%) between 1970 and 1980. Most of the residential areas in the Coastside are developed at medium densities (6.0-8.7 d.u./net acre). Some areas are old (e.g., neighborhoods of central Half Moon Bay) and some are quite new (e.g., areas of Montara, Half Moon Bay Colony).

(2) Commercial

The largest commercial area on the Coastside exists in and adjacent to the central business district of Half Moon Bay. Other neighborhood centers are located in Montara, Moss Beach, El Granada, and Pescadero. Along Princeton Harbor, many commercial recreation uses (e.g., shops, restaurants) have been built in the last few years. This area is and will continue to be the most popular commercial center, oriented to tourism, between San Francisco and Santa Cruz.

(3) Agriculture

Agricultural uses, farmland, and particularly grazing land, consume most of the acreage on the Coastside. Crops are grown on broad coastal terraces and in narrow alluvial stream valleys, while cattle grazing and dry farming occur on the surrounding Coastal foothills.

B. PROJECTED DEMAND FOR CONVERSION OF LAND USES

Based on national and regional demographic and economic assumptions and on local land use policy and surveys, the Association of Bay Area Governments (ABAG) Series 3 Projections show that the County's population will rise from 587,329 to 624,950 by the year 2000 and that a total of 11,400 acres of land will be converted to urban land uses. Table 7.2 shows the amount of acreage projected to be converted to urban land uses during this period.

The projections are considered to be conservative because the survey underestimated: (1) the potential for increasing densities on developed lands, (2) the amount of acreage that could accommodate small

TABLE 7.2

GENERAL LAND USES

SAN MATEO COUNTY
1980 - 2000

	1980 (Acres)	2000 (Acres)	ACRES	INCREASE (Percent)
Urbanized	62,779	74,192	+11,413	18%
Residential	(34,385)	(41,686)	(+7,301)	21%
Local Serving Employment and Basic Employment	(12,736)	(14,069)	(+1,333)	10%
Streets and Highways	(15,658)	(18,437)	(+2,779)	18%
Remainder	234,834	223,421	-11,413	-5%
TOTAL	297,613	297,613		

Source: Association of Bay Area Governments, Projections '83.

residential density increases (e.g., conversions from single family to multiple family residences, second units), and (3) the commercial redevelopment of small, existing business and retail locations. If local development policies change, these conversion estimates may change.

III. EXISTING PLANS, POLICIES, AND REGULATIONS AFFECTING GENERAL LAND USE

A. STATE

1. Urban Strategy for California

At the State level, goals and policies about growth, urban development, and environmental quality were adopted in 1978 in a report entitled, An Urban Strategy for California. This strategy also embodies a program of 45 specific actions that the State has taken or will be taking to accomplish its goals.

Generally speaking, the State's strategy is to protect the environmental quality and safety of urban areas and the agricultural and scenic resources of rural areas by encouraging the development of more compact urban areas, the revitalization of existing cities and suburbs, and the continued production of agricultural lands.

Specifically, the strategy sets the following priorities for new urban development: (1) first priority is given to renewing and maintaining existing urban areas, both cities and suburbs, (2) second priority is given to: (a) developing vacant and underutilized land within urban and suburban areas presently served by streets, water, sewer and other public services, and (b) to preserving open space, historic buildings, recreational opportunities and the distinct identities of neighborhoods, and (3) third priority is given to using land that is immediately adjacent to urban areas when new development is necessary outside of existing urban and suburban areas.

The strategy's program outlines the 45 specifications necessary for implementation and the steps necessary to carry out each. These steps range from simple gubernatorial approval to constitutional amendment. The programs which most directly affect general plans and land use planning in San Mateo County are outlined below.

a. Local General Plans

This program would establish legislation which would require the goals of local general plans to be consistent with the State's strategy.

b. LAFCo Objectives

Legislation would be passed requiring that all Local Agency Formation Commissions adopt the objective of directing new urban development to the priority areas established in the State's strategy.

Also, the legislation would require that changes to the boundaries of special districts be consistent with local general plans.

c. Areas to Receive Urban Services

This program would direct cities and counties to establish, as part of their general plan programs, an annual process for identifying which areas will receive urban public services within the near future (3-8 years). Also, it would require that all capital improvement plans be consistent with this program.

d. Industrial Siting

In coordinating the activities of local governments and regional agencies, the State would set up a pilot program to establish an industrial siting procedure in the Bay Area. The objectives would be to: (1) facilitate the siting of large industrial facilities, (2) encourage the economic development of older urban areas, and (3) balance development with environmental quality.

B. REGIONAL

1. Regional Plan

Since 1966, there has been a regional plan for the San Francisco Bay Area. Produced and maintained by the Association of Bay Area Governments (ABAG), the plan seeks to guide the economic, social, and environmental future of the nine-County region. Specifically, the Plan provides regional goals, objectives and policies on the following topics: (1) housing, (2) economic development, (3) environmental quality, (4) safety, (5) recreation, (6) transportation, and (7) health.

In addition to regional policies, the Plan also presents policies for subregions. These subregional policies determine what short-range actions are necessary to implement long-range regional policies.

San Mateo County is divided into two subregions: (1) San Francisco/Bayside San Mateo County, and (2) San Mateo Coast. At present, there are no policies for the first subregion, while for the Coastside, there are 13 very specific policies that ABAG and the Metropolitan Transportation Commission (MTC) will apply when evaluating important public service improvements (e.g., water, wastewater, and transportation) which need federal funding. These policies were originally developed as part of the San Mateo Coast Corridor Evaluation, a planning study conducted by ABAG and MTC, and basically seek to coordinate the provision of public facilities with land use decisions in order to concentrate development in urban areas and to preserve natural and scenic resources.

C. COUNTY

1. County General Plan Policies

a. Land Use Element

The County's existing Land Use Element, Master Plan-1990, presents very general policies which are called principles and standards. The Element has been superseded by the Conservation and Open Space Element and several area plans, so most parts of it are no longer relevant.

b. Conservation and Open Space Element

The County's existing Conservation and Open Space Element designates, on a map entitled the Parks and Open Space Plan, land uses in primarily the rural parts of the County. There are 12 land use designations on the map; however, most of these designations have been superseded by the Local Coastal Program and the Skyline Area General Plan Amendment.

2. Other County Policies and Programs

a. General Policies and Criteria for the Development and Determination of Spheres of Influence and Standards for the Evaluation of Proposals (LAFCo)

The Local Agency Formation Commission (LAFCo) in San Mateo County has adopted policies to encourage the orderly formation and development of governmental agencies. To achieve this objective, these policies attempt to: (1) provide efficient governmental services, (2) discourage the proliferation and overlapping of local government agencies, (3) discourage urban sprawl, and (4) conserve environmental resources.

To implement these policies, LAFCo has designated spheres of influence for each governmental agency. Spheres of influence are geographic areas, which represent the likely ultimate physical boundary or service area of a governmental unit. A map showing spheres of influence in San Mateo County appears on page 7.13.

LAFCo has established very specific criteria for determining the area included in a sphere of influence. In order for an unincorporated area to be assigned to a city, the city must be financially capable of furnishing necessary urban services (e.g., police, fire, water, wastewater), or these services must already be provided by a private utility or special district. Also, the city has to be able to deal physically, economically, and socially with the problems of urbanization. The criteria are generally similar for special districts; however, they also specify situations in which special districts should either be consolidated or eliminated.

LAFCo has a more specific set of criteria, called standards, which are used to assess proposals for the incorporation or disincorporation of a city, the formation or elimination of a special district, the inclusion or exclusion of land from a city, or the consolidation of two or more cities or special districts. The standards of evaluation measure: (1) environmental impacts, (2) the effects of new boundaries, (3) conformance with local general plans, (4) any duplication of governmental services, (5) fiscal impacts on governmental services, (6) economic feasibility, and (7) the impact on open space and agricultural lands.

SAN MATEO COUNTY GENERAL PLAN

SPHERES OF INFLUENCE

CITY LIMITS

UNINCORPORATED AREAS WITHIN CITY SPHERES OF INFLUENCE

INDICATES CITY SPHERE OF INFLUENCE

SPHERE OF INFLUENCE LINE BETWEEN TWO UNINCORPORATED AREAS

URBAN/RURAL BOUNDARY

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

BRISBANE
DALY CITY
COLMA
SOUTH SAN FRANCISCO
SAN FRANCISCO BAY
PACIFICA
SAN BRUNO
MILLBRAE
BURLINGAME
HILLSBOROUGH
SAN MATEO
FOSTER CITY
BELMONT
SAN CARLOS
REDWOOD CITY
MENLO PARK
EAST PALO ALTO
ATHERTON
WOODSIDE
HALF MOON BAY
PORTOLA VALLEY
SANTA CLARA COUNTY
PACIFIC OCEAN
SANTA CRUZ COUNTY
MUSSEL ROCK
PILLAR POINT
MONTARA POINT
POINT SAN PEDRO
MORI POINT
EEL ROCK
SEAL ROCK
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
ANO NUEVO POINT

GENERAL LAND USE ISSUES

I. ADEQUACY OF AVAILABLE LAND TO MEET DEMAND FOR NEW DEVELOPMENT

The Association of Bay Area Governments' (ABAG) Series 3 Projections estimate that the County will grow from its present population of 587,000 to 625,000 by the year 2000. The question the County and cities must address in their General Plans is where will these additional 38,000 people live and work?

There are 447 square miles of land in San Mateo County. Presently, approximately 62,794 acres (21%) are developed and 234,819 acres (79%) are undeveloped. Although there appears to be an adequate supply of raw land to accommodate new development, not all vacant land is suitable for urban land uses. As described in the other parts of the General Plan, much land in the County, because of hazardous conditions and lack of public facilities and services, is very difficult and expensive to build on, and much land contains natural resources of significant economic, scenic and recreational value. These physical limitations place significant constraints on urban development. On the other hand, 62,794 acres are urbanized, have a varying range of available urban services and contain pockets of vacant land. Which lands are most suitable to meet the demand for new development? Before these decisions can be made intelligently, it is necessary to identify and analyze major opportunities and constraints for planning the future use of land in San Mateo County.

II. OPPORTUNITIES AND CONSTRAINTS TO CONSIDER FOR GENERAL LAND USE PLANNING

Assessing five categories of major opportunities and constraints can help the County decide not only which land should best be used to accommodate new development but what type and density of development should be permitted in certain areas. These categories are: (1) Economic (how development and land use patterns affect governments' financial resources of the public sector and the economics of the private sector); (2) Infrastructure (how infrastructure affect development and land use patterns); (3) Natural Resources (how development and land use patterns affect valuable natural resources); (4) Natural Hazards (how environmental hazards affect development and land use patterns); and (5) Land Use Patterns (how development and land use patterns affect community character and identity).

Once major opportunities and constraints have been assessed, intelligent land use decisions may still be difficult to make. The impact of certain land uses might be fiscally beneficial, but environmentally detrimental. General Plan policies need to be set which clearly identify County-wide land use priorities. Developing policies to reconcile conflicting objectives is hard, but more than ever, governmental decisions about the use of land must conscientiously balance economic and social needs with environmental and fiscal constraints.

A. ECONOMIC

1. Fiscal

Certain types of land use can be either an economic asset or a liability to local government. They can generate revenues or they can deplete them. The type, density, and location of development have significant impacts on fiscal resources. Depending on local conditions, certain types of land uses and patterns can be encouraged or discouraged to assure that the provision of necessary public services and facilities does not burden the fiscal resources of local government.

Studies have shown that it is much more economical to build in or near developed areas than in undeveloped locations. In particular, low density urban sprawl, which distributes development over large land areas at distances farther and farther from urban centers, requires the construction of more roadways, the extension of more public facilities and services, and the lengthening of more utility lines when compared to more compact development patterns.[1]

The costs of providing public facilities and services are not the only fiscal concerns of local governments. Because the capital costs of new development can often be recaptured through fees and exactions, the longstanding commitment to providing ongoing services to populated and developed communities is becoming more and more a major burden.

The recent passage of tax and expenditure limitations in California (i.e., Proposition 13 and Proposition 4) have severely constrained local governments from generating tax revenues to fund ongoing public services. Local governments have responded to these limitations in various ways: (1) general plans and zoning regulations which dictate a certain mix of land uses which show a positive balance; (2) strict zoning regulations which yield from each and every new development proposal a maximum gain; (3) cost-revenue analyses to ensure that all new development pays its way; (4) fees, charges, and exactions to cover marginal costs; and (5) growth management programs to regulate the pace of development and keep expenditures down and property values up.[2]

There are several zoning approaches for determining a mix of land uses to assure fiscal gains. "Neutral fiscal zoning" generates the exact amount of revenues to pay for the cost of providing public services and facilities. The overall advantage of this approach is that residents do not have to subsidize new development and nonresidents do not have to subsidize the community. "Fiscal squeeze zoning," on the other hand, produces a mix of land uses which produce the most net tax revenue. New development pays much more than its way. "Scarcity zoning" more directly restricts the amount of land available for development. Public expenditures are kept in check and property values are kept high. Another approach, "public goods zoning," determines a mix of land uses which is the least dependent on public services and facilities. Here, the social and economic characteristics of new residents and the type and nature of new business are carefully determined through land uses controls.[3]

Sound fiscal planning also requires that new development patterns perpetuate and support the orderly formation and development of local governmental units. Developmental patterns that cause the proliferation of single purpose districts and/or cause the overlapping of government services unnecessarily burden local resources. At present, several areas in the County are urbanized but do not lie within the corporate limits of any city. These areas, often completely surrounded by incorporated lands, require services from the County which inefficiently duplicate those of adjacent cities.

2. Local Economies

In urban areas, development and land use patterns can contribute to the economic deterioration or revitalization of commercial, industrial, and residential districts. It is important for the County to attract industries and businesses which contribute to the support of the local economy and the economic well-being of the population. Also, it is important to look for opportunities to locate them in the right places; however, rapid economic growth and development can raise land costs and consequently increase the price of homes. This can lead to housing shortages and overcrowding.

If industries and businesses are attracted to urban fringe areas, existing older commercial centers lose patronage and economic vitality. Residential areas can experience the same downward spiral. As middle-income households rush to new outlying areas, low-income, elderly, and minority households are left behind. Lack of investment advances structural deterioration and leads to abandonment of buildings. The tax base begins to erode, services diminish, and the downward spiral becomes self-perpetuating. Efforts to conserve, rehabilitate, and revitalize older areas can halt such deterioration of existing neighborhoods.

In rural areas, conversion of agricultural lands and timberlands, which provide the local economic base, can threaten the jobs and security of the local work force. Land use decisions in rural areas must protect natural resources of significant economic value in order to sustain local economies.

B. INFRASTRUCTURE

The local infrastructure costs for low density, urban sprawl developments can be almost 50% higher than for more densely developed communities.[4] In particular, a recent Planning Division analysis compared the costs, per dwelling unit, for providing sanitary sewers, water systems, and roads in three areas: (1) East Palo Alto (before incorporation), (2) San Bruno Mountain, and (3) the Skyline Area. The existing availability of facilities and services and the natural physical characteristics of the land were variables which influenced costs the most. For example, in developed East Palo Alto, because public facilities and services are already there and the land is flat, the costs were

relatively low. In the undeveloped Skyline Area, however, the costs were significantly higher, because public facilities and services do not exist or are in need of improvement, and there are many environmental constraints (e.g., steep slopes, geologic hazards, dense vegetation).

C. NATURAL RESOURCES

In recent years, attitudes about the use of land have changed. Past decades of rapid growth in the Bay Area have made local governments realize that land is not only a commodity, but a valuable and limited resource that needs to be used effectively and managed properly. Growth usually requires the conversion of rural or open space lands to urban uses. Some lands, however, are not suitable for urban land uses because they possess irreplaceable natural resources.

The natural resources which exist in the County need to be protected for ecological, scenic, and recreational value. Some, like agricultural soils and redwood forests, must be protected and managed for their economic value. And, nationally, it is important to conserve oil and natural gas supplies to protect world-wide reserves and stabilize national economic conditions.

1. Vegetative, Water, Fish and Wildlife Resources

Certain parts of the County, particularly in the Santa Cruz Mountains and the Coastside, contain plant and animal species which are unique and rare and living in environments relatively pollutant-free. Decisions about how to use these lands must be carefully deliberated, because fragile ecological systems could be damaged by pollution or development and the existence of endangered species could become threatened.

2. Air Quality

Development and land use patterns can also affect air quality. Certain patterns generate more traffic and consequently result in more unsightly and unhealthy air pollution. Experts agree that air pollution increases the incidence of disease which causes Californians to pay several hundred million dollars a year in medical bills. Because of increased auto use, low density development and land use patterns (i.e., urban sprawl) can generate as much as 45% more air pollution than those of higher density. When auto use is curtailed, air pollution levels drop.[5] Although air pollution is, at present, no longer as bad as it once was in the Bay Area, land use patterns which contribute to increasing pollution levels need to be discouraged.

3. Water Quality

Water pollution is also influenced by development and land use patterns. As identified in the County's Surface Water Runoff Management Program, development in several Bayside watersheds caused significant pollution in streams and the Bay. In general, denser development patterns generally require fewer miles of roadway and cover smaller amounts of open space, because dwelling units are clustered or stacked.

Consequently, fewer acres are paved and fewer pollutants are carried by water runoff into storm drainage systems or sediment basins. Also, potential problems of downstream flooding can be avoided if the size of upstream areas covered by pavement is reduced.

4. Recreational and Scenic Resources

The Santa Cruz Mountains and the Coastside provide significant recreational and scenic opportunities. Decisions about the use of land in these areas should protect and enhance these resources.

5. Agricultural Soil Resources

The prime agricultural soils in the Mid- and South Coast, together with climatic conditions, provide the most ideal environment in the nation for growing certain specialty crops. Thus, these soils are in particular need of protection to provide the maximum opportunity for agricultural production. Although the County recently adopted strong policies to protect agriculture in its Local Coastal Program, there is continual development pressure to divide and convert agriculture land to non-agricultural uses. The problem is statewide. Every year the State of California loses 15,000 to 20,000 acres of agricultural land to urban uses. Although new land is brought into agricultural production yearly, lands suitable for such use are limited. If the most productive agricultural lands continue to be paved over and replaced by less fertile acreages, more intensive cultivation and irrigation will be required and the costs of agricultural production will be increased.

6. Timberland Resources

The County contains precious and valuable redwood forests. Land use decisions about the future use of these forests must protect not only their ecological and scenic value, but their significant economic value as well. Providing a balance between utilization and protection of timberland resources is essential.

7. Energy Resources

Development and land use patterns clearly affect the amounts of energy consumed for transportation. Depending on the condition of transportation systems, land use densities, and distances between employment centers and housing areas, development and land use patterns can be energy-efficient or wasteful. Clustered and denser patterns can save up to 44% more energy than similar sized urban sprawl developments.[6]

The private automobile has made urban sprawl possible. At present, no other form of transportation can support low density development and land use patterns as conveniently and economically. But because of the great distances between working and living areas that sprawl allows, a great amount of energy is consumed by using automobiles for home to work trips. Nationally, auto trips from home to work account for 36% of all

trips made and for 43% of all vehicles miles traveled. So dependent is sprawl on auto use that nationally only 4% of all trips are made by public transportation.[7]

But the cost of energy has risen dramatically. High levels of gasoline consumption are becoming increasingly more costly. Over the past decade, County residents have felt sharp rise in energy prices. Per capita energy expenditures rose from $324 in 1972 to $1,181 in 1980, faster than the general inflation rate. While it now appears that conventional energy supplies should be available through the end of this century, it is certain they will continue to become more costly in real terms. There is simply no assurance that development constructed today will be able to rely on present energy sources and distribution systems in future years.

D. NATURAL HAZARDS

Natural hazards exist in many parts of the County. For instance, much of the land in the Santa Cruz Mountains has steep and unstable slopes which can cause landslides; much is susceptible to geotechnical hazards such as intense shaking, ground rupture, and ground failure; and all of the area is considered a hazardous fire zone. And, along San Francisco Bay, some lands are subject to liquefaction, flooding, tsunamis and seiches. Development of such hazardous areas with urban land uses is unsuitable, because it endangers lives and property.

E. LAND USE PATTERNS

Development needs to be accommodated in land use patterns which are clear and coherent. It is important that people perceive their neighborhoods as distinct units within their cities, and their cities as distinct units within the County. As the physical and social building blocks of urban areas, neighborhoods must be identifiable to be viable. Yet, low density land use patterns which spread over large land areas, can make it impossible for people to identify with their neighborhoods, communities, and cities. Indistinguishable boundaries tend to blend communities together, destroying their uniqueness and sense of place. When neighborhood identity diminishes, people can lose interest and pride in their neighborhood and in its affairs. Loss of concern can threaten the economic and social stability of neighborhoods.

Reinforcing the image of neighborhoods and cities requires understanding and identifying the components which strengthen urban form and structure (e.g., identity activity centers, streets, boundaries, landmarks).[8] Although people may develop different images based on personal perceptions, strong structural elements in the urban landscape such as intensive, bustling commercial and cultural centers, well articulated transportation networks, distinct boundaries, and historical landmarks establish commonly perceived images which enhance neighborhood and civic identity, increase community affiliation and participation, and generate an overall sense of well-being.

In San Mateo County in the 1950's and 60's, new development was accommodated in a pattern of low density urban sprawl. Significant growth pressures after World War II caused cities along the Bayside to expand outward from their historical centers. As development pressed on, open spaces between cities were filled in, boundaries became indistinguishable, and the Bayside melded into one long strip of cities stretching southward from San Francisco. Although San Francisco Bay and the Santa Cruz Mountains confined urbanization in the County to a relatively narrow corridor, the low density pattern of urban development was, nevertheless, sprawl.

Today, the Bayside has physically matured and transformed itself into a linear city, a link in a chain of communities which now surround San Francisco Bay. The Bayside is held together by a network of freeways and highways which support a thin commercial and industrial spine which runs the length of the County along the El Camino transportation corridor.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING GENERAL LAND USE

Plans, policies, and regulations affecting general land use include the State's Urban Strategy, ABAG's Regional Plan, the County's General Plan, and LAFCo's Policies and Criteria. The State's Urban Strategy is advisory to local governments, and ABAG's Regional Plan is used to evaluate funding proposals. The County's existing Land Use Element is, as noted earlier, effectively superseded. This section, therefore, will be limited to an evaluation of San Mateo County LAFCo's Policies and Criteria as they affect general land use.

A. ECONOMIC

LAFCo regulations require the agency to assess fiscal impacts when developing spheres of influence and when evaluating specific proposals affecting governmental organization. These regulations effectively assure that, when establishing spheres of influence, cities and special districts are financially capable of establishing urban services for these areas.

Specifically, when assessing the fiscal impacts of proposals on public services, LAFCo compares incremental capital improvement and operating costs for schools, police, fire protection, health services, etc., with the additional revenues generated by the proposal. Positive and negative fiscal impacts are thus clearly and adequately identified.

In addition, in order to be fiscally prudent, LAFCo regulations adequately discourage the duplication and waste of public services by requiring the elimination or consolidation of small, single-purpose districts, with either multi-purpose districts or general governments.

B. INFRASTRUCTURE

When determining spheres of influence, LAFCo's general policies do not consider the availability of infrastructure. Only when "urbanized" land is considered for assignment to a city is it required that the city or district demonstrate that they have the existing or potential financial capability of providing services. Cities do not have to demonstrate that they can serve rural lands which are considered for inclusion within their spheres. There should be some consideration given to the availability and cost of providing public works before assigning land to a city. Specific proposals, on the other hand, are required to consider the availability of public works, because they have to document the fiscal impact of infrastructure improvement or development.

C. NATURAL RESOURCES

When establishing city spheres of influence, LAFCo regulations require the consideration of the impacts of development and urban service on open space and agricultural lands. Specifically, physical and economic impacts must be considered, particularly effects on the economic viability of agricultural preserves. No such consideration is required for establishing special district spheres of influence.

LAFCo regulations also require the agency to evaluate the impact that proposals would have on open space and prime agricultural lands. The regulations try to discourage the annexation of open space and agricultural lands if it would induce, facilitate, or result in development and conversion to other land uses.

These regulations could be much stronger in protecting agricultural lands from eventual urban development. For instance, land which is designated as Agriculture in the County's Local Coastal Program and General Plan should not be included in a city sphere of influence, because the County feels it very important to take advantage of the opportunity to use these lands for farming and ranching.

D. NATURAL HAZARDS

LAFCo regulations do not recognize natural hazards as an opportunity or constraint when determining spheres or evaluating proposals. To avoid risk to human safety and personal property, it seems logical that lands which have significant flood or seismic hazard potential should not be urbanized and, therefore, not included within a city sphere of influence. LAFCo regulations need to add natural hazards as a decision-making criterion when determining spheres and evaluating proposals.

E. LAND USE PATTERNS

LAFCo regulations use spheres of influence to discourage urban sprawl and premature urban development. When evaluating proposals, the regulations seek planned, well-ordered, efficient urban development

patterns. In particular, the regulations try to prevent urban sprawl, premature development, and unincorporated islands or corridors in urban areas.

The regulations, however, in no way require LAFCo to review, consider, or conform to the County's General Plan when designating spheres. Although State law requires LAFCo to consider the type of development planned or occurring for an area, the County's General Plan may be considered on an equal basis with a city's plan for the same unincorporated area. Thus, if the County feels strongly about preserving a rural area next to a city, LAFCo could potentially counter this policy by allowing it to be designated within a sphere, eventually annexed and developed as an urban area. County land use policy and LAFCo sphere determination are not required to be coordinated.

IV. ALTERNATIVES

Taking all of the previous opportunities and constraints into account, the County needs to develop specific objectives which can help make decisions about the type, distribution, location and density of land uses. Developing land use patterns which: (1) minimize the costs of providing public improvements, facilities, and services, (2) maximize the strength and viability of local economies, (3) minimize negative impacts on natural resources, (4) minimize the consumption of transportation energy, (5) minimize exposure of life and property to environmental hazards, and (6) provide physically coherent and workable communities would achieve many positive economic, social, and environmental effects. These could be used as the objectives for planning how land in the County should be used.

These objectives could be achieved by conserving the existing housing stock, developing vacant lands in existing areas where public facilities and services already exist, increasing densities in appropriate locations, and when necessary, developing lands which are contiguous to existing developed areas. Conserving the existing housing stock would maintain the social and economic stability of existing neighborhoods and lessen the demand for outward urban expansion. Developing vacant land within developed areas would maximize the efficiency of existing public facilities, utilities, and services and reduce the need for vast capital improvements. Increasing densities would allow households of all income levels to find housing near commercial, employment, and cultural centers. Preventing non-contiguous development would bring people closer to their jobs and reduce the need for long work trips and high gasoline consumption. It would also help to protect valuable resources such as agricultural lands and minimize the exposure to the natural hazards which exist predominantly in the undeveloped portions of the County: landslides, wild fires, seismicity and erosion.

In following these approaches, the County and cities would have to take specific actions. For the County, conserving and "infilling" existing developed unincorporated areas and increasing densities in these areas where appropriate, is a logical way to begin addressing future growth

requirements. Cities, where 92% of the County's population lives, can do much to alleviate pressure for expansion by infilling vacant parcels and increasing densities. Density increases, however, should occur only where there are or will be adequate public facilities and services. Density increases near transportation corridors can encourage the use of public transit, bring trip origins and destinations closer together, and make walking and bicycling a reasonable substitute for driving cars. On the other hand, density increases in isolated areas could increase dependence on the automobile.

But before these objectives can be achieved, the County and LAFCo need to develop a common strategy for determining which lands in the County will be devoted to urban or rural land uses.

A. DEVELOP SPECIFIC DEFINITIONS OF URBAN AND RURAL AREAS AND ESTABLISH A FIRM URBAN/RURAL BOUNDARY TO CONTAIN SPHERES OF INFLUENCE

This alternative would develop specific definitions of urban and rural areas which are not dependent on existing LAFCo spheres of influence. For the purpose of clarity, the areas best able to accommodate significant levels of new development would be defined and designated on the Land Use Plan Map as urban, while areas where less intensive development is appropriate would be defined and designated as rural. These two broad land use designations would be the basis for developing general land use policies. A boundary line separating these two areas could be drawn, showing clearly where new development in the County is to be located and concentrated. This line could be called an urban/rural boundary similar to the one that was established in the Local Coastal Program. It would establish a perimeter around urban areas beyond which significant levels of development, and public facilities and services would not be permitted.

When designating spheres of influence for cities and special districts, the County, in an effort to make spheres completely consistent with the General Plan, could request LAFCo to use the boundary as the outer limit beyond which spheres would not be extended. In this way, an efficient and effective growth management strategy could be established which would make LAFCo's spheres of influence, the future political boundaries of local governments, consistent with the County's General Plan land use designations. The boundary could be adjusted to meet changing conditions, but its function would be to establish, clearly and firmly, a line which would limit urban and rural development to specific areas.

B. DEVELOP SPECIFIC DEFINITIONS OF URBAN AND RURAL AREAS AND DESIGNATE RURAL AREAS WITHIN LAFCO SPHERES AS TRANSITION AREAS

1. This alternative would also develop independent definitions of urban and rural areas; however, it would accept the boundaries of existing LAFCo spheres and designate rural lands within them as a third category called Transition Zones.

Rather than having a firm urban/rural boundary separate urban and rural areas, a more flexible line could be drawn that would separate urban areas from transition zones. In these zones, the incremental extension of urban development would be permitted. When annexations occurred, urban development would take place within these newly incorporated areas.

The County would give all transition lands rural land use designations and permit only rural development until annexation took place. This would maintain some distinction between urban and rural areas. In this approach, the establishment of LAFCo spheres of influence would not be constrained by the County General Plan or an urban/rural boundary. City spheres would be determined independently and transition areas would be re-designated urban as incorporation occurred within spheres.

2. This alternative would follow the same approach, except that existing LAFCo spheres would not be automatically used to determine transition areas. If the County felt that a sphere boundary compromised an objective of the General Plan, it would request that LAFCo modify the line. Until there was agreement, the County would not designate a transition zone for that sphere.

C. ACCEPT ESTABLISHED LAFCO SPHERES AND DEFINE ALL LANDS WITHIN SPHERES AS URBAN AND ALL LANDS OUTSIDE AS RURAL

This alternative would automatically define all lands within a city sphere as urban. The General Plan would thus view unincorporated lands within spheres to be in a "holding pattern," waiting for eventual urban development. As much as possible, land use designations would reflect city General Plans so that there was clear, coordinated public policy about their future use. Establishing an urban/rural boundary would not really be effective but, if desired, the boundary would be coterminous with the combined outer limit of sphere lines. This alternative would make the County General Plan completely subordinate to LAFCo sphere designations.

D. DEVELOP VERY GENERAL DEFINITIONS OF URBAN AND RURAL AREAS AND ALLOW URBAN DEVELOPMENT OUTSIDE OF SPHERES

This alternative would not define urban and rural areas; instead, it would designate them based on more subjective criteria such as the presence of major physical and service constraints, as well as LAFCo spheres where they were acceptable. An urban/rural boundary could be developed, but it would move when constraints could be overcome. Rural land could become urban whether it was within a sphere or not. The County General Plan land use designations would correspondingly change to allow urban levels of development when constraints were overcome. The County's General Plan and LAFCo spheres would be completely independent of each other and urban areas would be permitted to develop outside of spheres.

GENERAL LAND USE FOOTNOTES

[1]Real Estate Research Corporation, The Costs of Sprawl, 1974.

[2]David Dowall and The Land Economics Groups, The Effects of Tax and Expenditure Limitations on Local Land Use Policies.

[3]Ibid.

[4]Real Estate Research Corporation, The Costs of Sprawl.

[5]Ibid.

[6]Ibid.

[7]Ibid.

[8]Kevin Lynch, The Image of The City, 1960.

8

Urban Land Use

Background ▪ Issues

URBAN LAND USE BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

The unincorporated area of San Mateo County includes several urban areas ranging in size from a few blocks to small communities. With the exception of the coastal communities of Montara, Moss Beach and El Granada, all of these urban areas are located on the Bayside, roughly east of Interstate 280. The Urban Land Use Chapter of the General Plan will examine these areas and establish policies to designate land uses within them. To facilitate discussion, urban unincorporated areas have been divided into the following three categories: Urban Communities, Urban Neighborhoods, and Special Urban Areas.

The Chapter provides an inventory of existing land uses in urban areas and identifies areas with urban development potential. The Issues Section identifies and analyzes factors that have an effect on the location and level of development in urban areas. An analysis of the adequacy of existing regulations to address the identified issues is included, followed by a discussion of alternative levels of development. Following an evaluation of the alternatives, policies are developed to guide future land use in urban areas.

B. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. Master Plan, 1990

The 1960 Land Use Element of the County General Plan has become obsolete and inadequate to effectively guide land use and development in San Mateo County. Although the land use designations contained in the Master Plan have been largely superseded by the Conservation and Open Space Element and the area plans, they remain applicable to several urban unincorporated areas. The very generalized land use designations of the 1960 Element make it very difficult to determine allowable land uses and densities within districts and nearly impossible to determine if zoning regulations are consistent with the General Plan. The Urban Land Use Chapter, together with the Rural and General Land Use Chapters will replace the 1960 document. Those parts of the Element that have remained relevant will be incorporated into this Chapter.

b. Conservation and Open Space Element

The Parks and Open Space Plan Map in the 1973 Conservation and Open Space Element designated land uses for the County's open space lands, including several undeveloped urban areas. Many of these

designations have been superseded by subsequent General Plan documents. In addition, several of the 1973 land use designations have become obsolete and no longer reflect the current issues facing these lands. The Land Use chapters of the General Plan will likewise replace the land use designations of the Parks and Open Space Map.

c. Area Plans

The County has adopted, as part of its General Plan, several area plans that are tailored to specific areas of the County. The San Bruno General Plan Amendment (1976), Emerald Lake Hills Community Plan (1977), Montara-Moss Beach-El Granada Community Plan (1978), North Fair Oaks Community Plan (1979), and the Local Coastal Program (1980) all contain policies that guide urban land use in these areas. Policies included in this Chapter will be more general than those included in the area plans and they will provide direction for further preparation of area plans. Existing area plans will not be replaced by this document; they may, however, be considered for later modification to maintain consistency with the General Plan. Land use and development in those urban areas that do not have area plans will be guided by this document.

2. Other Chapters of the Updated General Plan

By definition, the land use element is central to the general plan. Issues identified in every chapter of the general plan are also partially, if not entirely, land use issues. Focusing on urban land use, this Chapter is concerned with the availability of facilities and services essential to urban living as identified in the Community Development and Parks and Recreation chapters; valuable natural and cultural resources, identified in the Natural Resources chapters; and hazards, discussed in the Natural and Man-Made Hazards chapters.

II. INVENTORY OF EXISTING URBAN LAND USE

A. URBAN COMMUNITIES

Because of their relative size and mix of land uses, two urban unincorporated areas, North Fair Oaks and Montara-Moss Beach-El Granada, can be considered urban communities. These areas have commercial centers which serve the needs of the local population and industrial areas which contribute to the local economy. These areas, in effect, function much like self-contained, independent cities.

1. North Fair Oaks

North Fair Oaks, bounded by the corporate limits of Redwood City, Atherton and Menlo Park, comprises 798 acres. The area first began to develop shortly after the 1906 earthquake when many displaced San Francisco residents, attracted by the area's oak trees and low land prices, began looking for new homesites. A financial crisis in 1907 slowed

development, and it was not until the 1930's, when migrant farmers from the Dust Bowl settled the area, that growth resumed. By the end of World War II, almost every subdivided lot had been developed. The current population of North Fair Oaks is 10,300 persons.

a. Current Land Use Pattern and Zoning

North Fair Oaks supports a wide variety of land uses, ranging from single family residential to industrial. Almost 50% of the land area is in residential use, while commercial and industrial uses account for approximately 25%. Industrial uses are concentrated in two areas, along the Southern Pacific right-of-way and in the northwestern corner of the community. The industrial areas are generally surrounded by residential uses, primarily medium density (6-8.7 dwelling units/net acre). Commercial land uses are dispersed along three major traffic thoroughfares, El Camino Real, Middlefield Road and Fifth Avenue.

Current zoning reflects this land use pattern. The western portion of the community between El Camino Real and Middlefield Road is zoned for higher density residential uses, while the area east of Middlefield Road is predominantly zoned One Family Residential (R-1) and Light Industrial (M-1). Neighborhood Commercial (C-1) districts, which are intended to provide shopping, meeting and convenience services to surrounding residents, are situated on the southern half of Middlefield Road and on a portion of Fifth Avenue. General Commercial (C-2) districts, which permit uses that draw from a larger market, are stretched along El Camino, a portion of Fifth Avenue and the northern half of Middlefield Road.

b. Development Potential

The development potential for all urban communities, neighborhoods and special urban areas is summarized in Table 8.1. North Fair Oaks is largely developed. Some vacant land is located in the Light Industrial District (M-1), adjacent to the Southern Pacific right-of-way and Middlefield Road. There are very few undeveloped residential and commercial lots in North Fair Oaks. New development may not be limited to vacant land, however. With the growing scarcity of vacant buildable land on the Bayside, areas with lower land costs and proximity to transportation and employment centers, such as North Fair Oaks, may become attractive for redevelopment.

2. Montara-Moss Beach-El Granada

Montara-Moss Beach-El Granada, situated on the coastal terrace overlooking the Pacific Ocean, encompasses a land area of 1,607 acres. Like North Fair Oaks, this coastal community was initially subdivided during the real estate boom that followed the 1906 earthquake. To the disappointment of many speculators, however, San Francisco quickly rebuilt itself before the community could ever fully develop. Growth in

TABLE 8.1

DEVELOPMENT POTENTIAL UNDER EXISTING ZONING
URBAN UNINCORPORATED AREAS
SAN MATEO COUNTY

	DEVELOPMENT POTENTIAL[1]		
	RESIDENTIAL (Dwelling Units)	COMMERCIAL (Acres)	INDUSTRIAL (Acres)
North County			
Broadmoor	Neg.[2]	Neg.	--
Colma	20	Neg.	3
Country Club Park	Neg.	--	--
Olympic Club	220 - 250	--	--
California Golf and Country Club	60 - 210	--	--
San Francisco Jail	4 - 30	--	--
San Francisco International Airport	--	--	260
Guadalupe Valley Quarry	--	--	240
McLellan Nursery	60	--	--
Mid-Bayside			
Burlingame Hills	Neg.	--	--
Highlands/Baywood Park	90 - 120	--	--
Devonshire	120	--	--
Peninsula Golf and Country Club	280	--	--
Harbor Industrial	--	Neg.	Neg.
South Bayside			
North Fair Oaks	Neg.	Neg.	Neg.
Palomar Park	40	--	--
Emerald Lake Hills	800	--	--
Oak Knoll	10	--	--
Kensington Square	Neg.	--	--

TABLE 8.1 (continued)

DEVELOPMENT POTENTIAL UNDER EXISTING ZONING
URBAN UNINCORPORATED AREAS
SAN MATEO COUNTY

	DEVELOPMENT POTENTIAL[1]		
	RESIDENTIAL (Dwelling Units)	COMMERCIAL (Acres)	INDUSTRIAL (Acres)
South Bayside			
Sequoia Tract	Neg.	Neg.	--
West Menlo Park	10	Neg.	--
Menlo Oaks	10	--	--
Park Forest/Watkins	Neg.	Neg.	--
Weekend Acres	10	--	--
Ladera	Neg.	Neg.	--
Ideal Cement	--	--	220
Bayshore Mobile Home Parks	--	10	--
Benedetti Lands	16 - 80	--	--
Mid-Coast			
Montara-Moss Beach-El Granada	3,650	10	10

Notes: 1. Development potential includes buildable, appropriately zoned parcels. Scattered individual parcels not included. Sources include San Mateo County Housing Element (1982), A Little About Lots (Lewis and Knox, 1982), area plans, and data on file in the Planning Department offices.

2. Neg. = Negligible.

Montara-Moss Beach-El Granada proceeded slowly on a scattered, parcel-by-parcel basis until the early 1970's when with the decline of buildable land on the Bayside, many builders discovered the abundance of vacant subdivided lots and began to develop them. Presently, 8,300 persons reside in this community.

a. Current Land Use Pattern and Zoning

By far, the predominant land use in the Montara-Moss Beach-El Granada community is single family residential. Commercial uses are clustered along the Highway 1 corridor and Pillar Point Harbor. Half Moon Bay Airport, positioned midway between El Granada and Montara, dominates the industrial area. Beaches, parks, agriculture and general open space lands surround the community.

The current zoning in Montara-Moss Beach-El Granada supports the existing land use pattern. The majority of the land is zoned One Family Residential (R-1/S-17/DR). The Pillar Point Harbor area is zoned Coastside Commercial Recreation (CCR), and Princeton is zoned Marine Related Industrial (MAR). Lands zoned Resource Management (RM) and Planned Agricultural (PAD) surround the area.

b. Development Potential

Montara-Moss Beach-El Granada has significant amounts of undeveloped acreage. The unincorporated portion of the Mid-Coast can accommodate 3,650 new residential units[1] as well as some commercial and industrial development. At the present time, however, development on the Coastside is curtailed by the lack of an adequate drinking water supply and sewage treatment capacity (see Chapters 10 and 11).

B. URBAN NEIGHBORHOODS

In contrast to urban communities, there are many relatively small, unincorporated "pockets" of land which are devoted to primarily residential land uses. Because they appear and function like residential neighborhoods of contiguous cities, they can be called urban neighborhoods.

These areas exist in all parts of the urban Bayside. In the North County, urban neighborhoods include Broadmoor, Colma, and Country Club Park. In the Mid-Bayside are found Burlingame Hills, Highlands/Baywood Park, and Devonshire. In the South Bayside, the area with most unincorporated urban land, Palomar Park, Emerald Lake Hills, Oak Knoll, Kensington Square, Sequoia Tract, West Menlo Park, Menlo Oaks, Park Forest/Watkins, Stanford Weekend Acres, and Ladera are located. These areas are indicated on the map of Unincorporated County Land on page 28 of the Overview and Resource Management volume.

1. North County

Completely surrounded by the City of Daly City, Broadmoor occupies 294 acres in the northernmost portion of San Mateo County. Broadmoor Village remained undeveloped until after World War II when it was subdivided and developed with predominantly tract housing. The current population of Broadmoor is 4,000 persons.

Enveloped by the cities of Daly City and Colma, unincorporated Colma is a small neighborhood consisting of 115 acres which lies slightly southeast of Broadmoor. The area was first subdivided in 1872. The current population of unincorporated Colma is 1,300 persons.

Country Club Park consists of a small tract of land, completely surrounded by the City of South San Francisco. The area was subdivided in 1941, as South San Francisco expanded westward into the hills. It currently supports a population of approximately 100 persons.

a. Current Land Use Pattern and Zoning

Land use in Broadmoor is overwhelmingly single family residential. A mixture of commercial and multiple-family residential uses are scattered along the eastern perimeter of the neighborhood which adjoins the Daly City Civic Center. Within the residential area are two public elementary schools and a neighborhood park.

Current zoning in Broadmoor supports the existing land use pattern. The residential area is zoned R-1/S-7 (One Family Residential). The eastern edge of Broadmoor Village contains a scattering of General Commercial (C-2), Highway Commercial (H-1), and Multiple-Family Residential (R-3) districts.

Existing land use in unincorporated Colma is mixed, consisting of retail and service commercial establishments, nurseries, single family residential areas and industrial uses. The area east of El Camino Real is predominantly residential, although this area also contains industrial and commercial uses. The western half supports a variety of land uses, dominated by general commercial and industrial.

Existing zoning in Colma supports this land use pattern. Residential areas are zoned One Family Residential, Residential Estates and Multiple Family Residential. Commercial and industrial areas are zoned Neighborhood Commercial (C-1), General Commercial (C-2), Limited Highway Frontage (H-1), Light Industrial (M-1), and Agricultural (A-1).

Primarily a single family residential neighborhood, Country Club Park is divided into half acre lots that contrast sharply with the higher density residential neighborhoods in adjoining South San Francisco. Five churches are also located in this neighborhood, and they consume a substantial proportion of the total land area in this small neighborhood.

8.1M

SAN MATEO COUNTY GENERAL PLAN

URBAN LAND USE

PUBLIC RECREATION

GENERAL INDUSTRIAL

OS GENERAL OPEN SPACE

OS/FS GENERAL OPEN SPACE/FUTURE STUDY

SEE APPROPRIATE 1"–1000' MAP

0 4000 8000 16000 32,000 FEET

99 320 ac.

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north

OLYMPIC COUNTRY CLUB
BROADMOOR
COLMA
GUADALUPE VALLEY QUARRY
SAN BRUNO MOUNTAIN
MC ELLAN NURSERY
CALIFORNIA GOLF CLUB
COUNTRY CLUB PARK
SAN FRANCISCO JAIL
SAN FRANCISCO INTERNATIONAL AIRPORT
See NORTH COUNTY AREA (Proposed Land Use)
BRISBANE
SIERRA POINT
OYSTER POINT
SAN FRANCISCO BAY
POINT SAN BRUNO
MUSSEL ROCK
PACIFICA
OS
BURLINGAME HILLS
FOSTER CITY
HILLSBOROUGH
COYOTE POINT
MONTARA
MONTARA POINT
MOSS BEACH
EL GRANADA
PILLAR POINT
See MID-COAST AREA (Proposed Land Use)
PENINSULA GOLF AND COUNTRY CLUB
HIGHLANDS/BAYWOOD PARK
HARBOR INDUSTRIAL
IDEAL CEMENT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
DEVONSHIRE
See MID-BAYSIDE AREA (Proposed Land Use)
OS/FS
HASSLER AREA
PALOMAR PARK
OAK KNOLL
KENSINGTON SQUARE
MOBILE HOME PARKS
NORTH FAIR OAKS
MENLO PARK
EDGEWOOD PARK
EMERALD LAKE HILLS
HORGAN RANCH
MENLO OAKS
PARK FOREST/ WATKINS
SEQUOIA TRACT
WEST MENLO PARK
WEEKEND ACRES
STANFORD LANDS
LADERA
See SOUTH BAYSIDE AREA (Proposed Land Use)
SANTA CLARA COUNTY
REAL ROCK
EEL ROCK
PORTOLA VALLEY
MUSSEL ROCK
SAN GREGORIO RANCHO
PACIFIC OCEAN
SAN GREGORIO
LA HONDA
PESCADERO
PESCADERO POINT
See RURAL SERVICE CENTERS (Proposed Land Use)
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
AÑO NUEVO POINT
SANTA CRUZ COUNTY

NORTH COUNTY AREA
SAN MATEO COUNTY GENERAL PLAN

LAND USE

- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- MEDIUM HIGH DENSITY RESIDENTIAL (8.8 - 17.4 du/ac)
- HIGH DENSITY RESIDENTIAL (17.5 - 87.1 du/ac)
- NEIGHBORHOOD COMMERCIAL
- HEAVY INDUSTRIAL
- AIRPORT (T) TRANSPORTATION RELATED
- INSTITUTIONAL
- PUBLIC RECREATION
- PRIVATE RECREATION
- OS GENERAL OPEN SPACE
- C/I/R/FS COMMERCIAL/INDUSTRIAL/ RESIDENTIAL/ FUTURE STUDY
- C/FS COMMERCIAL/FUTURE STUDY
- R/FS RESIDENTIAL/FUTURE STUDY
- GENERAL INDUSTRIAL

0 1000 2000 4000 10,000 FEET

1 9 30 acres

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north

OLYMPIC COUNTRY CLUB
BROADMOOR
COLMA
C/I/R/FS
R/FS
C/FS
OS
GUADALUPE VALLEY QUARRY
SAN BRUNO MOUNTAIN (Area Plan Adopted 1976)
MCLELLAN NURSERY
CALIFORNIA GOLF CLUB
COUNTRY CLUB PARK
SAN FRANCISCO JAIL
SAN FRANCISCO INTERNATIONAL AIRPORT
(T)
PACIFIC OCEAN
SAN FRANCISCO BAY

2M

MID-BAYSIDE AREA

SAN MATEO COUNTY GENERAL PLAN

LAND USE

- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- HIGH DENSITY RESIDENTIAL (17.5 - 87.1 du/ac)
- PRIVATE RECREATION
- GENERAL INDUSTRIAL
- INSTITUTIONAL
- OS — GENERAL OPEN SPACE

0 1000 2000 4000 10,000 FEET

1 inch = 9 30 acres

north

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SAN FRANCISCO BAY

BURLINGAME HILLS

OS

PENINSULA GOLF AND COUNTRY CLUB

HIGHLANDS/BAYWOOD PARK

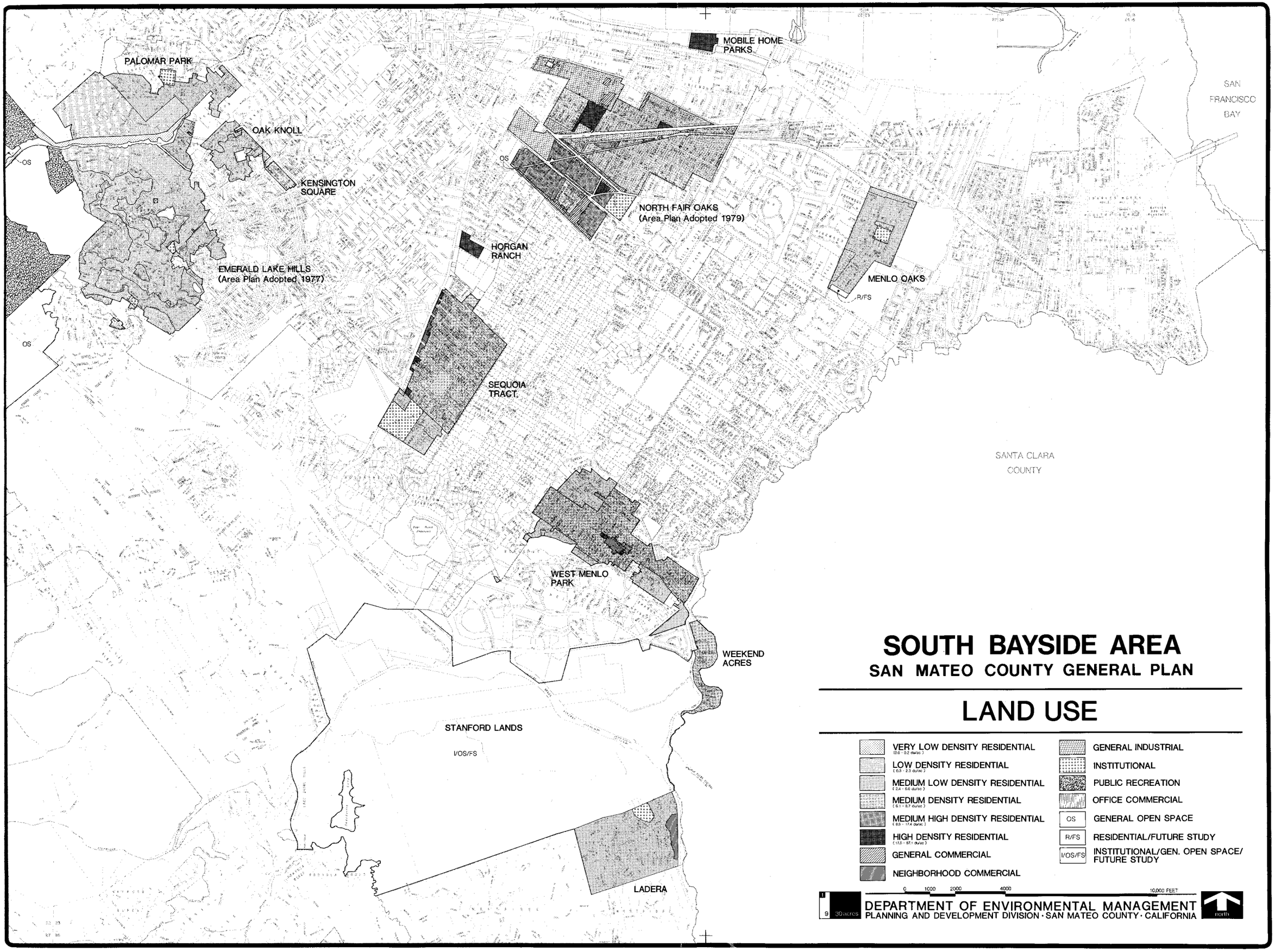
HARBOR INDUSTRIAL

DEVONSHIRE

BIRD ISLAND

SAN CARLOS AIRPORT

I:\maps\gp mid-bayside land use.pcx



SOUTH BAYSIDE AREA

SAN MATEO COUNTY GENERAL PLAN

LAND USE

- VERY LOW DENSITY RESIDENTIAL (0.0 - 0.2 du/ac)
- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- MEDIUM HIGH DENSITY RESIDENTIAL (8.8 - 17.4 du/ac)
- HIGH DENSITY RESIDENTIAL (17.5 - 87.1 du/ac)
- GENERAL COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- GENERAL INDUSTRIAL
- INSTITUTIONAL
- PUBLIC RECREATION
- OFFICE COMMERCIAL
- OS — GENERAL OPEN SPACE
- R/FS — RESIDENTIAL/FUTURE STUDY
- I/OS/FS — INSTITUTIONAL/GEN. OPEN SPACE/ FUTURE STUDY

0 1000 2000 4000 10,000 FEET

9 30 acres

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

MID-COAST AREA
SAN MATEO COUNTY GENERAL PLAN

LAND USE

LOCAL COASTAL PROGRAM AREA PLAN (Adopted 1980)

MONTARA

PORTOLA HEIGHTS SUBDIVISION

MOSS BEACH

EL GRANADA

URBAN/RURAL BOUNDARY

COASTAL ZONE BOUNDARY

PACIFIC OCEAN

- VERY LOW DENSITY RESIDENTIAL (0.0 - 0.2 du/ac)
- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- MEDIUM HIGH DENSITY RESIDENTIAL (8.8 - 17.4 du/ac)
- HIGH DENSITY RESIDENTIAL (17.5 - 34.9 du/ac)
- MIXED DENSITY RESIDENTIAL (6.1 - 17.4 du/ac)
- NEIGHBORHOOD COMMERCIAL
- COMMERCIAL RECREATION (Coastside)
- GENERAL INDUSTRIAL
- AIRPORT
- INSTITUTIONAL
- PUBLIC RECREATION (H) HIGH INTENSITY (L) LOW INTENSITY (M) MEDIUM INTENSITY (P) COMMUNITY PARK
- AG AGRICULTURE
- OS GENERAL OPEN SPACE
- D DESIGNATED HOUSING SITE

0 1000 2000 4000 10,000 FEET

1 9 30 acres

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

8.5M

The current zoning supports the existing land uses. Country Club Park is zoned R-1/S-10 (One Family Residential, 20,000 square feet minimum lot size).

b. Development Potential

Although Broadmoor Village is fully developed, changing social and economic forces may warrant the reuse of certain structures. For example, given the current trend of declining school enrollment, it is possible that one of the two elementary schools may be closed at some future date. At that time, the County must consider alternative uses for the site, taking into account the impact of various uses on the surrounding residential area.

The western half of Colma, between El Camino and Interstate 280 contains two large undeveloped parcels. These vacant parcels have high accessibility and are located in the midst of an otherwise intensively developed area. The present zoning allows commercial and industrial uses on these parcels.

Although Country Club Park is almost entirely developed, the large lots and the generally flat terrain presents the potential for increased density. At the present time, however, increased density in Country Club Park may be constrained because there are no sanitary sewers.

2. Mid-Bayside

Burlingame Hills, adjacent to the corporate limits of Burlingame and Hillsborough, comprises 156 acres of hillside land overlooking San Francisco Bay. The area's first subdivision was platted in 1912 when the Mid-Bayside was growing rapidly. The population of Burlingame Hills is 1,100 persons.

Highlands/Baywood Park, adjacent to the City of San Mateo and the Town of Hillsborough, occupies 1,251 acres of land immediately east of Crystal Springs Lakes. Originally subdivided in the 1950's, this neighborhood was developed during a great surge of development activity that occurred on the Bayside following World War II. Presently, 4,500 persons reside in the Highlands/Baywood Park neighborhood.

Devonshire lies on the western edge of the City of San Carlos. First subdivided in the late 1920's, it covers nearly 300 acres and holds a population of 700.

a. Current Land Use Pattern and Zoning

Burlingame Hills is a neighborhood of low and medium low density (0.3-6 dwelling units/net acre) residential uses. The neighborhood is divided into half acre lots; curvilinear streets, typical of the surrounding residential areas of Burlingame and Hillsborough, weave

throughout the area. The outer portions of this neighborhood are developed to a slightly higher density.

The current zoning in Burlingame Hills is consistent with the existing land use pattern. The area is zoned R-1/S-9 (One Family Residential, 10,000 square feet minimum lot size) and R-1/S-10 (One Family Residential, 20,000 square feet minimum lot size).

The Highlands/Baywood Park is a residential neighborhood of medium low density (2.4-6.0 dwelling units/net acre). Unlike most other urban neighborhoods, a large portion of the Highlands/Baywood Park area lies in open space uses, owing in part to the steep terrain. Within the residential area are churches, an elementary school and a community recreation facility. Several County institutional facilities, including Juvenile Hall and administrative offices, are clustered along Tower Road, near the southern edge of the Highlands. A small, neighborhood-oriented commercial center is located on Polhemus Road, a major thoroughfare. Although located within the corporate limits of San Mateo, the center is the commercial core of the unincorporated Highlands/Baywood Park neighborhood.

The residential areas of the Highlands/Baywood Park are uniformly zoned R-1/S-8 (One Family Residential, 7,500 square feet minimum lot size) with the exception of two parcels zoned R-E/SS-107 (Residential Estates, 5 acre minimum lot size) and one parcel zoned R-3 (Multiple Family Residential). The open space areas are zoned RM (Resource Management). The County institutional facilities are also zoned R-E (Residential Estates).

Devonshire is a single family residential neighborhood of low to medium low densities (0.3-6.0 dwelling units/net acre). There are Uno other uses in this area.

Current zoning in Devonshire is R-1/S-7 (One Family Residential, 5,000 square feet minimum lot size) and R-E/S-10 (Residential Estates, 20,000 square feet minimum lot size).

b. Development Potential

The land use pattern in Burlingame Hills is well established, and few lots remain undeveloped. Some development of second units will likely occur.

Several large sites encompassing approximately 265 acres within the Highlands/Baywood Park neighborhood remain undeveloped (excluding watershed land). Current zoning would allow approximately 90-120 additional dwelling units in this area.

There are approximately 60 acres of undeveloped land in Devonshire. Development on most of this land, however, is constrained by steep slopes and limitations on sewer connections.

3. South Bayside

Palomar Park flanks the western edge of San Carlos. It encompasses nearly 300 acres and supports a population of approximately 700 persons. It was first subdivided in the late 1920's, following the incorporation of San Carlos in 1925.

Emerald Lake Hills and Oak Knoll are located in the foothills overlooking Redwood City. This urban neighborhood is comprised of approximately 837 acres and is bounded by Redwood City, Woodside, Palomar Park and Edgewood County Park. During the 1920's, the Emerald Lake area was a popular location for vacation homes, most of which have become permanent residences. The current population of Emerald Lake Hills and Oak Knoll is approximately 3,400 persons.

Adjoining Oak Knoll to the south is Kensington Square, a small residential neighborhood that encompasses approximately two city blocks. The neighborhood is bounded on the west by Alameda de las Pulgas, and it extends one block east to include both sides of Upton Street. The northern and southern edges are defined by Harding and Jefferson Avenues. Kensington Square was initially subdivided in 1925 and currently supports a population of 200 persons.

The Sequoia Tract, wedged between Redwood City and Atherton, occupies an area of approximately 430 acres. The Sequoia Tract was first subdivided after 1910, although much of the development did not occur until the 1950's. Just over 4,000 persons reside in this urban neighborhood.

West Menlo Park, bounded on the west, south and east by the City of Menlo Park and on the north by the Town of Atherton, encompasses an area of 354 acres. Subdivision activity in this neighborhood began in 1889 when the small village of Menlo Park served the needs of nearby estates and Stanford University. The current population of West Menlo Park is approximately 4,400 persons.

Menlo Oaks is located in eastern Menlo Park, between Middlefield and Bay Roads, just south of the Atherton corporate limits. Menlo Oaks is situated on 163 acres and supports a population of just over 700 persons. When Menlo Oaks was initially subdivided in 1910, it was adjacent to the largest and most ornate of the County's estates, James Flood's Linden Towers. Although the estate lands have since been subdivided, Menlo Oaks and the surrounding residential neighborhoods retain much of the ambiance associated with the old rural estates.

Park Forest/Watkins is a small unincorporated neighborhood, bounded by Menlo Park and Atherton and situated between El Camino Real and the Southern Pacific Railroad tracks. Subdivision activity in Park Forest/Watkins began in 1868. Just over 400 persons presently reside in this small neighborhood.

Stanford Weekend Acres is a small residential neighborhood wedged between San Francisquito Creek to the south and Alpine Road to the north. An envelope of open space surrounds Weekend Acres, creating a buffer between the residential uses and nearby Interstate 280. Nearly 300 persons reside in this neighborhood.

Ladera occupies approximately 270 acres and is bounded by the open space lands of Stanford University and the corporate limits of Portola Valley. Ladera emerged from a series of subdivisions that were platted from 1948 to 1965 and was developed to densities significantly higher than those in neighboring Portola Valley. The current population of Ladera is nearly 1,600 persons.

a. Current Land Use Pattern and Zoning

Palomar Park is a single family residential neighborhood of low to medium low densities (0.3-6 dwelling units/net acre). There are essentially no other uses in this area. The zoning in Palomar Park is somewhat reflective of the terrain. The lower flat lands surrounding Edgewood Road and Alameda de las Pulgas are zoned R-1/S-9 (One Family Residential, 10,000 square feet minimum lot size). The steep, upper reaches of Palomar Park are zoned R-1/S-10 (One Family Residential, 20,000 square feet minimum lot size).

Emerald Lake Hills and Oak Knoll are residential neighborhoods consisting primarily of single family homes. Some homes are on large lots of a half acre or more; others were built many years ago on small lots less than one-quarter acre in size. The only uses aside from residential are a church and a nursery school, both located near the neighborhood's southern edge.

Emerald Lake Hills and Oak Knoll are currently zoned RH/S-18/DR (Residential Hillside). This zoning designation, which was devised specifically to address the area's hilly character, permits single family homes on minimum lot sizes which are based on the average slope of the site. The Design Review (DR) combining district contains guidelines on grading, landscaping, protection of views, vegetation, topography, location and exterior finishing of buildings and is attached to the RH District.

Kensington Square is a single family residential neighborhood of medium density. Adjacent land uses are similar. The entire neighborhood is presently zoned R-1/S-7 (One Family Residential, 5,000 square feet minimum lot size).

The Sequoia Tract is primarily a single family residential neighborhood. The area west of Alameda de las Pulgas contains Woodside High School and a small low density residential neighborhood. The eastern portion of the neighborhood is predominantly residential and developed to slightly higher densities. A diffuse mixture of commercial, office, and multiple family residential uses stretch along the Woodside Road corridor.

The current zoning in the Sequoia Tract reflects existing land uses. The small area west of the Alameda is zoned R-E (Residential Estates) and R-1/S-9 (One Family Residential, 10,000 square feet minimum lot size). The more intensely developed eastern portion is primarily zoned R-1/S-7 (One Family Residential) with a string of neighborhood commercial, office, parking and multi-family residential districts scattered along Woodside Road.

West Menlo Park is predominantly a single family residential neighborhood of medium and medium low densities. A small neighborhood commercial center which provides convenience services to the area is located at the core along the Alameda de las Pulgas. Several multi-family residential and small institutional uses are clustered around the commercial center.

The majority of West Menlo Park is zoned R-1/S-7 (One Family Residential), with lower density residential zones (R-1/S-8, R-1/S-9 and R-E/S-11) situated around the outer edges which border Atherton and Sharon Heights. The commercial core is primarily zoned C-1 (Neighborhood Commercial), although R-3 (Multi-Family Residential), O (Office) and P (Parking) districts are also located here.

Menlo Oaks is a low density (0.3-2.2 dwelling units/net acre), single family residential neighborhood. The only nonresidential use in this neighborhood is a private elementary school, located on Peninsula Way, near the center of the neighborhood.

The current zoning in Menlo Oaks is R-1/S-9 and R-1/S-10 (Single Family Residential, 10,000 and 20,000 square feet minimum lot size). Unlike other residential neighborhoods, Menlo Oaks has a special 40-foot setback requirement that is double the usual setback requirement.

Park Forest/Watkins supports a substantial variety of land uses. Commercial uses front along El Camino Real, forming the western edge of the neighborhood. Behind the commercial uses are two distinct residential districts. The southern residential area is composed of multi-family dwellings which are built around large, private interior court yards. The northern residential area is comprised of more typical single family residences.

The current zoning in Park Forest/Watkins corresponds with the existing land use pattern. The commercial uses along El Camino are zoned C-1 (Neighborhood Commercial) and P (Parking). The multi-family residential district located behind the commercial district employs a special combining district (SS-110) which requires an open space common area of 500 square feet per dwelling unit to be maintained for the use of all parcels in the district. The single family area is zoned R-1/S-7 (One Family Residential). This small neighborhood also contains a Planned Unit Development (PUD) district.

Weekend Acres is entirely a single family residential area developed at medium densities (6.1-8.7 dwelling units/net acre). Physical constraints have produced a street pattern of small, independent cul-de-sacs emanating from Alpine Road. The area is consistently zoned R-1/S-7 (One Family Residential, 5,000 square feet minimum lot size).

Ladera is primarily a residential community of medium low density. In addition, Ladera contains a neighborhood shopping area along Alpine Road which houses offices and small shops. A private elementary school and a recreation center are situated within the residential area.

The current zoning in Ladera is similar to the existing land use pattern. By far, the majority of the residential area is zoned R-1/SS-104 (One Family Residential). An SS-104 combining district, wherein the slope conditions of each lot determine the allowed density or minimum lot size for each dwelling unit, applies to this area. The northeastern corner of Ladera is zoned R-1/S-9, R-1/S-10, R-1/S-11 (One Family Residential, 10,000 square feet to 5 acres minimum lot size), reflecting the presence of significantly steeper slopes. The commercial center is zoned C-1 (Neighborhood Commercial), P (Parking) and O (Office).

b. Development Potential

There are approximately 30 acres of undeveloped land in Palomar Park. Development on most of this land, however, is constrained by the steep topography and lack of sanitary sewers.

Following the installation of sewers, Emerald Lake Hills may accommodate approximately 800 new residential units. As is often the case in hillside neighborhoods, several constraints to development have existed in the area. These are topography, inadequate access, and requirements for septic tank drainfields. The installation of sewers will help overcome these constraints.

Since Kensington Square is a fully developed neighborhood, few changes in the existing land use pattern are anticipated for this neighborhood.

The Sequoia Tract is primarily developed. However, the area may have potential for growth, because favorable environmental and locational conditions, flat land, nearby employment centers and transportation corridors, could induce future redevelopment activity in the area.

The West Menlo Park area is almost entirely developed. Under present zoning, approximately 10 new dwelling units could be developed in this area.

Adjoining Menlo Oaks to the south and west is a seminary that includes a large amount of undeveloped acreage. A small portion of this land is unincorporated and is zoned R-1/S-10. Approximately 10 additional units could be developed under the present zoning. Beyond this, the current land uses in Menlo Oaks are well established and few changes are anticipated for this neighborhood.

Park Forest/Watkins is almost entirely developed. Future land use questions facing this neighborhood may be oriented around maintenance and improvement of the commercial district.

Under present zoning, Weekend Acres could accommodate approximately 10 new dwelling units.

Ladera is almost entirely developed. The elementary school site may be considered for reuse in the future. Aside from the school site, few changes in the established land use pattern are foreseen.

C. SPECIAL URBAN AREAS

There are several urban unincorporated areas that are either devoted to primarily one nonresidential land use or remain undeveloped. Like the residential neighborhoods discussed previously, these areas often appear and function as components of contiguous cities. These unique places, called special urban areas, can be grouped into park and recreation facilities, institutional areas, industrial areas, floricultural areas, residential areas, and undeveloped areas.

1. Park and Recreation Facilities

The Olympic Country Club, bounded by the Pacific Ocean and the corporate limits of Daly City, occupies 170 acres at the extreme northwestern corner of San Mateo County. Approximately two-thirds of the Olympic Club falls within the Coastal Zone.

The California Golf Club, an expansive 190 acre facility, extends westward from El Camino Real to Junipero Serra Boulevard and is surrounded completely by the City of South San Francisco.

San Bruno Mountain consists of approximately 3,600 acres of land that comprises the largest, most prominent block of open space in the north County. San Bruno Mountain is bounded by the cities of Brisbane, South San Francisco, Colma and Daly City.

The Peninsula Golf and Country Club comprises 130 acres near the intersection of Highway 92 and Alameda de las Pulgas. The golf club is bounded on all sides by the corporate limits of San Mateo.

Edgewood County Park, covering over 400 acres of oak woodland and open grassy knolls, extends southward from the Hassler property to Woodside and Emerald Lake Hills. The land was purchased from the State of California with funds from the Federal government, San Mateo County and

Midpeninsula Regional Open Space District. Most of the easterly portion is within the city limits of Redwood City, and the westerly portion is in unincorporated San Mateo County. The unincorporated portion of Edgewood is bounded by Edgewood Road, Interstate 280, the Town of Woodside and the City of Redwood City.

The Hassler property consists of 300 acres of wooded slopes which adjoin the western edge of San Carlos. The Hassler property is bounded on the south by Edgewood Road, on the west by Interstate 280, on the north by the San Francisco State Fish and Game Refuge, and on the east by the City of San Carlos.

a. Current Land Use Pattern and Zoning

Skyline Boulevard transects the Olympic Club creating a boundary between the golfing fairways and the undeveloped shoreline. The portion of the golf course that falls within the Coastal Zone, is zoned RM-CZ/CD (Resource Management). The remainder of the Country Club is zoned R-E/S-9 (Residential Estates).

Golf course greens and fairways comprise the bulk of the California Golf Club. A small piece of undeveloped land and a public park are stretched along the northern perimeter of the unincorporated territory, separated from the golf course by Westborough Boulevard. In addition, an elementary school adjoins the southeast corner of the golf course.

The golf course, including the land north of Westborough Boulevard, is presently zoned R-1/S-11 (One Family Residential, 1-5 acre minimum lot size). The school site is zoned R-1/S-10 (One Family Residential, 20,000 square feet minimum lot size).

Most of San Bruno Mountain remains undeveloped. Most of those portions of the mountain that are urbanized or planned for development have been annexed to neighboring jurisdictions. The present exceptions to this are the Guadalupe Valley Quarry, located on the north side of the main ridge, the Brisbane School site, located next to Daly City on the northern perimeter of the park, and an antenna farm located on the crest of the main ridge. The main ridge of the mountain (except for the quarry) and the "Saddle Area" northwest of the main ridge have been purchased for parkland.

Presently, all of the Peninsula Golf and Country Club property is occupied by the golf course. Low density residential neighborhoods and open space areas of steep terrain adjoin the golf course property. The current zoning is R-E/S-10 (Residential Estates, 20,000 square feet minimum lot size).

Edgewood County Park is currently undeveloped. The unincorporated portion of the park is presently within the RM (Resource Management) district.

The Hassler property was once the site of a tuberculosis hospital. The vacant hospital buildings are located near the southern edge of the property, accessible from Edgewood Road. The vast majority of the site remains in open space due to steep terrain. The land is currently zoned R-E/S-11 (Residential Estates, 1-5 acre minimum lot size) and RM (Resource Management).

b. Development Potential

The Olympic Country Club is presently fully developed. Should the golf course cease operation, however, approximately 220 to 250 new units could be developed under current zoning.

Similarly, the California Golf Club, is also fully developed as a recreation facility. If converted to residential use, the golf club, including the elementary school, could accommodate 60-210 new dwelling units.

In contrast, San Bruno Mountain is, at present, relatively undeveloped. Adopted area plans call for large housing developments on the South Slope and the Northeast Ridge. These areas have already been annexed to South San Francisco and Brisbane. The remaining unincorporated portions of San Bruno Mountain are planned for parkland. The Brisbane school site could be used for housing.

The Peninsula Golf and Country Club is also fully developed. Should the golf course discontinue using this property, present zoning would allow a residential buildout of approximately 280 dwelling units.

The Edgewood acreage has been purchased by San Mateo County for parkland. A Master Plan for recreational facilities including a golf course and several trails has been adopted.

The Hassler property has been recently purchased by the Mid-Peninsula Regional Open Space District as a regional open space preserve.

2. Institutional Areas

The City and County of San Francisco maintains a jail on approximately 260 acres of unincorporated land situated on the crest of the coastal range, overlooking Crystal Springs Lakes and San Francisco Bay. The unincorporated land is bounded on the south and east by the City of Pacifica and on the north and west by the City of San Bruno.

The 1,900 acre San Francisco International Airport is bounded by San Francisco Bay and the corporate limits of South San Francisco, San Bruno, and Millbrae. The airport is the principal commercial air passenger and cargo facility in the Bay Area. Although located on unincorporated land, the airport is owned by the City and County of San Francisco, and is therefore not subject to the land use regulations of the County.[2]

a. Current Land Use Pattern and Zoning

The jail facility and grounds occupy a small part of the total acreage, the majority of which is in open space. The western portion of the property is included in the Sweeney Ridge Skyline Preserve. The entire area is presently zoned RM (Resource Management).

The airport land is traversed near the western perimeter by the Bayshore Freeway. Most of the land west of the freeway remains undeveloped. In addition, approximately 80 acres east of the freeway are undeveloped. The airport complex, including runways, passenger facilities, and airline maintenance facilities, occupies the larger area east of the Bayshore Freeway. The airport land is presently zoned M-1 (Light Industrial) and C-1/S-1 (Neighborhood Commercial).

b. Development Potential

Should the City of San Francisco discontinue using the jail facility, present zoning would allow approximately 4 to 32 new dwelling units on the jail property.

Approximately 260 acres of airport land remains undeveloped. The majority of this acreage, approximately 180 acres, lies in the area west of the Bayshore Freeway. Since there is no current land use plan for the airport, it is not known how these lands will be used.

3. Industrial Areas

The Guadalupe Valley Quarry is located on the North Slope of San Bruno Mountain, adjacent to Brisbane's Crocker Industrial Park and San Bruno Mountain County Park. The quarry commenced operation in 1895 on approximately 145 acres of Charles Crocker's Visitacion Ranch.

The Harbor Industrial area covers approximately 230 acres and lies between San Carlos, Belmont, the Southern Pacific right-of-way and the Bayshore Freeway. Subdivision activity in the Harbor Industrial area began in 1926, closely following the incorporation of San Carlos and Belmont. Approximately 100 persons reside in this area.

Ideal Cement is the name given to approximately 300 acres of bayland located at the end of Seaport Boulevard, adjacent to the Port of Redwood City. The Ideal Cement lands are defined on the north by Westpoint Slough, on the west by Redwood Creek, on the east by First Slough, and on the south by salt evaporation ponds.

a. Current Land Use Pattern and Zoning

The Guadalupe Valley Quarry consists of four parcels of land covering approximately 145 acres. Of this total, approximately 85

acres are devoted to the actual quarry operation.[3] The remaining acreage is in open space. The quarry floor is zoned M-2 (Heavy Industrial) and the surrounding slopes are zoned RM (Resource Management).

The land uses in the Harbor Industrial area are overwhelmingly industrial. Several commercial and high density residential uses are scattered along Harbor Boulevard, near the northern boundary of the industrial area. Both residential and industrial districts surround the Harbor Industrial Area. The entire area is within the M-1 (Light Industrial) zoning district.

Seaport Boulevard divides the Ideal Cement property into two pieces. The smaller northern portion of the property is occupied by a large cement processing plant. Undeveloped marshland and salt evaporation ponds comprise the acreage south of Seaport Boulevard. The entire area is currently within the M-2 (Heavy Industrial) district.

b. Development Potential

The Guadalupe Valley Quarry will terminate mining operations by December 31, 1991.[4] At this time, the quarry floor, consisting of buildable pads, roads and intervening slopes, will measure approximately 40 acres. Of this total, nearly 30 acres are anticipated to be usable for future industrial development.[5]

The Harbor Industrial area is largely developed. There are, however, several industrial facilities that are vacant or underutilized, creating some potential for redevelopment of these existing structures.

Over two thirds of the Ideal Cement land remains undeveloped.

4. Floricultural Areas

McLellan Nursery is located on approximately 30 acres of land enveloped by the City of South San Francisco. The nursery property is bordered on the west by El Camino Real and on the east by Buri Buri Junior High School.

Horgan Ranch is the name given to approximately 12 acres of unincorporated land located just east of the Sequoia Tract, near Woodside Road in Redwood City.

a. Current Land Use Pattern and Zoning

The McLellan Nursery is a floricultural growing and distribution operation. Several greenhouses, warehouses, wholesale and retail facilities are clustered near the southern end of the property. A junior high school, recreational, commercial and residential uses adjoin the property. The entire nursery property is currently zoned R-E/S-10 (Residential Estates, 20,000 square feet minimum lot size).

Most of the Horgan Ranch is used for floriculture. Several greenhouses, a warehouse and a single family residence are presently established on the land. Land uses adjoining Horgan Ranch include commercial, single family and multiple-family residential uses. The entire acreage is zoned A-3/S-11 (Floriculture).

b. Development Potential

If the McLellan Nursery were to discontinue operations, present zoning of this site would allow approximately 60 new dwelling units.

Horgan Ranch is surrounded by urban uses, creating tremendous pressure for development. About half of the land, however, is under Williamson Act contracts and could not be developed for 10 years. If the land were annexed to Redwood City, however, the contracts could be cancelled, allowing development to occur.[6]

5. Residential Areas

Two mobile home parks are situated on approximately 17 acres of land which lie just east of the Bayshore Freeway between Redwood City and Menlo Park. Nearly 400 persons reside in this small unincorporated area.

a. Current Land Use Pattern and Zoning

The Bayshore Mobile Home Parks comprise the southern portion of a larger area containing several mobile home parks. A small portion of an adjoining industrial complex also falls within the unincorporated territory. Current zoning for this area is C-2 (General Commercial) and M-1 (Light Industrial).

b. Development Potential

The Bayshore Mobile Home Park area is presently fully developed. Should the parks cease operation, however, present zoning would allow commercial uses to be developed in place of the mobile homes.

6. Undeveloped Areas

Approximately 2,600 acres of Stanford University lands lie within unincorporated San Mateo County. This large expanse of acreage is bounded by San Francisquito Creek and the corporate limits of Menlo Park, Atherton, Woodside and Portola Valley.

The Benedetti property encompasses approximately 80 acres of land which adjoins the northern limits of the Hassler property. The Benedetti land is bordered on the west by San Francisco Watershed property and on the east by the City of San Carlos.

a. Current Land Use Pattern and Zoning

Unincorporated Stanford lands can be divided into four subareas: Stanford Linear Accelerator, Guernsey Field, Jasper Ridge and Webb Ranch.

The Stanford Linear Accelerator (SLAC) is the only developed portion of the unincorporated Stanford lands. The accelerator, a physics education and research facility, spans almost the entire length of the unincorporated area. Guernsey field, bounded by Interstate 280 and Sand Hill Road, extends north from SLAC. The Jasper Ridge Biological Preserve, which covers nearly half of the unincorporated Stanford acreage, occupies the southernmost portion of the University lands. Adjoining Jasper Ridge to the east is Webb Ranch. The Stanford lands within unincorporated San Mateo County are presently zoned R-E/S-11 (Residential Estates).

The Benedetti property is presently undeveloped. The entire acreage is within the R-E (Residential Estates) zoning district.

b. Development Potential

All Stanford lands are ultimately intended to be used for educational purposes. However, Stanford land use policy allows for "interim" uses on land for which academic uses are not anticipated for many years.[7]

The Stanford Linear Accelerator has been designated academic/campus by the Stanford University Land Use Plan (1980). This designation allows only academic and academic related uses, instruction and research, faculty, staff and student housing and support services. Within the five year horizon, the land use plan anticipated some expansion of the Accelerator.[8]

Webb Ranch has been designated academic/academic reserve and open space. Allowable uses include open space and low intensity uses limited to instruction and research, faculty, staff and student housing, and related uses.

Jasper Ridge Biological Preserve is also designated academic, but is a special case. The biological preserve has been established as the permanent academic use for this land, to the exclusion of other uses allowed under this designation.

The Stanford Land Use Plan designates Guernsey Field (395 acres) as income property. Income property is defined as an interim use which will produce income for the academic endowment until the land is needed for academic programs.[9] Examples of University income property presently developed in Santa Clara County include Stanford Shopping Center and Oak Creek Apartments. Designation of specific uses for this acreage is pending further study.[10]

Current zoning would allow 16-80 dwelling units on the Benedetti property.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING URBAN LAND USE

A. COUNTY GENERAL PLAN POLICIES

1. Existing General Plan Elements

a. Master Plan 1990 (1960)

The 1960 Master Plan contains the County's existing land use element. Although much of the plan has been superseded by more recent general plan elements, it remains effective for most urban neighborhoods and single use areas. Included within the plan are several general principles and standards by which land use and development were to have been guided. The plan also designates land uses in a very general manner.

b. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan designates land uses for most of the special undeveloped areas, including San Bruno Mountain, Hassler, Ideal Cement, and Stanford Lands. Much of this acreage is designated "vacant lands under study" by the 1973 Element. Lands under this designation must be planned as a unit so that subsequent development respects the natural features and open character of the land.

c. Housing Element (1982)

The Housing Element of the General Plan provides a comprehensive assessment of residential land use in unincorporated San Mateo County. Contained within the Housing Element are policies which protect existing affordable housing, encourage new housing opportunities and provide housing for individuals with special needs.

2. Existing Area Plans

a. San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment contains policies which seek a balance between economic growth and open space preservation. The plan defines the general distribution and densities of residential, commercial, industrial and open space uses. In addition, the San Bruno Mountain General Plan Amendment includes a supplementary set of policies which describe the phasing of development, financing and management responsibilities, as well as additional requirements for specific plans. The General Plan Amendment has since been implemented, and partially superseded, by the adoption of the San Bruno Mountain Habitat Conservation Plan, and specific plans for the South Slope and the Northeast Ridge.

b. Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan includes a set of policies which focus on preserving the low density residential character and the important natural features of the Emerald Lake Hills neighborhood. To facilitate the implementation of these policies, a new zoning district, Residential Hillside (RH), was developed. The Residential Hillside district differs from traditional residential districts in two ways; first, clustered site plans are permitted and second, the minimum lot size for a dwelling unit is based on the average slope of the site. Both of these measures direct new development to land most suited to accommodate development. The rezoning action further resulted in the merging of substandard lots held in common ownership.

c. Montara-Moss Beach-El Granada Community Plan (1978)

The Montara-Moss Beach-El Granada Community Plan, adopted in 1978, contains policies which direct community development to areas which are subdivided, zoned for development and served by utilities. The plan has also established policies which separate commercial recreation activities from community commercial centers and locate industrial development in high noise areas which are unsuitable for residential development.

d. North Fair Oaks Community Plan (1979)

The North Fair Oaks Community Plan was developed to address land use issues specific to that area. The land use policies presented in the plan encourage the maintenance of single family residential neighborhoods while maintaining a strong commercial and industrial base. Several policies in the North Fair Oaks Plan are aimed at resolving land use conflicts that occur in areas with mixed uses. The plan policies further provide that new commercial development focus on neighborhood services and office uses.

e. Local Coastal Program (1980)

The Montara-Moss Beach-El Granada Community Plan was used as the basis for the LCP Land Use Plan in the Mid-Coast. Some changes were made to the original Mid-Coast Plan to meet the requirements of the Coastal Act. Beyond this, however, the policies and land use designations contained in the Montara-Moss Beach-El Granada Community Plan remain as the primary planning document for the Mid-Coast community.

B. COUNTY ZONING ORDINANCES

Table 8.2 summarizes the requirements of the zoning ordinances that are in effect in the urban unincorporated areas of San Mateo County.

TABLE 8.2

URBAN ZONING DISTRICTS
UNINCORPORATED SAN MATEO COUNTY
1984

DISTRICT	SUMMARY OF PROVISIONS
Residential Districts	
Residential Estates District (R-E)	The R-E district allows residential recreational and institutional uses including single family dwellings, servants' quarters, public parks, playgrounds, nurseries and greenhouses. Upon securing a use permit, schools, libraries, fire stations, churches, riding academies and golf courses are also allowed.
One Family Residential District (R-1)	The R-1 district allows all uses allowed in the R-E district (described above) with one primary difference--servants' quarters are not allowed in R-1 districts.
Residential Hillside District (RH)	The RH district established to address the hillside character of Emerald Lake Hills. Uses permitted in the RH zone include one family dwellings, public parks and playgrounds and home occupations.
Two Family Residential District (R-2)	One (1) two-family dwelling or two (2) one-family dwellings are allowed in the R-2 district in addition to those uses permitted in R-1 districts.
Multiple Family Residential District (R-3)	The R-3 district allows multiple family dwellings, fraternity and sorority houses and dormitories, in addition to uses allowed in R-1 and R-2 districts. Hospitals, rest homes, sanitariums, clinics, philanthropic institutions, automobile courts and hotels are additionally allowed in the R-3 district, subject to the issuance of a use permit.

TABLE 8.2 (continued)

URBAN ZONING DISTRICTS
UNINCORPORATED SAN MATEO COUNTY
1984

DISTRICT	SUMMARY OF PROVISIONS
Affordable Housing District (R-3-A)	To provide opportunities for low and moderate income households in the Coastal Zone, the County has adopted an affordable housing district. The R-3-A district allows one family and multiple family dwellings as well as institutional facilities such as community centers and day care centers. A development plan and use permit is required for all uses in R-3-A.
Commercial and Industrial Districts	
Neighborhood Business District (C-1)	The Neighborhood Business district provides shopping, eating and service uses such as grocery stores, bakeries, restaurants, banks and barber shops to proximate residential areas. All residential uses are also allowed in the C-1 district.
General Commercial District (C-2)	Uses allowed in the General Commercial district are generally larger, service oriented uses such as automotive repair shops, small animal hospitals, and car sales. Uses allowed in the C-1 district are allowed in the C-2 district as well.
Coastside Commercial Recreation District (CCR)	The CCR district was adopted to promote commercial areas on the coast which are primarily oriented toward meeting the service and recreational needs of Coastside visitors, boat users, and Coastside residents. The CCR district recognizes the unique land use situation created by the presence of the ocean, and this is reflected in the permitted uses. Marinas, boat building and repair, harbor administration offices and fish processing and purchasing are all limited to CCR districts adjacent to the shoreline. Uses permitted in other CCR districts include small retail shops, residences above the first floor of a mixed use building, recreational equipment rental and sales establishments.

TABLE 8.2 (continued)

URBAN ZONING DISTRICTS
UNINCORPORATED SAN MATEO COUNTY
1984

DISTRICT	SUMMARY OF PROVISIONS
Limited Highway Frontage District (H-1)	Upon securing a use permit, the H-1 district allows motels, mobile home parks, gas stations, restaurants, retail stores, nurseries, greenhouses, offices and directional or informational signs.
Office District (O)	The O district allows two family and multiple family dwellings, and, upon securing a use permit, offices, medical and dental clinics and prescription pharmacies.
Light Industrial District (M-1)	Uses permitted in the M-1 district are generally larger scale processing, manufacturing, warehouse and storage uses.
Heavy Industrial District (M-2)	All legal uses except residential and commercial uses are allowed in the M-2 district. Several uses such as junk yards, extraction, smelting or refining of mineral substances and disposal or incineration of refuse require a use permit.
Marine Related Industrial District (MAR)	Similar to the CCR district, the MAR district was designed to address the special land use considerations present along the coast. Permitted uses include boat chandlery, agricultural or sea product storage or processing, nurseries and greenhouses. Upon securing a use permit, boat building, repair, storage and sales and other compatible light industrial uses are allowed.
Agricultural and Open Space Districts	
Floriculture District (A-3)	The A-3 district allows nurseries, greenhouses and accessory uses such as one family dwellings and temporary trailer parks for seasonal farm labor.

TABLE 8.2 (continued)

URBAN ZONING DISTRICTS
UNINCORPORATED SAN MATEO COUNTY
1984

DISTRICT	SUMMARY OF PROVISIONS
Community Open Space and Conservation District (COSC)	The COSC district was developed to protect open space land in urban areas by providing for planned low intensity development which preserves the visual and open characteristics of the land.
Other Districts	
Parking District (P)	The P district allows parking lots in connection with an establishment permitted in an adjoining R, H, C or M district.
Planned Unit Development District (PUD)	Unlike traditional zoning districts, the Planned Unit Development district does not contain a list of uses and development standards which apply to each PUD district. Instead, permitted uses and development standards are developed on a site-by-site basis. In this manner, concerns that are peculiar to each individual site may be addressed through the provisions of the zoning regulations.
Airport Overlay District (A-O)	The A-O district is intended to provide a margin of safety at the ends of airport runways by limiting the concentration of people where hazards from aircraft are considered to be greatest. Permitted uses are not specified, however, preference is given to uses which are anticipated to attract no more than 10 persons per net acre at any one time. The requirements of the A-O district are applied in addition to the requirements of the primary zoning designation.
Combining Districts (S)	S districts contain standards which control the height, bulk, setbacks and minimum lot sizes for residential development. S district requirements are summarized in Appendix A.

C. OTHER COUNTY POLICIES AND PROGRAMS

a. Energy Conservation Resolutions (1981)

In 1981, the Board of Supervisors adopted several resolutions encouraging energy conservation in San Mateo County. Contained within these resolutions are guidelines for solar access in all new development. The guidelines establish standards for the orientation of streets, drives and newly created parcels and buildings in a manner which maximizes solar access. The guidelines also specify siting and landscaping principles designed to protect solar access. The use of planned unit developments (PUDs) are encouraged to increase open space and facilitate energy efficient clustered building arrangements. The resolutions also encourage retrofit of energy conservation measures for residential buildings and efficient street and parking lot lighting fixtures.

b. Airport Land Use Plan 1981

In recognition of the special land use problems created by airports, the State Legislature required the establishment of Airport Land Use Commissions (ALUC) to develop plans for land use around airports. The ALUC Airport Land Use Plan establishes criteria to determine the appropriateness of new land uses based on airport noise levels. The plan further requires that airport "approach zones" be kept free of structures. Nonstructural uses may be permitted in approach zones if they do not cause a concentration of more than 10 persons per acre on a regular basis.

c. Second Unit Ordinance (1984)

To increase the supply of rental housing and smaller housing units, the Board of Supervisors has adopted ordinances permitting the construction of new second dwelling units and the legalization of existing second dwelling units on single family lots in unincorporated areas of the County (excluding the Coastal Zone). The second unit ordinance contains development standards and a quota system to ensure that the units are compatible with existing neighborhoods.

URBAN LAND USE ISSUES

I. ADEQUACY OF AVAILABLE LAND TO MEET THE DEMAND FOR NEW DEVELOPMENT IN URBAN AREAS

The availability of vacant, buildable land in San Mateo County's urban area is limited. Future urban development is generally restricted to infilling vacant parcels scattered within several urban communities and neighborhoods. The demand for certain urban land uses, on the other hand, is tremendous. Rapid employment growth in neighboring Santa Clara and San Francisco Counties, as well as San Mateo County, has contributed to a burgeoning demand for housing in the County. The Association of Bay Area Governments (ABAG) has estimated unincorporated San Mateo County's local "fair share" of regional housing needs to be 2,142 units over the next five years. This estimate represents nearly three times the current rate of residential development.

In addition, favorable economic conditions in the Bay region have bolstered the demand for commercial, office and industrial land uses in San Mateo County. A sustained demand for these uses can be expected, particularly along the Bayside and in the North County, where ABAG estimates indicate substantial gains in retail trade and service employment.

Clearly, decisions about how land in urban areas will be used must be carefully deliberated. The following section identifies and analyzes major opportunities and constraints which are necessary to consider before determining land use designations in urban unincorporated areas.

II. OPPORTUNITIES AND CONSTRAINTS TO CONSIDER FOR URBAN LAND USE PLANNING

A. ECONOMIC

1. Fiscal

When designating land uses in urban areas, the County needs to be aware of the fiscal benefits and liabilities that might result from its decisions. Other variables, of course, need to be considered when making land use decisions, but because of recent Statewide tax and expenditure limitations, there is an increasing incentive for local governments to adopt land use policies for fiscal gains. This often results in neighboring jurisdictions competing for highly desirable types of development. The General Land Use Chapter outlined various strategies that have been used to assure positive fiscal gains from land use planning. This section focuses on the appropriateness of employing these approaches in the County's unincorporated urban areas.

Overall, when a locality bases land use decisions on fiscal impacts, the following will most likely result: (1) development will tend to be of greater value and quality and considerably more expensive, (2) the

locality will spend more and more of its resources on attracting development which generates high revenue, (3) development with any uncertain fiscal benefit will be denied, altered, or required to pay for its way, and (4) development on the urban edges of a community, where expensive infrastructure improvements would be needed, will most likely be limited unless special taxing arrangements are set up to cover capital costs.

The strategy that a jurisdiction may wish to use to improve its fiscal position needs to respond to local conditions. Localities with a lot of vacant land may want to designate it for high-valued commercial or industrial uses in order to capture immediate property and sales tax revenues and to avoid paying for the level of public services and facilities that residential uses would require. Or, a locality may wish to designate vacant land for high-valued residential uses which can generate enough property taxes over time to offset the costs of public services, because they are sold more often than commercial and industrial land and, consequently, their assessed and market values are more equivalent. Localities which are significantly developed, like most of the County's unincorporated urban areas, may want to designate remaining precious vacant lands for development which will achieve the highest value and net tax revenue possible in order to offset losses from other land uses that will not change over time. Localities pursuing any fiscal land use policy will need to depend on cost-revenue analyses to evaluate the implications of specific proposals.

Localities need also to consider the disadvantages or constraints of pursuing a vigorous fiscal land use policy. To the south, Santa Clara County's well documented jobs-housing imbalance is the direct result of a deliberate attempt by some cities to capture all of the new jobs but provide none of the housing. By designating vacant land for only high revenue generating uses (i.e., industrial and commercial) some cities may have achieved maximum fiscal gains, but caused significant environmental (traffic congestion, air pollution) and social problems (exclusionary zoning) in the process. When a few cities ignore the interrelationships and dependencies of land uses (e.g., jobs and houses too far apart) by pursuing fiscal land use policies, significant negative impacts on the quality of life for an entire county can result.

What fiscal policy is most appropriate for the County's urban unincorporated areas? Because there is not a lot of vacant land in urban areas, an effort should be made to plan for and attract the type of development on these parcels that will generate high tax revenues. On the other hand, established urban communities and neighborhoods should not be recommended for significant levels of redevelopment in order to achieve positive fiscal gains, because too many negative physical and social impacts would result, thereby compromising other countywide land use objectives. Overall, it seems reasonable that the County carefully determine through cost-revenue analyses the fiscal impacts of land use decisions when developing area plans or conducting land use studies with the objective of establishing a mix of land uses that would produce sufficient net tax revenues to pay for the costs of providing public

services and facilities. Such a balanced approach would lessen the potential of incurring public debt without sacrificing other significant land use objectives such as increasing housing opportunities.

2. Local Economies

When designating land in urban areas, the County also needs to be aware of the effects that its decisions will have on the local economy. If an area has specific economic objectives, the most appropriate type and amount of land uses must be identified and designated in order to achieve its goals. Areas where high unemployment exists usually seek the designation of more job generating land uses. And areas which lack commercial and professional services usually seek the designation of more commercial land. Areas where industry cannot find enough workers because of housing shortages usually look for the designation of ample supplies of residential land. The supply, location, and mix of land uses affects the overall economic well-being of a community.

In the County's unincorporated urban areas, the economic objectives of each area should be clearly articulated and understood. Urban communities, where a wider variety of land uses exist, function almost like independent cities and the health of their commercial and industrial tax bases are important to locally employed residents. In North Fair Oaks, for example, where social and economic problems exist, the land use plan must be concerned about meeting the overall economic development needs of the community. As identified in the North Fair Oaks Community Plan, more industries in the community need to be attracted and physically accommodated in order to employ more local residents and reduce the area's unemployment problem. And, because residents have to travel outside the area to gain many services, more businesses on commercial land need to be set up to serve the needs of the local rather than Countywide population.

In many incorporated urban neighborhoods, particularly those which are predominantly residential, considering the local economy is not important when making land use decisions. These areas often function as residential neighborhoods of adjacent cities, and land use planning in these areas has little impact on local economies.

On the other hand, several special areas are job generating and contribute to the economy of the County: San Francisco International Airport and Harbor Industrial area. Making future land use decisions about these areas may well affect the economic well-being of the entire County.

B. INFRASTRUCTURE

In designating land uses for urban unincorporated areas, the County must consider the availability of urban services such as roads, sewers and water service, which are necessary to support urban land uses. Coordination between the land use plan and urban services is crucial;

significant gaps between service capacity and service demand can result in unnecessary environmental degradation, overburdened services and undue expense.

The Wastewater, Water Supply and Transportation Chapters of the General Plan have documented that many urban service systems in San Mateo County are approaching capacity and in several areas are deficient. On the Coastside, development potential exceeds the capacity of the current water and wastewater treatment systems. On the Bayside and in the northern County, the ability of the wastewater systems to accommodate new development is limited in several areas. Treatment capacity for North Fair Oaks, Devonshire and unincorporated Colma is presently very limited. In Palomar Park and Country Club Park, the lack of sewers constrains new development.

The condition of physical improvements in urban unincorporated areas is a further consideration. In the past, the County has relied on development standards in the urban unincorporated areas that are different than those employed by contiguous cities. As a result, standard improvements such as curbs, gutters and sidewalks are often lacking in unincorporated areas. In some neighborhoods, particularly Emerald Lake Hills, Palomar Park and Devonshire, roads are rough, narrow and winding, often making it difficult for two cars to pass.

In general, however, the physical infrastructure in most urban communities, neighborhoods and special areas is already in place and can be easily improved or expanded. It is less costly to renovate or increase the capacity of existing systems than to build new ones. In areas where the physical infrastructure is in place, the County has the opportunity to pursue land use strategies which use existing services more efficiently. Infill development, increased urban densities and redevelopment or reuse of underutilized land are three strategies which can be used to direct new development to areas with urban services in place. The greatest potential for infill development, provided sewage capacity becomes available, is within the Montara-Moss Beach-El Granada community, while older areas on the Bayside, such as North Fair Oaks, provide the greatest potential for redevelopment. Increased urban densities are most readily accommodated in undeveloped urban areas which maintain large parcellation. Horgan Ranch and McLellan Nursery, for example, occupy urban locations close to major transportation corridors and employment centers, presenting an opportunity for higher density residential land uses. Conversion of floricultural uses at these locations may be warranted by the overwhelming demand for housing on the urban Bayside and the availability of agriculturally designated land in the rural areas of the County.

Annexation of urban unincorporated areas would also facilitate service efficiency. Most urban unincorporated lands lie within the urban service area of contiguous cities, yet they require services from the County which duplicate those of the cities. Such unincorporated areas could be more efficiently served by the adjoining cities.

C. NATURAL RESOURCES

1. Vegetative, Water, Fish and Wildlife Resources

Although much of the land in unincorporated urban communities, neighborhoods and special areas has been developed for urban uses, select urban areas contain sensitive habitats with resources that are irreplaceable and important in County ecological processes (see Map of Sensitive Habitats in Vegetative, Water, Fish and Wildlife Resources Chapter). Several sensitive habitats are located on vacant parcels surrounded by or adjacent to urban development, creating a potential conflict between protecting the sensitive habitat and designating land uses that are appropriate with the surrounding area. For example, a population of the endangered San Francisco Garter Snake resides on airport land adjoining Highway 101 and the City of San Bruno. Restricting uses to lower densities may afford better protection of the habitat; however, such uses would be incompatible with the surrounding land uses. In urban sensitive habitats, standards which govern practices such as the siting of improvements, removal of vegetation, grading, and site preparation could be used to mitigate the impacts of development on sensitive habitats.

2. Recreational Resources

Several parks and golf courses are located within the urban unincorporated areas. Aside from fulfilling recreational needs, these areas act as natural watershed lands and provide open space and visual relief from the surrounding urban landscapes. In addition, these recreational lands occupy prominent locations and have a great visual impact on the surrounding neighborhoods.

Most of these recreational lands represent substantial acreage which is served by, or has access to, urban services such as water, roads and sewers. As buildable land in the urban area becomes increasingly scarce, these lands may become attractive for urban development. Future land use designations for these lands must balance the need to provide urban land uses with the need for preserving recreational facilities.

3. Energy Resources

As discussed in the background section, most of San Mateo County's urban areas developed in the years following World War II, a time when land and energy resources were abundant and relatively inexpensive. As a result, a majority of the urban area developed into low density single use districts, a land use pattern which consumes more energy than compact development patterns. In terms of energy, lower density, homogeneous districts result in longer distances between residential, employment, shopping and other common destinations, creating a great dependence on private automobiles to reach each destination.

Although the County's land use patterns are well established, it is advantageous to pursue land use strategies which would result in a more compact and functionally integrated land use pattern. In urban

unincorporated areas such as Colma and North Fair Oaks, the potential exists to integrate land uses by mixing residential and commercial uses in existing commercial areas. These older commercial districts typically accommodate only commercial enterprises at street level. Adding higher density residential uses in these areas would foster housing opportunities located closer to employment, transit, commercial, cultural and recreational services. Such land use patterns would make travel easier by foot, bicycle or public transit, and reduce mileage traveled in automobiles. In addition, new residents in commercial areas can boost the economic vitality of the local businesses.

Many of the County's existing structures were likewise built without considering long-term energy costs. As a result, many County residents reside in buildings which are not energy efficient. New and existing buildings can, however, be adapted or designed to reduce substantially energy waste. Using a combination of conservation and solar technologies, the energy consumed within a structure can be reduced by 90% or more.[11]

D. HAZARDS

1. Natural Hazards

By nature of its geographic setting, San Mateo County is subject to a variety of natural hazards. Portions of the Mid-Coast, Burlingame Hills and Ladera are traversed by active and potentially active faults, while areas along the Bay and Ocean shoreline are subject to seismically induced wave action. Urban neighborhoods situated in the foothills of the Santa Cruz Mountains are exposed to landslide hazards, and several urban areas are subject to flooding (see Map of Natural Hazards in Chapter 15). Improper land uses and development activities can exaggerate the impacts of natural hazards, and this must be considered when determining appropriate land uses and densities for the urban area.

The County may respond to natural hazards by pursuing land use strategies which lower densities or limit population in hazard areas. On the Mid-Coast, for example, lower densities have been implemented in the Seal Cove area of Moss Beach, where residential development has occurred in areas traversed by the Seal Cove-San Gregorio fault system. These strategies reduce risks to life and property by minimizing the population and structural development exposed to hazards. Development standards which control construction practices as well as the siting and design of structures may also be used to minimize risks in hazard areas.

2. Man-Made Hazards

Residents and visitors of San Mateo County are also subject to hazards which are inherent to urban living: noise from machinery and transportation vehicles and potential exposure to hazardous materials, structures and activities. Such hazards are more prevalent in urban areas due to a concentration of people and activities. The spatial arrangement of land uses can intensify or reduce the risks of man-made hazards.

a. Noise

Residential districts within North Fair Oaks, Country Club Park, Colma, the Sequoia Tract and a portion of the Mid-Coast are exposed to noise levels which are unacceptable by current standards for residential uses. In these areas, the County may consider land use designations which are less noise sensitive, such as commercial or industrial uses. However, when distributing land uses, other variables must also be considered. The Housing Element has documented the overwhelming need for housing, particularly affordable housing which often is situated in areas of high noise exposure. Conversion of this housing stock to less noise sensitive uses would undermine stated housing objectives. Depending on the severity of the noise exposure, mitigation measures which moderate the effects of noise may be preferable to redesignation of land uses in such areas.

b. Hazardous Materials

The Man-Made Hazards Chapter identifies portions of North Fair Oaks and the Harbor Industrial Area as hazardous material concentration areas. In North Fair Oaks, and to a lesser extent in the Harbor Industrial area, industrial uses often adjoin residential uses. It may be advantageous to consider redesignating adjoining properties to more compatible land uses such as commercial, mixed use or open space, in order to provide a transitional "buffer area."

c. Airport Safety

The Man-Made Hazards Chapter also identifies a residentially designated area adjacent to the Half Moon Bay Airport which is unsuitable for homes because of airport safety reasons. Redesignation of these parcels to uses which limit the concentration of people, such as warehouses or open space, should be considered in future area plan update efforts.

E. LAND USE PATTERNS

1. Land Uses

The basis for appropriate land use designations can often be determined by considering the pattern of land use in existing urban unincorporated areas. In urban neighborhoods, such as Broadmoor, Burlingame Hills and the Highlands, the land use pattern is closely integrated with the pattern of contiguous cities. In these areas, a land use pattern which is compatible, identifiable and functionally integrated with contiguous cities could be encouraged. In contrast, urban communities generally appear and function as independent jurisdictions. In such areas, it would be beneficial to encourage land use patterns which strengthen the individual character of the community.

a. Residential Areas

Most unincorporated residential areas are characterized by a stable, well defined land use pattern, which supports primarily low density residential uses. Such areas generally maintain an environment protected from excessive crowding, noise and congestion and are thus very sensitive to adjoining land uses. Maintaining these qualities in residential areas is of great concern to neighborhood residents. Land use designations which guard against intrusion of incompatible land uses and preserve the established neighborhood character has therefore become the primary planning objective in existing single family residential districts.

Under certain conditions, single family districts can be complemented by more intense uses. For example, higher density residential uses and neighborhood commercial centers are situated along major thoroughfares within the Highlands/Baywood Park and West Menlo Park neighborhoods. This land use arrangement provides convenient commercial services and needed high density residential uses in a manner which does not significantly detract from surrounding low density residential districts.

b. Commercial Areas

Commercial districts in the urban unincorporated area are diverse in character. Most urban communities and neighborhoods contain commercial areas which primarily serve the needs of nearby residents, while commercial districts in areas such as Colma and North Fair Oaks serve a regional market. In addition, select commercial districts in the Montara-Moss Beach-El Granada community cater primarily to Coastside visitors. Neighborhood and visitor serving commercial uses generally benefit from pedestrian activity, whereas larger commercial uses rely more on customers making automobile trips to patronize a specific business.

Commercial districts are generally much less sensitive to adjoining land use patterns than are residential districts; depending on the nature of the use, commercial uses may be successfully integrated with a range of land uses. Higher density residential uses can work especially well with commercial uses. The potential benefits of this land use pattern are described in the Housing Element.

Mixing residential and commercial uses must be carefully considered, however. Many commercial uses are accompanied by undesirable externalities such as noise, dust, glare, increased congestion or the presence of hazardous materials. Such uses are clearly incompatible with residential uses. There is a further consideration. Mixed-use development generally results in increased density and congestion, making it inappropriate in areas with limited or inadequate public services.

c. Industrial Areas

Industrial uses have traditionally been the most noxious. Due to excessive noise, smoke, odor, dust and other associated hazards, industrial uses have typically been directed away from other uses, particularly residential. As discussed previously, some residential districts in urban unincorporated areas do adjoin industrial areas, creating the need for a transitional buffer area to protect the more sensitive residential uses.

Some industrial uses, however, can be compatible with residential and commercial uses. For example, many computer and electronics firms do not produce many of the adverse impacts associated with other industries. In addition, such firms are often well landscaped and assume a campuslike appearance. Integrating residential with these industrial uses would hold many of the benefits discussed previously and in the Housing Element.

d. Institutional Areas

Three institutional facilities of regional and national importance are located within the unincorporated area of San Mateo County: San Francisco International Airport, a portion of Stanford University and San Francisco Jail. These large institutional facilities have a significant influence over surrounding areas. Presently, land uses adjoining San Francisco Jail and Stanford University have been buffered from potential land use conflicts by a belt of open space. In contrast, many land use conflicts have developed around San Francisco International Airport. Each of these facilities presently maintains significant undeveloped acreage. Future plans for redevelopment or expansion of these institutional facilities could be encouraged, if compatible with adjacent land uses.

2. Development Standards

Elements of structural development such as building height, bulk, lot coverage and building site dimensions also contribute to urban land use patterns. The character and organization of a neighborhood or district is often defined by the size of its buildings and the arrangement of structures on building sites. In urban areas, it is desirable to foster land use patterns which are clear and coherent and can be easily "read" by residents and visitors. For example, land uses which are typically larger and more intense, such as industrial or high density residential uses, are generally most successfully accommodated on larger parcels. In addition, clustering larger buildings can create recognizable districts and provide orientation points for travelers. Locating such uses on smaller parcels in areas with predominantly low, fine scaled buildings disrupts the land use pattern and can create land use conflicts.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING URBAN LAND USE

A. FISCAL

The General Land Use Chapter has noted that Propositions 13 and 4 have provided the impetus for considering fiscal opportunities and constraints in land use planning. As most of the County's land use plans were prepared before the passage of these measures, fiscal opportunities and constraints were not considered.

B. ECONOMIC

Existing area plans which consider local economic objectives include the North Fair Oaks Community Plan and Local Coastal Program. The policies of the North Fair Oaks Plan promote a strong commercial and industrial base and encourage the location of industries which utilize the skills of the local residents. The Plan contains an implementation program which seeks to establish an economic development corporation within the community and continue local employment and training programs. The ability to implement these programs and the overall effectiveness of these policies, however, has been severely constrained by limited revenues. Local economic objectives are not as well developed in the Local Coastal Program. However, policies are included which provide for development of agriculture and coastal dependent land uses. These policies have been successfully implemented by the ordinances of the Planned Agriculture, Coastside Commercial and Marine Related Industrial zoning districts.

C. INFRASTRUCTURE

The critical need to coordinate public works and the land use plan has been most effectively addressed in the Coastal Zone. The Coastal Act allows the County to regulate the capacity of public facilities and further requires that their capacity be consistent with the growth projections included in the Land Use Plan of the Local Coastal Program. Outside of the Coastal Zone, the County has no authority to regulate the capacity of public facilities; however, existing area plans for Emerald Lake Hills, North Fair Oaks and San Bruno Mountain have been generally effective in directing development to areas with adequate services and permitting a level of development which is commensurate with the availability of public services.

The issue of utilizing existing services more efficiently has been adequately addressed by the infill policies of the Montara-Moss Beach-El Granada Community Plan, Emerald Lake Hills Community Plan and the Local Coastal Program. In the Coastal Zone, the designation of the urban-rural boundary was a key policy in encouraging urban infill. This boundary does not currently exist on the Bayside.

The recently adopted Second Unit Ordinance also promotes more efficient use of services by allowing higher densities in residential areas. As this ordinance has only been in effect for a short time, it is difficult to evaluate its success.

D. NATURAL RESOURCES

1. Vegetative, Water, Fish and Wildlife Resources

The need to preserve important vegetative, water, fish and wildlife resources in urban areas is most effectively addressed by the Local Coastal Program. Policies included in the Locating and Planning New Development Component encourage infill development in urban areas which do not contain sensitive habitats or prime agricultural soils. These policies further direct higher density urban development to areas where coastal resources would not be compromised. In addition, the Sensitive Habitats Component contains policies which regulate the type, density and location of land uses in sensitive habitats. Outside of the Coastal Zone, land use designations and allowable densities generally do not reflect the presence of sensitive habitats.

2. Recreational Resources

Area plans for the Mid-Coast, Emerald Lake Hills, San Bruno Mountain and North Fair Oaks have identified recreational opportunities within those areas of the County. The Mid-Coast Plan and the San Bruno Mountain General Plan Amendment have further designated acreage for public and private recreation. The North Fair Oaks and Emerald Lake Hills Community Plans do not designate recreational sites. They do, however, provide programs for the acquisition of parkland. To date, neither of these programs has been implemented.

The unincorporated golf courses are presently designated for institutional uses by the general plan. This designation is inconsistent with the current zoning, which allows residential development of each golf course.

3. Energy Resources

More efficient use of energy resources is addressed by the energy resolutions adopted by the Board of Supervisors. The resolutions provide more energy efficient development by encouraging new streets, parcels and buildings to meet guidelines for solar design and solar access. Planned unit developments (PUD's) are also encouraged to facilitate energy efficient clustered building arrangements. The energy resolutions further encourage retrofit of energy conservation measures for existing residential structures. Although the energy resolutions appear to be comprehensive, they are voluntary measures. In the absence of an implementing ordinance, it is difficult to successfully incorporate these measures into the development review process.

Several other County regulations indirectly favor energy conservation, including the Second Unit Ordinance, and policies contained in the Emerald Lake Hills Community Plan, Local Coastal Program, and the Montara-Moss Beach-El Granada Community Plan which encourage infill development and the clustering of structures.

E. HAZARDS

1. Natural Hazards

Several County plans, policies and regulations are aimed at protecting new development from natural hazards. The Montara-Moss Beach-El Granada Community Plan and the Hazards Component of the LCP contain policies which limit density and direct development away from areas with known hazards. In the Seal Cove area of Moss Beach, where geologic problems are especially pronounced, new development is subject to the requirements of the Geologic Hazards (GH) Zoning district. The GH district has been effective in reducing the densities and, therefore, the number of persons and structures exposed to geologic hazards in Seal Cove. The GH Ordinance also provides a disclosure procedure which adequately forewarns potential land owners of the hazards in the area.

Geologic hazards are also a primary planning concern in the Emerald Lake Hills neighborhood. The policies of the Emerald Lake Hills Community Plan seek to accommodate neighborhood growth in a manner which reflects the physical characteristics and limitations of the land. These policies are effectively implemented through the provisions of the Residential Hillside (RH) district. This district employs a flexible zoning technique, slope density zoning, to determine the appropriate density for a given site. The RH district also encourages clustered site plans to direct structural development to portions of a site which are most suited to construction.

Slope density regulations have also been adopted for Ladera. However, other hillside neighborhoods with similar slope conditions, such as Palomar Park, Devonshire and Highlands/Baywood Park, maintain fixed residential density standards.

2. Man-Made Hazards

a. Noise

The issue of noise/land use compatibility has not been thoroughly developed in existing area plans, nor have noise compatibility standards been formalized to regulate development within urban areas. Methods of noise control are assessed in the Man-Made Hazards Chapter.

b. Hazardous Materials

Many of the issues associated with hazardous materials have only been recently explored. As a result, existing County area plans and zoning ordinances do not directly respond to the consequences of hazardous materials in the urban area.

c. Airport Safety

Land uses and densities surrounding County airports are effectively regulated by the ALUC Airport Land Use Plan. The ALUC Plan designates approach zones which are recognized as areas of high accident potential. ALUC policy discourages structural development in these zones.

Lands surrounding the Half Moon Bay Airport are further protected from hazards associated with airport activities through the provisions of the Airport Overlay (A-O) district. Land uses in A-O districts are limited to those which attract no more than 10 persons per net acre. In addition, no structure or tree in excess of 36 feet may be erected or maintained in the district.

F. LAND USE PATTERNS

1. Area Plans

Several area plans have been adopted to guide the overall pattern of land use within a defined area. These plans have been generally effective in addressing land use compatibility issues of specific areas.

Existing policies contained within the Montara-Moss Beach-El Granada Community Plan have been adequate to address the land use pattern opportunities and constraints on the Mid-Coast. Existing policies provide for the separation of residential uses from visitor-serving commercial and industrial uses. The policies also encourage the preservation of the surrounding open space lands by directing urban growth to those areas which are subdivided, zoned for development and served by public facilities.

The policies of the Emerald Lake Hills Community Plan have been effective in encouraging a land use pattern which preserves the natural features of the area and responds to geologic constraints. This is accomplished through policies and regulations which limit residential densities in sloping areas and encourage clustering of new development.

North Fair Oaks has a large amount of industrial acreage, much of which is bordered by low density residential uses. The current policies of the North Fair Oaks Community Plan do not adequately address the conflicts which occur as a result of this land use pattern. The policies of the Plan support the existing pattern of land uses, but do not provide for buffering residential areas from the noise, dust smoke, odor and congestion common to industrial activities.

2. Urban Zoning Districts

The mixture of land uses allowed in residential, commercial and industrial districts is largely determined by urban zoning districts. The existing residential, commercial and industrial zoning districts have been generally effective in fostering a pattern of similar, compatible uses within each district. Almost by definition, these districts have been less successful in cultivating a land use pattern which supports a combination of compatible uses, although several existing zoning districts allow combinations of residential and commercial uses. In these districts, a mixture of uses is allowed, but there is no real incentive to provide them. Residential uses, for example, are often not economically feasible to build or maintain in commercial districts. If, however, the zoning ordinance provides incentives such as density bonuses or required floor area ratios, providing residential uses in commercial areas may become more practicable.

3. Land Use Planning at San Francisco International Airport

Under current State law, San Mateo County's land use regulations have limited influence over San Francisco International Airport. Because of this lack of local jurisdiction, there is no formal mechanism, other than CEQA and the Airport Land Use Planning law, for the airport to submit development plans to local communities which are most impacted by airport operations.

G. SUMMARY OF PROBLEMS

1. County land use plans and policies do not presently address fiscal opportunities and constraints.

2. Economic objectives for urban communities have not been fully developed.

3. Existing County plans and policies seek to maximize service efficiency primarily through measures which encourage urban infill. Other techniques, such as mixed use development, could be explored.

4. There are presently no land use policies which address sensitive habitats in urban areas outside of the Coastal Zone.

5. The energy resolutions adopted by the Board of Supervisors are voluntary and are not adequately integrated into the development review process.

6. Land use regulations for golf courses in unincorporated areas are inconsistent.

7. County policies and regulations which guide development in identified geologic hazard areas are effective. There is a need, however, to extend these regulations to additional areas.

8. Existing County land use policy does not adequately address hazardous material issues.

9. There are presently no policies which provide for buffering of land uses in areas where land use conflicts are prevalent.

10. County policies and regulations also do not encourage integrated development patterns.

IV. ALTERNATIVES

A. MAINTAIN EXISTING PLANS, POLICIES AND REGULATIONS

The County may consider maintaining present land use strategies included in existing General Plan and other documents. As discussed in the previous section, existing General Plan policy adequately directs urban development to those areas which have sufficient public services and are relatively free of hazardous conditions. As much of the development in urban areas is limited to infilling "skipped over" vacant parcels, the policies contained within existing General Plan documents are generally adequate to accommodate new development in a manner which is compatible with existing development.

The primary disadvantage to this approach is efficiency. Continuing the present level of development in some urban areas would not maximize the County's housing opportunities. In addition, present levels of development would not utilize existing public facilities as efficiently as possible, nor encourage energy efficient land use patterns.

B. MODIFY EXISTING PLANS AND POLICIES TO ALLOW A GREATER LEVEL OF DEVELOPMENT

This alternative represents a more intensive level of development in all urban unincorporated areas. The basic advantage to such an alternative would be an increased availability of housing in relatively central locations. A more intensive level of development would also encourage energy and service efficiency and, when development is near commercial centers, promote economic activity.

Many of the vacant parcels in urban areas, however, have remained undeveloped because significant constraints to development accompany these lands. Steep hillsides, inadequate public services and the existence of sensitive habitats hinder development potential in several areas. Increasing densities where these conditions exist would increase exposure to natural hazards and impair sensitive habitats. In addition, a substantial investment would often be necessary to overcome service limitations.

In underdeveloped urban areas, an increased level of development is often constrained by the small lot size and multiple ownership patterns established by the original subdivisions. Much of North Fair Oaks, for

example, has been subdivided and developed as 5,000 square foot single family lots. Higher density uses would require merging several of these smaller lots.

C. MODIFY EXISTING PLANS AND POLICIES TO ALLOW A REDUCED LEVEL OF DEVELOPMENT

Another alternative would be to lower the intensity of development presently allowed by existing plans and policies. This strategy would be a most effective means to reduce risks to life and property in hazardous areas and protect environmentally sensitive areas. Such an alternative would, however, hinder housing opportunities and generally discourage energy and service efficient land use patterns.

URBAN LAND USE FOOTNOTES

[1] Development of new residential units on the Mid-coast is limited to 125 units per year by the LCP.

[2] California Government Code, Section 53090.

[3] Martin-Carpenter Associates, Environmental Inventory for the Guadalupe Valley Quarry (Owl and Buckeye Canyon) Planned Development Plan/Specific Plan San Mateo County, California, February 1984, p. 7.

[4] Quarry termination date established by the San Mateo County Board of Supervisors, February, 1983.

[5] Martin-Carpenter Associates, Phased Development Plan/Specific Plan for the Guadalupe Valley Quarry, Owl Canyon and Buckeye Canyon, March 1984, p. 11.

[6] California Government Code, Section 51235.

[7] Stanford University Planning Office, Stanford Land Use Plan, December 1980.

[8] Ibid., p. 4.

[9] Ibid., p. 9.

[10] Ibid., p. 13.

[11] Solar Energy Research Institute, Report on Building a Sustainable Future, Volume I, April 1981.

URBAN LAND USE APPENDICES

APPENDIX A - COMBINING DISTRICT STANDARDS

APPENDIX B - SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX C - TOPICS FOR FUTURE CONSIDERATION

APPENDIX A

COMBINING DISTRICT STANDARDS

DISTRICT	MINIMUM BUILDING SITE AVERAGE WIDTH (Ft.)	MINIMUM (Area)	MINIMUM LOT AREA PER DWELLING UNIT	MINIMUM YARDS REQUIRED FRONT (Ft.)	SIDE (Ft.)	REAR (Ft.)	MAXIMUM HEIGHT PERMITTED Stories	Ft.	MAXIMUM COVERAGE PERMITTED (%)
S-1	50	5,000 sq. ft.	500 sq. ft.	20	5	20	3	36	50
S-2	50	5,000 sq. ft.	1,000 sq. ft.	20	5	20	3	36	50
S-3	50	5,000 sq. ft.	1,250 sq. ft.	20	5	20	3	36	50
S-4	50	5,000 sq. ft.	1,650 sq. ft.	20	5	20	3	36	50
S-5	50	5,000 sq. ft.	2,500 sq. ft.	20	5	20	3	36	50
S-6	50	5,000 sq. ft.	3,500 sq. ft.	20	5	20	3	36	50
S-7	50	5,000 sq. ft.	5,000 sq. ft.	20	5	20	3	36	50
S-8	50	7,500 sq. ft.	7,500 sq. ft.	20	5	20	3	36	40
S-9	50	10,000 sq. ft.	10,000 sq. ft.	20	10	20	3	36	30
S-10	75	20,000 sq. ft.	20,000 sq. ft.	20	10	20	3	36	25
S-11	100	1-5 acres[1]	1-5 acres[1]	50	20	20	3	36	15
S-12	175	2.5-5 acres[1]	2.5-5 acres[1]	50	20	20	3	36	10
S-13	250	5 acres	5 acres	50	20	20	3	36	10
S-14	350	10 acres	10 acres	50	20	20	3	36	10
S-15	500	20 acres	20 acres	50	20	10	3	36	10
S-16	700	40 acres	40 acres	50	20	20	3	36	10
S-17	50	5,000 sq. ft.	5,000 sq. ft.	20	5-15[2]	20	N/A	28	35/50[3]
S-18	N/A	12,000-90,000[1] sq. ft.	12,000-90,000[1] sq. ft.	20	7.5-12.5[4]	20	N/A	24	30

APPENDIX A (continued)

COMBINING DISTRICT STANDARDS

DISTRICT	MINIMUM BUILDING SITE AVERAGE WIDTH (Ft.)	MINIMUM (Area)	MINIMUM LOT AREA PER DWELLING UNIT	MINIMUM YARDS REQUIRED FRONT (Ft.)	SIDE (Ft.)	REAR (Ft.)	MAXIMUM HEIGHT PERMITTED Stories	Ft.	MAXIMUM COVERAGE PERMITTED (%)
SS-103	N/A	14,000 sq. ft.	14,000 sq. ft.	25	10	25	2.5	35	N/A
SS-104	50	8,000-16,000[1] sq. ft.	8,000-16,000[1] sq. ft.	25[5]	8	20	2.5	35	
SS-107	N/A	5 acres	5 acres	50	50	20	N/A	N/A	N/A
SS-110	25	16,000 sq. ft.	--	0	0	15	3	36	N/A

Maximum coverage limitations shall apply to all structures except:

(a) structures in C, H, M, or P Districts in which there are no dwelling facilities.

(b) greenhouses, lathhouses, or other structures used exclusively for flower growing.

Notes: N/A = Not Applicable.

1. Required minimum standard is determined by slope.
2. Side yard setbacks vary with the height of the structure, zero side yard setbacks allowed under some conditions.
3. Lot coverage is determined by the height of the structure.
4. A combined side yard setback of 20 feet is required with a minimum setback on any side of 7.5 feet.
5. Twenty-five (25) feet for residences--15 feet for attached garages.

Source: San Mateo County Zoning Regulations.

APPENDIX B

SUPPLEMENTAL BACKGROUND INFORMATION

1. In response to a request by the City of Brisbane, the following paragraph replaces the first paragraph on page 8.18 under:

   b. Development Potential:

   Under current regulations, the Guadalupe Valley Quarry is scheduled to terminate mining operations by December 31, 1992.[4] At this time, the quarry floor, consisting of buildable pads, roads and intervening slopes, will measure approximately 40 acres. Of this total, nearly 30 acres are ultimately planned for light industrial development.[5]

2. In response to a request by the San Mateo County Board of Supervisors on September 17, 1985, the following background data is added to the Urban Land Use Chapter on page 8.22 as a new paragraph following the discussion under:

   b. Emerald Lake Hills Community Plan (1977)

   The Land Use designations adopted in the Emerald Lake Hills Community Plan provide a generalized indication of the densities permitted. The designations are not intended to be parcel specific. Rather, implementation through the Residential Hillside district regulations are used to determine specific density on a parcel by parcel basis.

APPENDIX C

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Urban Land Use Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

1. Evaluate, as soon as possible, the adequacy of public services (especially local parks) to accommodate buildout of the Montara-Moss Beach-El Granada communities (LCP).

2. Investigate methods of preserving existing greenbelt areas which (1) separate Montara, Moss Beach and El Granada, and (2) preserve views of the coast and hills (LCP).

3. Evaluate circulation, jurisdictional and land use compatibility problems surrounding the following areas (LCP):

   a. Pillar Point Harbor
   b. Surfers Beach
   c. The breakwater (City of Half Moon Bay)

4. In developing an area plan for Stanford lands, consider a policy direction which directs higher intensity uses to the central campus and provides for orderly growth outward from the central core.

5. During the zoning ordinance revision, consider allowing churches in industrial districts.

9

Rural Land Use

Background ▪ Issues

RURAL LAND USE BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

The Rural Land Use Chapter focuses on the existing and potential use of land in the unincorporated rural portion of the County generally west of Interstate 280 and south of the City of Pacifica. (The more densely populated unincorporated coastal communities of Montara, Moss Beach, and El Granada are analyzed in the Urban Land Use Chapter even though they are located west of I-280.) For purposes of analysis, the rural lands are divided into three broad categories: Rural Service Centers, Rural Subdivisions, and Rural Lands.

This Chapter provides a background discussion of the present pattern of land uses and the historic, geographic, demographic, and economic forces that have created and continue to influence the rural areas. The Chapter includes an analysis of the demand for new development, the trends of the conversion of rural lands to different uses, the existing policies and regulations that affect rural land use, and the amount of new development allowed by existing zoning. A map of the existing use of the rural lands is also included. The factors which affect land use in the rural area are analyzed, focusing primarily on fiscal and economic considerations, the availability of infrastructure, the presence of valuable natural resources, the numerous natural hazards of the area, and existing land use patterns. The Issues section also discusses the adequacy of existing regulations. A proposed land use map is included as part of a set of policies that will guide the County's future rural land use decisions.

B. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

The existing General Plan documents most closely related to the Rural Land Use Chapter are the County's two area plans for the rural area, the Local Coastal Program (LCP), adopted in 1980, and the Skyline Area General Plan Amendment, adopted in 1983. These documents will continue to function as area plans. Land use designations and policies from these documents are used in this Chapter in the formulation of more general land use policies for the entire rural area.

Other existing General Plan elements provided background information on the natural hazards and resources of the rural area (Seismic and Safety Element, Conservation and Open Space Element), existing and future park and open space lands (Parks and Recreation Element), and the history of the development of the rural lands (Historic Resources Element).

2. Other Chapters of the General Plan Update

The designation of land uses in this Chapter reflects the opportunities and constraints identified in other chapters of the General Plan. Thus, the geologic, fire, and flooding hazards identified in the Natural Hazards Chapter, valuable resources identified in the Vegetative, Water, Fish and Wildlife Chapter, valuable soils for agriculture and timber identified in the Soils Chapter, special mineral resources identified in the Mineral Resources Chapter, and availability of infrastructure (Water, Wastewater, and Transportation Chapters) are all considered in the proposed rural land use designations.

II. INVENTORY OF EXISTING RURAL LAND USE

The existing land use pattern is indicated on the Existing Rural Land Use map at a scale of 1 inch to 4,000 feet. Table 9.1 describes the existing land use categories found on this map. A number of data sources were used during its preparation in order to obtain the most accurate picture of land use.[1]

A. RURAL SERVICE CENTERS

1. Inventory

San Mateo County has three small, somewhat isolated rural communities that have permanent residents but also provide important services to the residents and workers of the surrounding agricultural, timber production, and recreational lands of the rural area. These have been described in past planning efforts as rural service centers. San Gregorio and Pescadero, located just east of State Highway 1 in the Coastal Zone, provide services to the predominantly agricultural and recreational economy of the South Coast. La Honda is located in the Santa Cruz Mountains. Generally, the services in La Honda are not as oriented to agricultural or recreational activities as Pescadero or San Gregorio. Instead, La Honda is home to approximately twice as many permanent residents, many of whom commute to jobs in the urban Bayside.[2] La Honda also provides services to employees of and visitors to the local park areas and the surrounding timber industry. The locations of San Gregorio, Pescadero and La Honda are indicated on the Existing Rural Land Use map.

a. San Gregorio

San Gregorio was founded in 1854 as a service center catering to the needs of local farmers. Later, when more visitors came to the area because of the stagecoach trade between the Coast and the Bayside, the San Gregorio House, a small hotel, opened and became the nucleus of the village. It became a popular resort for San Franciscans during the 1880's and 1890's. The community began a general decline in the 1920's when the new Coast Highway bypassed it by a mile to the west. The San Gregorio House is still standing, although now in use

9.1M

SAN MATEO COUNTY GENERAL PLAN

EXISTING RURAL LAND USE

- RESIDENTIAL
- COMMERCIAL
- PUBLIC RECREATION
- PRIVATE RECREATION
- AGRICULTURE – CULTIVATED LANDS
- AGRICULTURE – GRAZING LANDS
- TIMBER PRODUCTION
- INSTITUTIONAL
- SOLID WASTE DISPOSAL FACILITIES
- QUARRIES
- OS GENERAL OPEN SPACE

0 4000 8000 16000 32,000 FEET

99 320ac

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SAN FRANCISCO BAY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

BRISBANE
SIERRA POINT
OYSTER POINT
SOUTH SAN FRANCISCO
POINT SAN BRUNO
PACIFICA
MUSSEL ROCK
MORI POINT
POINT SAN PEDRO
MONTARA POINT
PILLAR POINT
COYOTE POINT
FOSTER CITY
HILLSBOROUGH
BELMONT
SAN CARLOS
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
MENLO PARK
WOODSIDE
PORTOLA VALLEY
KEEL ROCK
SEAL ROCK
MUSSEL ROCK
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
ANO NUEVO POINT
OS

9.2M

SAN MATEO COUNTY GENERAL PLAN

RURAL LAND USE

- VERY LOW DENSITY RESIDENTIAL (0.0 - 0.2 du/ac)
- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- GENERAL COMMERCIAL
- INSTITUTIONAL
- PUBLIC RECREATION
- PRIVATE RECREATION
- OS GENERAL OPEN SPACE
- AGRICULTURE
- TIMBER PRODUCTION
- ADOPTED AREA PLAN BOUNDARY
- ★ SEE RURAL SERVICE CENTER MAP

0 4000 8000 16000 32,000 FEET

99 320ac.

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SAN FRANCISCO BAY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

LOCAL COASTAL PROGRAM AREA PLAN (Adopted 1980)

SKYLINE GENERAL PLAN AMENDMENT (Adopted 1983)

OS

LOCAL COASTAL PROGRAM AREA PLAN (Adopted 1980)

SKYLINE GENERAL PLAN AMENDMENT (Adopted 1983)

URBAN/RURAL BOUNDARY

SAN GREGORIO

PACIFIC OCEAN

OS

AG

TP

COASTAL ZONE BOUNDARY

REDWOOD TERRACE

LA HONDA

ALPINE CREEK TRACT

LA HONDA/ REDWOOD PROPERTIES

PESCADERO CREEK PARK SUBDIVISION

GUTHRIE SUBDIVISION

LOMA MAR

PESCADERO

DEARBORN PARK

BUTANO FALLS

RURAL SERVICE CENTERS

SAN MATEO COUNTY GENERAL PLAN

LAND USE

- LOW DENSITY RESIDENTIAL (0.3 - 2.3 du/ac)
- MEDIUM LOW DENSITY RESIDENTIAL (2.4 - 6.0 du/ac)
- MEDIUM DENSITY RESIDENTIAL (6.1 - 8.7 du/ac)
- NEIGHBORHOOD COMMERCIAL
- GENERAL COMMERCIAL
- PUBLIC RECREATION
- INSTITUTIONAL
- TP TIMBER PRODUCTION
- AG AGRICULTURE
- OS GENERAL OPEN SPACE

1 9 30 acres

0 1000 2000 4000 10,000 FEET

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9.3M

TABLE 9.1

EXPLANATION OF EXISTING RURAL LAND USE CATEGORIES

LAND USE CATEGORY	DESCRIPTION
Residential	Parcels which are: (1) Generally developed with residences on parcels 5 acres or smaller in size. (2) Located in areas which are primarily developed for residential purposes. (3) Assembled in aggregations that are large enough to be considered more than simple clusters of rural development adjacent to agriculture or other uses.
Commercial	Any category of commercial uses including but not limited to retail, auto related businesses, storage facilities, offices, and small neighborhood shopping areas.
Agricultural: Cultivated Lands	Lands which are currently under cultivation, including both irrigated and non-irrigated croplands and pastures, orchards, groves, vineyards, ornamental horticultural areas, greenhouses, confined feeding operations and other agricultural lands.
Agricultural: Grazing Lands	Lands which are currently being grazed by livestock, or which contain vegetative material that is suitable for the grazing or browsing of livestock.
Timber Production	Lands which are actively being harvested for timber or are in production as Christmas tree farms or wood fuel harvesting operations.
Public Recreation	Lands owned or managed by the County Parks and Recreation Department, the State of California parks system, the Midpeninsula Regional Open Space District, or the U. S. Government that are specifically intended for public recreation use.
Private Recreation	Lands owned or managed by churches, YMCA's, Scouts, or other private organizations that are used for camps, private beaches, golf courses, stables, and other recreational uses.

TABLE 9.1 (continued)

EXPLANATION OF EXISTING RURAL LAND USE CATEGORIES

LAND USE CATEGORY	DESCRIPTION
Institutional	Lands developed with schools, fire stations, churches, cemeteries, educational and rehabilitative facilities, and other public buildings.
Solid Waste Disposal Facilities	Lands developed with sanitary landfill sites.
Quarries	Lands presently in use for large scale mineral operations.
General Open Space	Lands in very low density residential use, in use for the managed production of resources, hazardous for development, or owned by private parties specifically for watershed or other resource protection.

Source: San Mateo County Planning Division

as a private residence, and the community's general store provides services for nearby farmers and the many visitors to the coastal parks and beaches.

b. Pescadero

The rich soils in the alluvial plain of Pescadero Creek attracted the first house in what is now Pescadero. From the 1860's until the turn of the century, Pescadero also prospered as a resort community, attracting vacationers to nearby beaches and fishermen to Pescadero Creek. The community now has approximately 400 year-round residents and retains the distinctive, New England style of architecture that makes it a unique visual and cultural resource in the South Coast. It provides a service base for the surrounding agricultural lands, as well as a focal point for visitors to the state beaches in the area.

c. La Honda

As logging on the eastern slope of the Santa Cruz Mountains slowly depleted the best timberlands, the dense redwood forests that cover the western slope attracted the first settlers to the La Honda area. In the early 1860's, John Sears built a store near La Honda Creek to serve the small logging settlements in the region. This store, known as the La Honda Store, served as a stagecoach stop between Redwood City and San Gregorio. As logging diminished in the La Honda vicinity, the surrounding area began to be subdivided for summer cabins. Many of these early vacation cabins now are occupied by year-round residents.

2. Current Land Use Pattern and Zoning

a. San Gregorio

The amount of land within the San Gregorio rural service center boundary is minimal, amounting to only 13.5 acres. Some of this land is vacant or in agricultural use. The rest is in neighborhood commercial and low density residential uses, reflecting the presence of the San Gregorio General Store and a few single family homes that comprise the small hamlet. As the Existing Rural Land Use map indicates, San Gregorio is surrounded on all sides by agricultural land.

Current zoning within San Gregorio's rural service center boundary is R-1/S-10/DR (One Family Residential, 20,000 square-foot minimum parcels, subject to Design Review), or C-1/S-7/DR (Neighborhood Commercial, 5,000 square-foot minimum parcels, subject to Design Review). The current zoning would allow a buildout of seven residential units (existing plus new). There is presently no vacant land zoned for commercial use. Table 9.2 summarizes the residential and commercial buildout for the three rural service centers.

TABLE 9.2

EXISTING AND POTENTIAL DEVELOPMENT ALLOWED BY ZONING
IN RURAL SERVICE CENTERS
1984

RURAL SERVICE CENTER	TOTAL ACREAGE	RESIDENTIAL ACREAGE	EXISTING DWELLING UNITS	DWELLING UNITS AT BUILDOUT[1]	DEVELOPED COMMERCIAL ACREAGE	VACANT COMMERCIAL ACREAGE
San Gregorio	13.5	4.1	3	7	9.4	0
Pescadero	64.5	50.0	47	67	11.5	3.0
La Honda	251.0	234.0	278	368	7.0	0.3
TOTALS	329.0	288.1	328	442	27.9	3.3

Source: San Mateo County Planning Division

Note: 1. Dwelling units at buildout is determined by adding existing dwelling units with the additional units allowed by the existing zoning, assuming the full development and subdivision of vacant parcel or the subdivision of developed parcels. Although residential uses are also allowed in commercial zoning districts, it was assumed that any vacant parcel in commercial districts would be developed with commercial uses.

b. Pescadero

There is significantly more acreage included within the Pescadero rural service center. There is also a greater diversity of land uses, ranging from medium low and medium high density residential uses, to neighborhood commercial, agricultural and institutional uses. Development generally spreads out from the axis formed by the intersection of Pescadero and Stage Roads, the historical crossroads of two major stagecoach routes.

Current zoning within Pescadero's rural service center boundaries includes two residential zoning districts, R-1/S-10/DR and R-1/S-7/DR. The S-7 combining district allows parcel sizes as low as 5,000 square feet, which is considerably higher in density than the 20,000 square-foot minimum required by the S-10 combining zone. Existing neighborhood commercial uses are zoned C-1/S-7/DR, the same category applied to similar uses in San Gregorio.

Pescadero Creek, a large perennial stream, flows through the community. Unfortunately, the founders of Pescadero were not aware that the site they chose for their community is almost entirely located within the floodway of this creek, and a significant amount of residential development has occurred within the flood plain over the years. This problem is discussed in more detail in the Natural Hazards Chapter, but it does have land use implications.

Current zoning in Pescadero would allow a buildout of 67 residential units, and there are 3 vacant acres available for commercial development.

c. La Honda

The La Honda rural service center is larger than both San Gregorio and Pescadero combined, and also contains a variety of land uses. Along Route 84, there are a number of small neighborhood commercial uses that serve the community and the surrounding area and highway commercial uses that serve traffic headed to and from the Coastal Zone and nearby parks. The residential portion of La Honda is primarily located on the east side of Route 84 at Entrada Way. This area gently slopes upward to the east and is developed at medium low residential density. In the center of the subdivision are private recreation lands developed with a swimming pool, a clubhouse facility and a maintenance yard. There is also a pond which collects runoff from the subdivision and serves as backup water supply for fire protection. The La Honda community is also traversed by a perennial stream, La Honda Creek, and portions of the community are located within its floodplain.

Current zoning within La Honda is either R-1/S-10 (20,000 square foot minimum parcels) or R-1/S-11 (5-acre minimum, dependent on slope), to reflect the septic system constraints that are present in different portions of the subdivision. The commercial areas

fronting Route 84 are zoned H-1/S-10 or H-1/S-11 (limited highway frontage, with minimum parcel sizes of 20,000 square feet and 5 acres). The H-1 zoning district allows a variety of commercial uses oriented to highway traffic. The private open space lands are zoned COSC (Community Open Space Conservation), reflecting their recreational and institutional uses. Current zoning would allow a build-out of 368 dwelling units. There are only .3 acres of vacant commercial land.

3. Demand for New Development in Rural Service Centers

There is a need for new housing, both in the County and in the Bay Area as a whole, as documented in the County's Housing Element,[3] and for visitor-serving commercial facilities in the Coastal Zone, as documented in the LCP.[4] The need for housing is a regional problem that has been created as much by large increases in new employment in Santa Clara County and San Francisco without a corresponding increase in the supply of housing, as by increases in San Mateo County itself.[5] However, there has been relatively little employment growth in the coastal and mountainous areas, and only a small number of housing units actually constructed in these areas.[6]

In the South Coast, the amount of land converted to residential use has been lower than in the Mid-Coast, due primarily to remoteness from Bayside employment centers. However, as documented in the LCP, the South Coast has a clear need for more housing, particularly for smaller units and for farm worker housing.[7] There is also a smaller need for housing to serve local employees in coastal recreation-oriented industries such as restaurants and retail shops. The actual number of units constructed in the South Coast, however, has been low, primarily due to the constraints of providing adequate water supply and sewage disposal and the continuing demand for much of the land to remain in agricultural production.

Although Pescadero and San Gregorio are not in great demand as sites for new housing, a significant increase in the number of visitors passing through them to the coastal beaches is expected. The County's Parks and Recreation Element has projected that the demand for certain County park uses will exceed capacity during the 1980's[8], and that steps need to be taken to correct these deficiencies. The State's Park and Recreation Information System (PARIS) indicates that tremendous pressures on coastal beaches from weekend and summer visitors will continue and proposes to focus future funding on campsites and recreational parking facilities on the Coast where the demand is most intense.[9] The demand for recreational facilities will also result in increasing demand for visitor-serving commercial facilities in the Coastal Zone.

Although many La Honda residents commute to jobs in the Bayside, there have been few new dwellings constructed in the La Honda rural service center since 1980, due primarily to the small parcel sizes and the constraints of providing adequate water supplies and sewage disposal. La Honda may also experience an increase in demand for visitor-serving

facilities as the County implements its master plans for each of the parks in the vicinity (which are now primarily in a wilderness state), allowing for more campers and day visitors. The County Parks Department expects significant increases in traffic on La Honda, Pescadero and Alpine Roads when the park development master plans for Memorial, Sam McDonald and Pescadero Creek Parks are implemented.[10] Such an increase in traffic could stimulate the commercial development of remaining highway commercial lands and possibly increase the intensity of development of existing commercial facilities.

B. RURAL SUBDIVISIONS

1. Inventory

There are 21 subdivided areas in the rural portion of San Mateo County. Subdivided areas are aggregations of parcels of five acres or less, either as the result of one action or a pattern of subdivisions that has occurred over time. Most of these subdivided areas were created between 1900 and 1930, primarily to provide weekend and vacation homes for residents of more urbanized portions of the Bay Area. Today, most of these vacation cabins have become homes for permanent residents, many of whom commute to employment centers in the Bayside.

Table 9.3 lists the rural subdivisions of San Mateo County, the existing land uses and zoning, the number of existing dwelling units and potential buildout allowed by present zoning in each. The general location of the areas is indicated on the Existing Rural Land Use map. For purposes of analysis, the rural subdivisions can be divided into four broad subareas: (1) the eastern slope of the Santa Cruz Mountains, which will be referred to as East of Skyline Boulevard; (2) the vicinity of Skyline Boulevard, which will be referred to as the Skyline Area (including the Middleton Tract, which is somewhat remote from Skyline Boulevard, but uses it for primary access); (3) the vicinity of the La Honda rural service center, including the Loma Mar Subdivision, which is somewhat isolated and autonomous, which will be referred to as the La Honda-Loma Mar Area; and (4) the rural portion of the Coastal Zone, which will be referred to as the Coastal Zone.

a. East of Skyline Boulevard Subdivisions

As the pattern of urban growth expanded into the foothill areas, a number of small clusters of residential development began to encroach on the eastern slope of the Santa Cruz Mountains. The first of these, Los Trancos Woods (1929), was originally developed as a cluster of summer cabins used by residents of more urbanized portions of the Bay Area. Like other rural subdivided areas, this area now hosts permanent residents.

Bear Gulch Road-East was originally a logging road that served the large holdings of a lumber company. As the commercially valuable timber was exhausted, the company eventually subdivided its holdings and sold them to private parties. Incremental development of individual single family homes has occurred in the area since then.

TABLE 9.3

RURAL SUBDIVISIONS IN SAN MATEO COUNTY
1984

SUBDIVISION	EXISTING DWELLING UNITS[1]	NUMBER OF ADDITIONAL DWELLINGS ALLOWED BY CURRENT ZONING[2]	DWELLING UNITS AT BUILDOUT TO CURRENT ZONING	CURRENT LAND USES	CURRENT ZONING DESIGNATIONS
EAST OF SKYLINE BOULEVARD					
Los Trancos Woods	90	80	170	Single Family Residential	R-1/S-8
Vista Verde	124	126	250	Single Family Residential General Open Space	R-E/S-11 R-1/S-10 R-1/S-8, RM[3]
Bear Gulch Road - East	5	28	33	Single Family Residential General Open Space	RM
Subtotal	219	234	453		
SKYLINE AREA					
Quail Lane	21	12	33	Single Family Residential Highway Commercial	H-1/S-11, RM
Sierra Morena Woods	88	116	204	Single Family Residential Highway Commercial	R-1/S-10 R-1/S-11 R-E/S-11 H-1/S-11
Redwood Park	60	20	80	Single Family Residential County Park	R-1/S-10, RM
Kings Mountain Park	26	47	73	Single Family Residential	R-1/S-11 R-3/S-11
Sky Ranch Estates	14	1	15	Single Family Residential	R-1/S-11
Skylonda	139	53	192	Single Family Residential	R-1/S-10 R-E/S-10
La Honda Vista	18	18	36	Single Family Residential	R-E/S-11 R-1/S-11
Heacox Road	9	9	18	Single Family Residential Agriculture	RM
Middle Tract	33	30	63	Single Family Residential Agriculture Private Utilities	RM
Subtotal	408	306	714		

TABLE 9.3 (continued)

RURAL SUBDIVISIONS IN SAN MATEO COUNTY
1984

SUBDIVISION	EXISTING DWELLING UNITS[1]	NUMBER OF ADDITIONAL DWELLINGS ALLOWED BY CURRENT ZONING[2]	DWELLING UNITS AT BUILDOUT TO CURRENT ZONING	CURRENT LAND USES	CURRENT ZONING DESIGNATIONS
LA HONDA /LOMA MAR AREA					
Alpine Creek Tract	29	0	29	Single Family Residential Open Space	R-1/S-11, RM
La Honda/Redwood Prop.	25	2	27	Single Family Residential Highway Commercial	R-1/S-11, RM
Redwood Terrace	22	5	27	Single Family Residential	R-1/S-10
Loma Mar	29	18	47	Single Family Residential Highway Commercial	R-1/S-10 H-1/S-10
Pescadero Creek Park Subdiv.	4	2	6	Single Family Residential	R-1/S-10
Guthrie Subdivision	13	5	18	Single Family Residential	R-1/S-10
Subtotal	122	32	154		
COASTAL ZONE					
Dearborn Park	30	247	277	Single Family Residential Agriculture	R-1/S-7 R-1/S-8 R-1/S-9
Butano Falls	77	69	146	Single Family Residential Private Utility	R-1/S-10 TPZ/CZ
Portola Heights	18	154	172	Very Low Density Residential	RM/CZ
Subtotal	125	470	595		
TOTALS	874	1,042	1,916		

Source: San Mateo County Planning Division

TABLE 9.3 (continued)

RURAL SUBDIVISIONS IN SAN MATEO COUNTY
1984

Notes:

1. Existing dwelling units were determined by review of County Assessor's records. Those parcels that were assigned a residential use code and indicated a substantial assessed value for improvements were counted as dwelling units. These counts were confirmed by windshield survey where possible.

2. The number of additional dwelling units allowed by current zoning was determined by two methods. In the Skyline and the La Honda-Loma Mar Subdivisions, the data from the Skyline Area General Plan Amendment was used. This data includes an analysis of the buildout that could take place if merger of substandard lots is pursued. The buildout for the remaining areas was determined by analyzing the number of dwelling units allowed assuming development of all vacant parcels and subdivision of all parcels to densities allowed by existing zoning. The more complex merger analysis was not pursued for these areas, so the buildout estimates are probably higher than what would actually occur.

3. If a vacant parcel in any rural subdivision is zoned RM, it is assumed that the minimum parcel size for any land division in the RM district is five acres. Similarly, if a parcel zoned RM is already developed, it is assumed that it has no additional development potential.

Vista Verde was the most recently subdivided area (mid-1960's), but it has had the most development problems. Unfortunately, many homes were seriously damaged by unstable soils and landslide conditions common to the area. The San Andreas Fault passes nearby, providing further geotechnical constraints.

b. Skyline Area Subdivisions

During the decades in which the San Francisco Peninsula was settled, several roads and logging trails were built to cross and follow the Skyline ridge. Not until the 1920's was a route running the length of the County constructed in the rugged hills. Following the construction of Skyline Boulevard, the whole area was made more accessible. Many areas along Skyline Boulevard were subdivided between 1908 and 1928. These include Sierra Morena Woods (1922), Redwood Park (1908), Kings Mountain Park (1928), and Skylonda (1928). These subdivisions were first used as vacation homes, but attracted more and more permanent residents in the 1930's and 1940's.

Further south along Skyline Boulevard are the Sky Ranch Estates subdivision, which was the last major subdivision (of five or more lots) approved in the Skyline Area (1967), and the subdivided area adjacent to Heacox Road, between Skyline Boulevard and Portola Valley. The Heacox Road area was not developed as one subdivision but resulted from a series of minor subdivisions and earlier land divisions preceding the Subdivision Map Act that were eventually legalized by the County.

Finally, the Middleton Tract subdivision is several miles south of Skyline Boulevard, located on Portola State Park Road and surrounded on three sides by the park boundary. This area was originally a logging camp and, like the Heacox Road area, has been divided not by one subdivision action but by numerous divisions preceding the Subdivision Map Act that were eventually legalized by the County.

c. La Honda-Loma Mar Subdivisions

La Honda, which has its roots in the timber industry, is the focal point of several rural subdivisions. Subdivision activity occurred in this area between 1917 and 1932 as access improved with the construction of new roads. Subdivisions in the La Honda vicinity outside of the rural service center are the Alpine Creek Tract, La Honda Redwood Properties, and Redwood Terrace subdivisions, all of which directly front on one of the major roads serving the area.

Somewhat removed from the La Honda vicinity is the Loma Mar area, named after a subdivision approved in 1932. This residential area includes the Loma Mar, Pescadero Creek Park, and Guthrie subdivisions. Like other subdivided areas, Loma Mar was originally developed with summer cabins. The area grew due to its close proximity to the large private camps and public parks in the vicinity, and is located approximately midway between La Honda and Pescadero.

d. Coastal Zone Subdivisions

Three subdivided areas are located in the Coastal Zone. The Dearborn Park and Butano Falls subdivisions are both located in remote inland portions of the South Coast. They were developed after World War I when access roads to the coast were improved. The Portola Heights area just outside of Montara was originally subdivided earlier this century into small parcels, but then consolidated through merger action in the late 1970's into the larger parcel sizes (approximately five acres) that exist today.

2. Current Land Use and Zoning

The subdivided areas are almost entirely developed with low or medium-low density residential uses. Unlike the rural service centers, there are few commercial or higher density residential uses in these areas. There are some vacant parcels.

a. East of Skyline Boulevard Subdivisions

The Los Trancos Woods, Vista Verde, and Bear Gulch Road-East areas are developed with low density rural residential uses. Bear Gulch Road-East is zoned RM. Los Trancos Woods is zoned R-1/S-8. Vista Verde has a mixture of zoning districts: R-1/S-10, R-E/S-11, R-1/S-8, and portions that are zoned RM. Many of the parcels in these subdivided areas are vacant due to steep slopes, geotechnical hazards, poor access, or other developmental constraints. A total of 234 additional dwelling units is possible in this area under present zoning.

b. Skyline Area Subdivisions

Table 9.3 illustrates that the Skyline Area subdivisions are overwhelmingly residential in nature, with a few pockets of highway commercial or neighborhood commercial.

The Heacox Road and Middleton Tract areas are presently developed to lower densities than the other Skyline Area Subdivisions. The Heacox Road area is divided into parcels which are approximately five acres in size, and located in open grassland or mixed woodland landscapes that are highly visible from Skyline Boulevard. The Middleton Tract also is divided into parcels that are generally five acres in size, but in a very different landscape that is dominated by redwood trees.

Table 9.3 indicates that the Skyline Area subdivisions have a build-out potential of 306 additional dwelling units. At the present time, there is only a minimal amount of vacant commercially zoned acreage.

c. La Honda/Loma Mar Subdivisions

The La Honda/Loma Mar subdivisions are also overwhelmingly developed with residential land uses. La Honda itself is a rural service center, so there are more extensive commercial uses. There is one highway-oriented commercial use in Loma Mar, and one in the La Honda-Redwood Properties area. Table 9.3 summarizes land use and zoning for these areas also, indicating a buildout potential of 32 additional dwelling units.

d. Coastal Zone Subdivisions

Dearborn Park and Butano Falls are also primarily in residential use. There are commercial uses in the Dearborn Park subdivided area, but only residential uses in the Butano Falls subdivision, as indicated in Table 9.3.

The Portola Heights area is developed with a few single family residences at very low densities and is presently zoned RM. An additional 470 units can be developed in the Coastal Zone subdivisions under existing zoning.

3. Demand for New Development

a. East of Skyline Boulevard Subdivisions

Development has been slow in the Bear Gulch Road-East, Vista Verde, and Los Trancos Woods areas due to the developmental constraints present in these areas. The County has been very cautious in reviewing any development applications in these areas.

Bear Gulch Road-East, a private road, has recently been improved through an assessment district of the private property owners who benefit from the use of this road. The improved condition of this road may facilitate the development of remaining lots, although geotechnical hazards still pose a constraint in the area.

The Vista Verde and Los Trancos Woods areas continue to have poor access, as well as geotechnical hazards. They also have adverse conditions for septic systems as documented in the 1982 Onsite Wastewater Study.

b. Skyline Area Subdivisions

The demand for new development in the rural subdivisions has been tempered by the high real estate prices for parcels, especially those adjacent to the Skyline ridge area. It has also been constrained by the lack of water and adequate area for septic system drain fields and the skyrocketing costs of construction.[11] Thus, the demand for new building sites is restricted to those who can afford to solve many of these development problems. In the area adjacent to Route 84, the Skyline Area subdivisions are built to

similar densities as residential development within the Town of Woodside, and residential values correspond also. Only nine new dwelling units have been constructed in the Skyline Area subdivisions since 1980.[12] This low rate of development reflects the high real estate prices and physical constraints to development that are found in the area.

c. La Honda-Loma Mar Subdivisions

The need for housing for persons willing to commute to the Bayside is fairly strong in the La Honda area. The 1980 Census data on journey-to-work indicates a significant number of commuters who drive to jobs in the Bayside.[13] Many La Honda residents are urban professionals who seek to live in a more rural atmosphere. However, the rate of housing construction has been slow due to sewage and water constraints. The Loma Mar area is more removed from the Bayside, so demand for new housing is not as high in this subdivided area. Only 15 new dwelling units have been constructed in the La Honda-Loma Mar subdivisions since 1980.[14]

d. Coastal Zone Subdivisions

There has been very little building activity in the South Coast due primarily to limitations on water supply. Most of the activity has occurred in the Pescadero rural service center. No new dwelling units have been constructed in the more remote subdivisions such as Butano Falls and Dearborn Park since 1980. Although the LCP encourages more visitor-serving commercial activities and visitor usage to coastal parks and beaches continues to rise, few new facilities have been constructed or are projected to be constructed.[15]

C. RURAL LANDS

1. Inventory

The term rural lands refers to those areas of rural San Mateo County outside of the rural service centers and rural subdivisions which are primarily undeveloped or developed at very low densities. The resources of the rural lands provided adequate sustenance to the first dwellers of the area, the Costanoan Indians, who subsisted by hunting, fishing, and using the natural plants of the area. Agriculture was not practiced until the Spanish missionaries arrived in the mid-18th Century. However, by 1810, the original subsistence economy of the Costanoans had been replaced by one organized around the Spanish missions.[16]

Under Spanish rule, most of the ownership of land was vested in the Crown. With the establishment of Mexican rule in 1821, the pattern of ownership shifted to large landowners who were the recipients of the Mexican land grants. More than a dozen of these "ranchos" were initially granted in the County. The establishment of large land holdings altered the emphasis of the rural area's agricultural economy from an almost feudal system of small subsistence plots to large cattle ranches.

Smaller parcelization began during the Gold Rush era in the mid-19th century due to the influx of new settlers, who incrementally bought or squatted on portions of the ranchos. As new settlement continued, the increase in demand for building materials inspired more harvesting of timber in the foothill areas of the Santa Cruz Mountains. Numerous logging camps were established, and a commercial center began to develop around La Honda.

The flat agricultural lands of the Coastal Zone experienced an increasing influx of small farmers, who often had bitter battles over ownership of land with the Mexican rancheros. After the San Francisco earthquake of 1906, grandiose plans were made to build new cities for the refugees from the urban area. However, lack of access prevented much development until the mid-20th century, when the area came under increasing pressure for development for housing for commuters to jobs in the Bayside. Although much subdivision occurred during the 1950's and 1960's in the Half Moon Bay vicinity, most of the South Coast retains its large parcels and agricultural uses.

2. Current Land Use and Zoning

The uses and densities permitted by the zoning districts underlying the rural lands is one of the strongest determinants of how land is presently used or could be used. Table 9.4 indicates the acreage in each of the rural zoning districts. Table 9.5 indicates the level of development currently allowed by these zoning districts in the major subregions of the County.

a. Agricultural Lands

(1) Categories and Location of Agricultural Lands

A significant percentage of the rural lands are being used for or have potential to be used for agricultural purposes. There are two major categories of existing agricultural land use. The first is for the cultivation of crops, including cultivation that occurs inside of greenhouses. Large acreages of agricultural soils and a unique microclimate make the lands in the coastal terraces and valleys suitable for the raising of different crops, including a number of specialty crops.[17]

A second major agricultural land use is for the grazing of livestock.[18] In the Santa Cruz Mountains area, the steep terrain and very narrow alluvial valleys of the perennial streams preclude most of the agricultural uses found in the Coastal Zone. In this area, agricultural use is primarily in the form of animal grazing in the grasslands, on the open ridges and a few orchard lands where valleys widen as they near the Coastal Zone. Significant grazing activity also occurs in the foothills which rise just east of the Coastal Plain.

TABLE 9.4

AMOUNT OF ACREAGE IN RURAL ZONING DISTRICTS
1984

ZONING DISTRICT	ACREAGE
Planned Agricultural District (PAD)	55,684
Resource Management District (RM)	63,545
Resource Management District/Coastal Zone (RM/CZ)	13,150
Timberland Preserve (Production) Zone District (TPZ)	21,451
Timberland Preserve (Production) Zone District/ Coastal Zone (TPZ/CZ)	7,787
TOTAL ACRES	161,617
TOTAL SQUARE MILES	253

Source: San Mateo County Planning Division

TABLE 9.5

RESIDENTIAL BUILDOUT PERMITTED BY CURRENT ZONING
IN RURAL AREAS OF SAN MATEO COUNTY

LAND USE CATEGORY	EXISTING DWELLING UNITS	BUILDOUT DWELLING UNITS
Rural Service Centers		
La Honda	278	368
Pescadero	47	67
San Gregorio	3	7
Subtotal	328	442
Subdivided Areas[1]		
Skyline Area	408	713
La Honda/Loma Mar Area	122	154
Coastal Zone	125	595
Subtotal	655	1,462
Rural Lands[2]		
Skyline Area[3]	260	1,560
Coastal Zone[4]	700	1,750
Remainder[5]	11	1,966
Subtotal	971	5,276
TOTAL	1,954	7,180

Source: San Mateo County Planning Division

Notes:
1. See Note 1 on Table 9.3 for explanation of how buildout was determined for the subdivided areas.
2. Buildout refers to the maximum development allowed by a density matrix analysis of remaining rural lands outside of subdivided areas and rural service centers.
3. Within Skyline-Santa Cruz Mountains Study Area.
4. Within the boundaries of the Coastal Zone.
5. Remaining areas between Interstate 280 and the Skyline-Coastal Zone area, including the San Francisco Watershed Lands.

The Existing Rural Land Use map indicates those areas which are either in cultivation or being actively grazed at this time or which, whether grown naturally or through management, are suitable for the grazing or browsing of livestock.[19] The agricultural acreages are summarized by watershed in Table 9.6.

(2) Agricultural Products of San Mateo County

San Mateo County's agricultural lands produce a wide variety of products for both local and distant markets. Many of the vegetables and fruits found in local groceries are grown within the County, including specialty crops such as artichokes and Brussels sprouts. San Mateo County is one of the nation's leading supplier of these two vegetables, which are grown most productively in the unique climate offered in the Coastal Zone.[20] The variety and diversity of the County's agricultural products are summarized in Table 9.7.

In recent years, the most commercially profitable agricultural sector has been the floricultural and ornamental nursery crop industry. In the same time period, there have been minor declines both in the value and acreage of many of the specialty field crops such as Brussels sprouts, but the overall acreage has remained roughly the same. Table 9.8 summarizes the changes in acreage and value over the past ten years for the most important of the County's agricultural products.

(3) Organization of Agricultural Operations

There are currently about 330 farms in San Mateo County including ranching operations. Between 1969 and 1978, the number of farms in the County declined with the most severe declines in small operations between 1 and 50 acres in size. The change in the number of farms by size is summarized in Table 9.9. The overwhelming majority of these farms are located in the rural portion of the County, although there are still a few key agricultural operations in the urbanized area.

In spite of the decline of the small farming operations, a majority are still operated by the individuals and families who also own the property being farmed. A smaller percentage of farms are operated by corporations or partnerships who lease their land for farming by tenants. Table 9.10 summarizes farm ownership patterns in the County.

(4) Current Zoning of Agricultural Lands

The agricultural lands in the Coastal Zone were inventoried during the preparation of the Local Coastal Program. Parcels containing prime agricultural soils or other soils suitable for agriculture were subsequently zoned PAD as a result of this inventory. Other agricultural lands which do not fall into these categories are zoned RM/CZ.

TABLE 9.6

AGRICULTURAL ACREAGE IN RURAL SAN MATEO COUNTY BY WATERSHED
1984

WATERSHED	CULTIVATED LANDS	GRAZING LANDS	TOTAL ACREAGE
San Pedro	0	37	37
San Vicente	367	165	532
Denniston	147	0	147
Arroyo De En Medio	55	0	55
Frenchman's	92	37	129
Crystal Springs	0	165	165
Pilarcitos	698	3,490	4,224
Arroyo Canada De Verde	496	2,277	2,773
Purisima	165	3,085	3,250
Lobitos	569	1,414	1,983
Tunitas	37	4,169	4,206
San Gregorio	696	14,086	14,782
Pomponio	18	3,398	3,416
Pescadero	863	5,473	6,336
Butano	1,267	1,965	3,232
Arroyo De Los Frijoles	202	588	790
Yankee Jim Gulch	845	1,120	1,965
Gazos	37	478	515
White House	110	1,010	1,120
Cascade	1,359	459	1,818
San Francisquito	0	331	331
TOTAL	8,023	43,747	51,770

Source: San Mateo County Planning Division

Note: Acreage measurements were obtained using a planimeter so there may be a ten percent margin of error in either direction. However, this is the best available data to illustrate the breakdown of agricultural use by specific watershed.

TABLE 9.7

AGRICULTURAL CROPS GROWN COMMERCIALLY IN SAN MATEO COUNTY

CATEGORY	CROPS
Vegetable	Artichokes, Snap Beans, Brussels Sprouts, Cabbage, all varieties of Lettuce, Market Peas, Potatoes, Radish, Spinach and New Zealand Spinach, Pumpkins; miscellaneous vegetables, including: Beets, Celery, Leeks, Mushrooms, Summer Squash and Swiss Chard.
Floral and Nursery - Outdoor Grown	Heather, Iris, Daisies, Strawflowers; miscellaneous flowers, including: Calla Lily, Chrysanthemum, Cut Foliage, Stock, Violets and Yarrow; Ornamentals, including: Herbaceous Perennials, Christmas Trees and Nursery Stock.
Indoor Grown	Cut flowers: Carnations; Chrysanthemums, including: Standard--Fuji, Spiders, Disbuds, Anemone and Pompon; Roses; miscellaneous cut flowers, including: Fern, Freesia, Gardenias, Lilies, Orchids, Snapdragons and Stephanotis; Potted Plants, including: African Violets, Chrysanthemums, Lilies, Orchids and Poinsettias; Propagated Plants, including: Bedding plants, Cuttings and Liners.
Field	Dry edible Beans, including: Fava Beans; Barley; Hay, including: Grain Hay, Oat Hay, Barley Hay, Alfalfa and other Tame Hay; Oats; Pasture, including Irrigated and other.
Flower and Vegetable Seed	Various flower and vegetable products sold as seeds, including Fava Beans, Beans, Grains, Primroses and other Decoratives.
Fruit and Nut	Apples, Prunes, Strawberries, Walnuts; miscellaneous Fruits, including: Apricots, Grapes, Pears, Plums and Bushberries.
Livestock	Cattle and Calves; Sheep and Lambs; Hogs and Pigs; Poultry.
Livestock and Apiary Products	Wool; Honey; Beeswax

Source: San Mateo County Department of Agriculture, Agricultural Crop Report, 1982.

TABLE 9.8

CHANGES IN ACREAGE AND VALUES OF MAJOR AGRICULTURAL CROP CATEGORIES
IN RURAL AREAS OF SAN MATEO COUNTY
1972-1982

AGRICULTURAL CATEGORY	1972 ACREAGE	1972 DOLLAR VALUE	1982 ACREAGE	1982 DOLLAR VALUE	CHANGE 1972-82 ACREAGE	CHANGE 1972-82 VALUE
Vegetable Crops	3,871	9,845,500	3,242	25,021,000	(629)	15,175,500
Flower and Nursery Crops Outdoor Grown	1,259	9,807,000	1,722	26,088,000	463	16,281,000
Flower and Nursery Crops Indoor Grown	285[1]	20,910,400	396[1]	90,015,000	111	69,104,600
Field Crops	47,136	684,260	41,965	1,181,700	(5,441)	497,440
Seed Crops	N/A	13,100	N/A	46,000	N/A	32,900
Fruit and Nut Crops	98	101,500	160	385,000	62	283,500
Livestock and Poultry	N/A	1,365,800	N/A	1,523,400	N/A	157,600
Livestock and Apiary Products	N/A	89,150	N/A	25,270	N/A	(63,880)
TOTALS		42,816,710		144,285,370		101,468,660

Source: San Mateo County Agricultural Crop Reports, 1972-82.

Note: 1. The total area of Flower and Nursery Crops grown indoors is normally expressed in square footage, but it has been converted for acreage to maintain consistency in this table. The square footage figures are 12,393,900 for 1972 and 17,243,000 for 1982 respectively.

TABLE 9.8a

CHANGES IN ACREAGE AND VALUES OF MAJOR AGRICULTURAL CROP CATEGORIES
IN RURAL AREAS OF SAN MATEO COUNTY
1982-1984

	1984		CHANGE 1982-84	
AGRICULTURAL CATEGORY	ACREAGE	DOLLAR VALUE	ACREAGE	DOLLAR VALUE
Vegetable Crops	3,405	29,512,000	163	4,491,000
Flower and Nursery Crops (Outdoor)	1,725	29,317,000	3	3,229,000
Flower and Nursery Crops (Indoor)	411[1]	111,364,000	15	21,349,000
Field Crops	40,340	1,194,300	(1,625)	12,600
Seed Crops	N/A	60,000	N/A	14,000
Fruit and Nut Crops	N/A	495,000	N/A	110,000
Livestock and Poultry	N/A	1,382,100	N/A	(141,300)
Livestock and Apiary Products	N/A	22,800	N/A	(2,470)
TOTALS		$173,347,200		$29,938,730

Source: San Mateo County Agricultural Crop Reports, 1982-84.

Note: 1. The total area of Flower and Nursery Crops grown indoors is normally expressed in square footage, but it has been converted for acreage to maintain consistency in this table. The square footage figures are 17,243,000 for 1982 and 17,890,000 for 1984 respectively.

TABLE 9.9

NUMBER OF FARMS BY SIZE IN SAN MATEO COUNTY
1969 - 1982

	NUMBER OF FARMS		
SIZE OF FARM (Acres)	1969	1978	1982
1 to 9	143	129	125
10 to 49	126	56	69
50 to 69	12	15	21
70 to 99	15	25	19
100 to 139	17	15	17
140 to 179	17	15	9
180 to 219	9	3	6
220 to 259	7	5	1
260 to 499	20	22	19
500 to 999	26	22	13
1,000 TO 1,999	14	13	13
2,000 and over	6	8	10
TOTAL	412	328	322

Sources: U.S. Bureau of the Census: 1974 Census of Agriculture, Vol. 2, Part 5, California, page 235;

1978 Census of Agriculture, Vol. 1, Part 5, California, page 385.

1982 Census of Agriculture, Vol. 1, Part 5, California, page 157.

TABLE 9.10

FARM OWNERSHIP IN SAN MATEO COUNTY
1982

	NUMBER OF FARMS		ACRES	
Tenure of Operator				
Full Owner	199	(61.8%)	26,665	(38.1%)
Part Owner	51	(15.8%)	30,626	(43.8%)
Tenant Only	72	(22.4%)	12,627	(18.1%)
TOTAL	322	(100.0%)	69,918	(100.0%)
Type of Organization				
Individual/Family	232	(72.0%)	52,116	(74.5%)
Partnership	39	(12.1%)	*	
Corporation	49	(15.3%)	9,253	(13.2%)
Other	2	(0.6%)	*	
TOTAL	322	(100.0%)	69,918	

Source: U.S. Bureau of the Census, 1982 Census of Agriculture, Volume 1, Part 5, California, pages 169 and 174.

*Withheld to avoid disclosing data for individual farms.

In the Skyline Area, most of the open grassland areas suitable for grazing have been zoned RM (Resource Management), although there are portions of lands zoned TPZ where some grazing is feasible.[21]

b. Timber Production Lands

The second most extensive use of County lands for resource production and/or extraction is for timber harvesting. Three major categories of timber harvesting operations are found: coniferous forests, hardwoods, and Christmas tree farms. Only a small portion of the lands which have timber production potential are currently being harvested, as reflected on the Existing Rural Land Use map.

(1) Location of Timber Production Lands

The mountainous areas east of the Coastal Plain generally south of State Route 92 contain commercially productive conifers such as redwood and douglas fir that are suitable for timber harvesting. The location and quality of the timberlands is discussed in more detail in the Vegetative, Water, Fish and Wildlife Chapter. Generally, harvesting takes place in the more remote portions of the mountainous area on large parcels managed by logging firms. Redwood is the most widely harvested of the timber crops. Other commercially valuable hardwoods such as oak, eucalyptus and madrone are found in the mixed woodland and oak savanna vegetative communities. Generally, these vegetative communities are found in the foothills and ridge areas of the rural lands.

Christmas tree farms are located in all sections of the rural areas, generally limited only by the ability to obtain adequate irrigation and easy access for potential customers. They tend to be located along the major highways serving the rural area.

(2) Timber Products in San Mateo County

Commercial timber harvesting was a major industry in San Mateo County during the 1860's when at least 11 sawmills were operating in the County. The industry has since declined and there are currently no local sawmills in operation. The nearest operating sawmill is in Davenport, just south of the County line on the Coast highway.

Conifers and hardwoods are harvested under timber harvesting permits issued by the State of California Department of Forestry.[22] Approximately six million board feet are harvested annually. At the present time, there are 18 active harvests taking place in the County, encompassing some 3,467 acres.[23] In 1981, the timber harvested was valued at over $1 million.

The timber harvested from coniferous forests provides quality lumber for use by the local and regional construction industry. The harvest of hardwood trees has increasingly become popular as a source for firewood which are sold for up to $150-$200 per cord. Table 9.11 summarizes the amount and estimated value of both conifer and hardwood harvests. The volume of timber harvested during this period has been well below the presumed sustained yield in San Mateo County of 10 million board feet per year. This has primarily been due to higher interest rates and a slowdown in the building and construction industry which has reduced the demand and market value for timber in recent years.

The harvest of Christmas trees continues to be one of the most profitable resource extraction uses in the rural area and the values of the annual harvest have been rising in recent years, as documented in Table 9.12.

(3) Organization of Timber Harvest Operations

Timber operators who harvest conifers and hardwoods tend to have large holdings and are located in the mountainous areas of the County. One of these companies, Big Creek Lumber based in Santa Cruz, has significant holdings of several thousand acres in the southern portion of the County.

When timber is harvested for lumber, it must be hauled out of the County to major sawmills in Sonoma County, Soledad in Monterey County, or Davenport in Santa Cruz County. Haul routes and other details such as specified times for hauling are set by the conditions of the timber harvesting permit issued by the State.

(4) Current Zoning of Timber Lands

Most of the lands that are currently being harvested or which have potential for harvest are located in the Timberland Preserve (production) zoning districts (TPZ or TPZ/CZ). However, because inclusion into this district is accomplished by voluntary request by the property owner, some productive timber lands and current harvests are located in the RM, RM/CZ, or PAD zoning districts. The total acreage of rural lands zoned TPZ and TPZ/CZ is indicated in Table 9.4.

c. Public Recreation Lands

Public Recreation Lands include parks and open space preserves owned and managed by public agencies such as the County, the State of California, the Federal government, or the Midpeninsula Regional Open Space District. These agencies have purchased approximately 18,000 acres for permanent public open space use in the rural portion of the County as documented in the Parks and Recreation Chapter.

TABLE 9.11

COMMERCIAL TIMBER HARVESTING IN SAN MATEO COUNTY
1972 - 1981

YEAR	VOLUME HARVESTED[1] (in 1,000 Board Feet)	DOLLAR VALUE[2]
1972	6,381	Not available
1973	5,292	Not available
1974	5,583	Not available
1975	6,671	Not available
1976	5,843	Not available
1977	7,270	586,000
1978	5,722	1,362,000
1979	7,287	1,880,000
1980	3,506	590,000
1981	6,446	1,122,000

Sources: 1972-1976 California Department of Forestry. Voluntary reports by timber operators.

1977-1981 California State Board of Equalization, Timber Tax Division. Mandatory reports, value calculated for taxation purposes.

Notes:
1. Includes sawtimber, hardwoods, and miscellaneous products. A board foot is the amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide.
2. Value is based on standing timber, before tree is cut (does not include labor and other costs of harvesting and processing timber).

TABLE 9.12

CHRISTMAS TREE HARVESTING IN SAN MATEO COUNTY
1969-1983

	ACRES HARVESTED[1]	ESTIMATED MARKET YEAR VALUE[2] (DOLLARS)
1969	310	122,000
1970	320	96,000
1971	226	188,000
1972	232	232,000
1973	203	210,000
1974	158	168,000
1975	150	164,000
1976	236	484,000
1977	255	714,000
1978	230	800,000
1979	200	650,000
1980	250	700,000
1981	325	3,140,000
1982	410	5,800,000
1983	410	4,600,000

Sources: San Mateo County Department of Agriculture: Annual Reports, 1969-1983; Lou Masini, Biologist; telephone conversation, April 1982.

Notes:
1. Estimated by Department of Agriculture, based on information from tree farm owners.
2. Market value estimated by Department of Agriculture based on assumed number of trees produced per acre and current average market value of trees. 1982 market value is estimated to be $15-20 per tree.

The acreage owned by public recreation providers, however, does not reflect the existing land use of the public recreation lands. Portions of these lands are also used for agriculture, grazing, or timber production even though they are also owned by public agencies.

The publicly-owned recreational lands in the rural area are generally developed with few facilities to serve visitors. County parks such as Sam McDonald and Pescadero Creek are largely wilderness, having only a few developed trails to provide public access. Butano and Portola State Parks are similar, containing large tracts of land with few visitor-accommodating facilities. Midpeninsula Regional Open Space Lands are intentionally kept in their natural state as much as possible in accordance with the District's acquisition and development policies. However, the District maintains some trail systems and provides parking for hikers in their facilities. State beaches are in similar passive recreational uses, providing some off-road parking but few other facilities such as campgrounds or visitor centers.

In a few cases, other resource extracting uses occur within the parcels owned by public agencies. In isolated areas of Pescadero Creek Park, for example, the County Parks Department has conducted selective harvest of timber in conjunction with debris-clearing operations.[24] There are also active timber harvest permits on certain Midpeninsula Regional Open Space Lands. Agricultural uses such as grazing occur on several MROSD parcels, and cultivation of field crops occurs in some State beach properties. The Existing Rural Land Use map reflects these uses in spite of the fact that they occur within the parcel boundaries of publicly-owned lands.

In the Santa Cruz Mountains area, public recreation lands are generally zoned RM (Resource Management). There are a few instances of parcels within Midpeninsula Regional Open Space lands that remain zoned for Timberland Production (TPZ).

In the Coastal Zone, public beaches are generally zoned PAD (Planned Agricultural District), reflecting the presence of valuable agricultural soils, which are often present in the terraces that begin at the top of the coastal bluffs. Butano State Park, which is partially located in the Santa Cruz Mountains area, is also zoned PAD in its Coastal Zone portion. Other portions of public recreation lands are zoned Resource Management/Coastal Zone (RM/CZ).

d. Private Recreation Lands

There are a number of private organizations that own large parcels of land for private campgrounds and vacation sites. Most notable are the holdings of the San Francisco and Oakland YMCA organizations, the Redwood Glen Baptist Camp, and other camps. There are also smaller parcels owned by private clubs or smaller businesses. These areas may contain vacation cabins which are only in use for a limited time of the year, stables, or other private commercial activities. They are summarized in more detail in the Parks and Recreation Chapter.

The private recreational lands tend to have more facilities than the public lands and are generally designed to accommodate large groups of people during the peak summer season. Thus, many of them are developed with summer cabins, dormitories, swimming pools, group shower facilities and assembly rooms. Camp Loma Mar of the Alameda County YMCA even conducts a computer camp during the summer.

The private recreational lands are generally zoned RM or TPZ (in those few parcels where timber harvesting is still actively occurring). If located in the Coastal Zone, the private recreational lands are generally zoned RM/CZ or TPZ/CZ.

e. Institutional Lands

Institutional lands are developed with educational facilities, churches, police and fire stations, government offices or other public buildings, or developed with facilities for educational and rehabilitative purposes, such as the Log Cabin Ranch, Honor Camp, the Outdoor Education Center, or similar facilities. These facilities are indicated on the Existing Rural Land Use map and listed in Table 9.13. Most of the lands that are currently in institutional use in the rural area are zoned RM or RM/CZ unless they are included inside rural service center boundaries, where they are normally zoned for residential uses.

f. Solid Waste Disposal Facilities

The County has two solid waste disposal facilities in the rural area, the Ox Mountain facility off Highway 92 and the Pescadero landfill on Bean Hollow Road south of Pescadero. These two facilities, which are indicated on the Existing Rural Land Use map, have been zoned RM or RM/CZ. They are discussed in greater detail in the Solid Waste Chapter.

g. General Open Space Lands

General Open Space lands are those which have very low density residential uses, contain resources that are not presently being used, and/or which are owned by private parties for resource protection. This category includes lands for watershed protection and lands owned by private groups such as the Audubon Society for nature preserves. Lands in general open space use are generally zoned RM or TPZ in the Skyline area and RM/CZ, TPZ/CZ or PAD in the Coastal Zone.

h. Quarries

There are two major operating quarries in the rural area, the Pilarcitos Quarry located off Highway 92, and the Langley Hill Quarry located in the remote area west of Skyline Boulevard between Highway 84 and Alpine Road. Both quarries are zoned RM. More detailed information on the economic value and the operations of quarries is found in the Mineral Resources Chapter.

TABLE 9.13

INSTITUTIONAL LAND USES IN RURAL SAN MATEO COUNTY
1983

FACILITY	GENERAL LOCATION
SCHOOLS	
Lobitos School	Lobitos Creek Road, South Coast
Kings Mountain School	Swett Road, Skyline area
La Honda School	La Honda
Pescadero Elementary School	Pescadero
Pescadero High School	Pescadero Creek Road at Butano Cut-Off Pescadero
REHABILITATION FACILITIES	
Camp Glenwood	Pescadero Creek Road, La Honda near Alpine Road
Sheriff's Honor Camp	Pescadero Creek Park
Log Cabin Ranch	Pescadero Creek Road near Alpine Road, La Honda
San Francisco County Jail	Skyline Boulevard, outside San Bruno
COUNTY CORPORATION YARDS	
Pescadero Facility	Pescadero
La Honda Facility	La Honda
FIRE STATIONS[1]	
Skylonda Station	Skyline Boulevard near State Highway 84
Pescadero Station	Pescadero
CEMETERIES	
Skylawn Cemetery	Skyline Boulevard and State Highway 92
Pescadero Cemetery	Pescadero
MISCELLANEOUS	
San Mateo County Dept. of Education, Outdoor Education Facility	Loma Mar

Source: San Mateo County Planning Division

Notes: 1. Only the California Department of Forestry (CDF) Stations in the rural area are listed here. There are also a number of volunteer stations that are an important part of the County fire protection system. These are listed in Table 15.5 of the Natural Hazards Chapter.

3. Demand for Development of Rural Lands

The rural lands experience the same County-wide demand pressures for new residential and commercial development that occur for rural service centers and rural subdivisions. However, the actual demand, as measured by the conversion of land to these uses, has been considerably less. One way to look at the concept of "demand" is to break it into two components. There are basic needs or demands by society at large. These include a demand for more affordable housing, more park lands, more land for industrial development to create jobs and more land on which to grow agricultural crops to feed the population. Ideally, there would be adequate land resources available to meet all of these needs. However, in a system where the remaining available supply of land is finite and there are competing pressures for the use of those lands, there is a great difference between ideal demand and actual demand.

The market forces that have created County and region-wide demand for land have been examined in detail in documents such as the LCP and the Housing Element. To obtain a measure that reflects the actual demand, this section will focus on what has actually occurred in each of the land use categories in recent years. This should be a more accurate measure of demand because it reflects the economic and physical constraints addressed in more detail in other chapters of the General Plan.

a. Residential

The rate of conversion of land to residential uses in the rural area has been extremely slow in recent years. There have only been 63 new dwelling units constructed in the rural lands outside of the rural service centers and rural subdivisions since 1980.[25] The pattern of land parcelization in areas that do not front on major roads tends to be larger and access is often very poor or not available. The cost of these large parcels and the need to provide access through difficult terrain has been a deterrent to a significant amount of rural residential development. The Skyline-Santa Cruz Mountains Area Study found that there were only 260 dwelling units that could be considered "rural" in a 60,000 acre study area.[26] Many of these homes are not the result of a demand for housing for commuters, but rather are ancillary to the farming, grazing, or timber harvesting uses taking place on the larger parcels.

b. Commercial

The greatest need for commercial uses in the rural area is for more facilities to serve recreational visitors. The LCP has documented a great unmet demand for more hotels, motels, and restaurants in the Coastal Zone. In the Santa Cruz Mountains area, commercial facilities are found only in La Honda and on Skyline Boulevard north of State Route 84. There is demand for commercial services to serve both weekend visitors and the local residents who must drive long distances to existing commercial areas. However, actual rates of

conversion of land to commercial uses remain low. Many parcels that have commercial zoning in the rural area remain undeveloped.

c. Agriculture

Agriculture continues to be an important sector of the San Mateo County economy. The 1982 San Mateo County Agricultural Crop Report estimates the total gross value of County agriculture to be $144.3 million, an increase in value of 6% over 1981 levels. Certain sectors of the agricultural economy continue to increase in value. In general, floriculture led the way in increased value, while vegetable crops remained stable or sustained slight losses due to 1982's heavy rainfall. Another sector that did well was livestock, indicating continuing incentive for ranching operations and cattle grazing. An interesting trend in demand for agricultural products is the increase in the sale of pumpkins, which is related to increased visitor attendance at the annual Half Moon Bay Pumpkin Festival. The success of this festival is an indicator both of the strong demand for recreational visits to the Coastside and the potential profitability of certain agricultural products.

The increase in value of agricultural products is one indicator that there continues to be a demand for the use of land for this purpose. Another indicator is the constancy of the amount of acreage under cultivation as summarized in Table 9.8.

d. Timber

The harvest of timber continues to be profitable in San Mateo County, although the recent recession and dramatic reduction in the number of new housing starts in the Bay Area has had some effect in the computation of timber values.[27] Nevertheless, it is unique that such a large amount of prime timberland is located in close proximity to potential Bay Area markets. This locational criterion alone should increase the demand for timber during better economic times for the housing industry.

In 1981, timber harvested in coniferous forests was valued at over $1 million, and the County collected some $36,000 in timber tax revenue. The demand for Christmas trees also continues to be strong. Values rose from $700,000 in 1980 to $4,600,000 in 1983.[28] As the costs of transportation rise, locally available timber should increase in value, particularly if Santa Clara County continues to be the center for new employment and housing growth in the 1980's, as projected by ABAG and others. Recent changes in timber and Christmas tree values are summarized in Tables 9.11 and 9.12.

e. Recreational

The LCP documented the enormous demand for visitors to the coastal beach areas, projecting a 2-3% annual growth rate in recreational

visitors to 1990.[29] The County Parks Department also projects that the capacity of County Parks will be exceeded in the 1980's even when full development of facilities occurs. In response to this demand, it is expected that the Midpeninsula Regional Open Space District (MROSD) will continue to pursue its land acquisition program, particularly in the Skyline Ridge Area. The rural area's scenic beauty makes it much in demand for acquisition for permanent open space by a variety of public and private agencies.

Since 1980, MROSD has purchased 5,845 acres and the County Parks Department has purchased 400 acres. The Federal government has purchased several properties, including the Sweeney Ridge property, as additions to the Golden Gate National Recreation Area (GGNRA).[30]

f. Institutional

The demand for new institutional land uses is directly related to the growth in residential population and the level of services that the area has experienced in the past. Both the La Honda-Pescadero and Cabrillo Unified School Districts have been experiencing declining enrollments, so new school facilities will not likely be required unless there is dramatic new residential growth. New police stations, fire stations, or other public facilities would also become necessary only if there is substantial population growth or a defined need to reorganize the service delivery system. The South Coast presently does not have a permanent branch of the County library, and many area residents have expressed a desire for a local library branch. Presently, the nearest branch is located in Half Moon Bay. In recent years, there have been very few new institutional facilities constructed by the County or special districts in the rural lands.

g. Solid Waste Disposal Facilities

The Ox Mountain and Pescadero landfills should be adequate to serve the needs of the rural area through the 1990's. Expansion of the Ox Mountain facility to accommodate County-wide growth to the year 2039 has recently been approved. The Apanolio Canyon landfill proposed in this expansion will increase the facility by approximately 300 acres.[31]

h. General Open Space

The urbanized Bay Area has a great need for open space lands in general, to provide a sense of place, to retain contact with nature and to define urban form. A very large amount of land (23,000 acres) is owned by the City and County of San Francisco and designated a State Fish and Game Refuge in order to protect the watershed areas adjacent to Crystal Springs and San Andreas reservoirs. If new water systems are created and/or expanded, more land would need to be set aside for watershed protection. Similarly, other general open space lands may need to be set aside for protection of other resources or to act as buffers to more intensive uses.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING RURAL LAND USE

A. FEDERAL, STATE AND REGIONAL

1. Golden Gate National Recreation Area

The Golden Gate National Recreation Area (GGNRA) is administered by the National Park Service of U.S. Department of the Interior. The boundaries of this area are authorized by and can only be amended by Congress. Inside of its boundaries, the GGNRA is authorized to purchase any privately owned property in order to maintain the open space integrity of the area. The GGNRA can only acquire publicly owned lands, such as County or State park lands, if they are donated by the public agency.

The San Francisco watershed lands are owned by the City and County of San Francisco but are included within GGNRA boundaries. The City has granted two easements to the GGNRA, a scenic easement and a scenic and recreation easement. The scenic easement limits the use of some 19,000 acres to open space, the collection, storage and transmission of water, and the protection of water quality. The scenic and recreation easement places some 4,000 acres under the direct management of GGNRA, and allows outdoor recreation uses. It is illustrated on the Park and Recreational Facilities map. Proposals for more intensive recreation uses within the scenic and recreation easement must be approved by the GGNRA.[32] The only other property in the County that is directly managed by the GGNRA is the recently acquired Sweeney Ridge.

2. California Parks Department

The California Parks Department manages several State parks and beaches in San Mateo County. The Department has prepared and adopted a California State Park System Plan, which identifies priority areas for acquisition and/or development of existing facilities. This plan places priority on the development of coastal trails in San Mateo County and the provision of parking, day use and camping facilities, which are in short supply in existing State beaches. The only acquisition projects proposed for San Mateo County involve right-of-way for trails.[33]

3. Midpeninsula Regional Open Space District

The Midpeninsula Regional Open Space District (MROSD) was created by the voters in 1972, to acquire and preserve foothill and bayland open space for the use and enjoyment of the public. The District's first priority is land acquisition, and it has thus far acquired about half of its targeted goal. After its acquisitions are complete, the focus will be on making the properties more accessible to the public. The land acquisition policies of the District may, therefore, convert some lands from open space to public recreational uses. The District does, however, allow agricultural and resource recovery uses on certain of its properties.

B. COUNTY

1. General Plan Policies

a. Conservation and Open Space Element

The County's Conservation and Open Space Element establishes a comprehensive set of management policies to preserve and enhance environmental quality, encourage agriculture and preserve natural resources for future generations, primarily through more precise site design criteria. Many of these policies have been incorporated into the development review criteria of the RM zoning district.

b. Local Coastal Program

The Local Coastal Program (LCP) contains a comprehensive set of land use policies for the Coastal Zone in order to meet the requirements of the California Coastal Act of 1976. These policies encourage the development of recreation-oriented, visitor-serving facilities and the concentration of new development within rural service centers, while providing the maximum protection of access to beaches, the preservation of scenic values, and the protection of agricultural lands.

To assist in the implementation of these policies, an urban/rural boundary was delineated in order to minimize urban intrusions on the surrounding agricultural resource areas and encourage infill development adjacent to existing development. These policies permit urban development at relatively high densities within the urban boundary as long as services are available, and encourage the investigation of methods to finance the provision of these services.

In the rural lands outside the urban/rural boundary, the LCP establishes the following priorities for land uses, in order to reflect the Coastal Act mandates:[34] (1) agriculturally-related development; (2) public/private recreation; (3) affordable housing; (4) visitor serving commercial uses; (5) farm labor housing.

Other uses, such as the development of residential units in subdivided areas, are not considered to be priority uses. An annual quota for building permits has been set for each South Coast watershed for these nonpriority uses, and an annual monitoring program has been undertaken since the adoption of the LCP in 1980 to track the rate and impact of development.

c. Skyline Area General Plan Amendment

The Skyline Area General Plan Amendment, adopted in 1983, resulted in the lowering of densities in the Skyline and La Honda-Loma Mar subdivided areas primarily to reflect constraints imposed by septic system and other service limitations. This rezoning action resulted in the establishment of a new minimum lot size for residential

development and in the merger of contiguous lots in the same ownership if the lots are smaller than the minimum lot size required by zoning.[35]

The Skyline amendment also established clear policy direction for the preservation of the open space character of the rural area by adopting policies aimed at conserving and protecting the visual, timber and watershed resources which give the area its unique character, and establishing compatible land use designations that are consistent with this goal.[36] The policies did not result in zoning changes in the rural lands, but rather directed that the impacts of new development activity on the area's scenic and timber resources be carefully monitored on an ongoing basis.[37] In recognition of the sensitive nature of the area's resources, policies were also adopted to give further protection to surface water sources, which are vital to the maintenance of the viability of agricultural uses in the downstream coastal areas.[38]

2. County Zoning Ordinance

a. Resource Management District (RM and RM/CZ)[39]

In San Mateo County, the largest amount of rural land is in the RM and RM/CZ zoning districts. The RM zone is a general open space zone that allows, by right, agricultural and low density residential uses. Other uses such as hotels, restaurants and commercial recreation facilities are allowed upon securing a use permit. Density is determined by an analysis of the environmental factors in a density matrix, including slope, floodplains and geologic hazards. There is no minimum lot size. Rather, density credits allowed by the evaluation of different environmental factors can be distributed in the manner best achieving the conservation of scenic and resource values. Clustering of development is encouraged in this zoning district. In addition to the density analysis, each proposed project must conform to a series of environmental review criteria.

In the Coastal Zone, a large amount of rural land is in the RM/CZ zoning district. This zoning district has different density matrix criteria and, due to the more sensitive nature of the land resources, a different set of environmental review criteria for each proposed project.

b. Timberland Production District (TPZ and TPZ/CZ)[40]

The TPZ contains a series of criteria for the protection of timber resources. Like agriculture, timber lands need to retain their large parcelization in order to enhance their economic viability. Land may not be divided into parcels less than 160 acres in size unless a timber management plan is approved by a four-fifths vote of the Board of Supervisors. If this plan is adopted, the density matrix regulations in the TPZ district become the same as in the RM district, with the important additional requirement that development

must be compatible with the commercial production of timber. A master land division plan is also required in the TPZ, but only for divisions of five parcels or more. In both situations, maximum efforts are made to retain productive timberlands in large parcelization. Other uses allowed in the TPZ include residential housing, outdoor education activities, grazing, outdoor recreation, energy resource development, and mineral and hydrocarbon production.

c. Coastal Development District (CD)[41]

The Coastal Development district was established to ensure that all proposed development is consistent with the land use designations and policies of the LCP. This district requires that a coastal development permit (CDP) be obtained for most development proposals in the Coastal Zone. The CDP is the County's certification that the project conforms with the LCP as approved by the Coastal Commission. No action by the Coastal Commission is necessary unless an appeal of the CDP is filed.

d. Planned Agricultural District (PAD)[42]

To protect the valuable soils for agriculture identified in the LCP and to maintain the agricultural viability of the Coastal Zone, including agriculture being practiced on "nonprime" soils, the County adopted a new zoning district, the Planned Agricultural District (PAD). The PAD allows agricultural uses by right, but requires a planned agricultural permit for other uses, including single family residences. One of the reasons most often cited as an obstacle to the long-term viability of agriculture is the disaggregation of large parcels into smaller units. In an effort to retain the maximum amount of soils suitable for agriculture in large parcelization, the PAD established a series of steps which must be followed in any proposed land division. First, a detailed survey of the property proposed for division is conducted to determine: (a) the location of prime agricultural soils, (b) the location of other lands suitable for agriculture, and (c) the presence of other lands not suitable for agriculture. Second, a density matrix is prepared to determine the maximum number of density credits allowed on the parcel. Third, a master land division plan is prepared, which outlines the ultimate development plan for the parcel. This plan must avoid wherever possible the parcelization of viable agricultural soils.

Parcelization of these soils is only permitted if the applicant demonstrates that the existing or potential agricultural productivity of the parcels would not be diminished. Fourth, the applicant is required to grant an agricultural easement to the County limiting the use of the parcels containing agricultural soils to that use in perpetuity. Finally, an agricultural management plan which demonstrates how the agricultural productivity of the land will be fostered and preserved is required prior to division or conversion of agricultural parcels that are more than 20 acres in size.

3. Other County Ordinances and Regulations

a. San Mateo County Subdivision Ordinance[43]

The County's subdivision ordinance specifies the procedures and requirements for dedication when a piece of property is proposed for division. Land divisions that are proposed must conform to these regulations and must meet the minimum parcel size requirements for the underlying zoning district.

The subdivision ordinance was amended in 1979,[44] requiring the merger of contiguous parcels in the same ownership that do not meet the minimum parcel size of the zone. Since many portions of the subdivided area were subdivided into much smaller parcels than allowed by recent changes in zoning, there is a high potential for merger in the rural area. Recent changes in State law will limit future merger requirements.

b. County Flood Hazard Ordinance

There are 21 large drainage basins (watersheds) in the rural area. Certain of these watersheds such as the San Gregorio and Pescadero Creek watersheds drain numerous large perennial (year-round) streams and produce significant peak winter flows. In these drainage basins, a flooding hazard exists.

To minimize damage from flooding, the County participated in the Federal Emergency Management Agency (FEMA) study of flood hazard areas in unincorporated areas of the County. Regulations to discourage development in these areas have been adopted, including flood insurance rate maps. The County Flood Hazard Ordinance incorporates the information on these maps to protect rural area residents and to avoid risk of loss of Federal financial assistance for properties within the floodplain zones, including mortgage loans guaranteed by the Federal Housing Administration.

The flood hazard regulations affect the entire rural area adjacent to major streams, but have the most effect on new development proposed in the three rural service centers. Pescadero, which is built almost entirely within the 100-year floodplain, is most affected. The Flood Hazard Ordinance allows new development within the rural service centers if (1) specific structural design measures are employed to minimize flood damage and (2) a finding is made that the new structure will not increase the downstream flooding hazard.

c. Environmental Health Requirements

Before any new building permit or division of property is approved in subdivided areas, applicants must demonstrate to the satisfaction of the County's Environmental Health Officer that there is a potable and adequate supply of domestic water and a satisfactory method of sewage disposal.

d. Regulation of Portable Sawmills

The County allows the use of small, portable sawmills in timber production areas if the lumber being milled is harvested on the property, is not sold commercially and amounts to less than 100,000 board feet. There is no permit procedure for these sawmills as long as the lumber being cut is only for the use of the property owner. Larger operations that include the hauling of timber are subject to the State's timber harvesting regulations.

RURAL LAND USE ISSUES

I. ADEQUACY OF AVAILABLE LAND TO MEET DEMAND FOR DIFFERENT LAND USES IN RURAL AREAS

The rural area contains lands that are uniquely suited for resource production. There is a limited amount of land where cultivated agriculture or cattle grazing can be practiced. There is also a limited amount of land uniquely suited to the growth and harvesting of timber or the extraction of minerals. By contrast, only a small amount of territory is sufficiently free of natural hazards and is served by roads, water supply systems and other services and can accommodate urban uses.

The Issues Section examines the adequacy of available land by analyzing the opportunities and constraints for each of the three types of rural areas: rural service centers, rural subdivisions and other rural lands. There are very good reasons why most of the County has remained unurbanized throughout its history. These constraints will be explored, along with the opportunities and alternative strategies for future land use planning in San Mateo County.

II. OPPORTUNITIES AND CONSTRAINTS TO CONSIDER FOR RURAL LAND USE PLANNING

A. RURAL SERVICE CENTERS AND RURAL SUBDIVISIONS

The land use patterns and physical limitations found in the rural service centers and rural subdivisions are very similar. Consequently, the following discussion will evaluate the opportunities and constraints for land use planning found in both of these categories.

1. Economic

The higher density concentration of development in rural service centers and rural subdivisions relative to surrounding rural lands provides certain fiscal opportunities for the County. Because population and services are concentrated and tend to be located near major roads, new investments in services and/or public works facilities made there would directly benefit a larger number of rural County residents than if directed to less densely populated portions of the rural area. County services such as road maintenance, septic system inspection, Sheriff's patrol and fire protection are more easily delivered in areas where population is concentrated.

Rural service centers might be a logical location for certain revenue-generating land uses, particularly those with potentially high sales tax revenues. Rural subdivisions are generally residential in nature and offer fewer opportunities for commercial development. Both Pescadero and San Gregorio are immediately adjacent to coastal beaches that annually attract millions of visitors.[45] La Honda is located in the

midst of several County Parks and Midpeninsula Open Space District landswhich attract a smaller but still substantial number of visitors. These locational advantages make it more likely that visitor-serving commercial land uses in rural service centers would be successful, and could potentially provide the County with a steady source of sales tax revenue (one cent on each dollar spent).[46] Specific revenue-generating commercial uses could be more attractive than others. Service stations would provide the County with both sales and gasoline tax revenues. Hotels, motels, hostels or country inns are a potential source of transient occupancy tax revenues.[47] New development could also benefit the County through higher property tax revenues.

The arrangement of land uses in the rural service centers and rural subdivisions can also strongly affect the overall economic well-being of the rural area. At the present time, a significant sector of the economy of the rural area is based on the use of soil and other resources (for agriculture, timber harvesting, mineral extraction) and on the provision of services for visitors to the many beaches, parks and open spaces of the area.[48] The County has the opportunity to protect these resources and the visual amenity of the rural area by pursuing land use policies that concentrate new development whenever possible. New residential and commercial development in rural service centers could benefit the local economy in several ways. Increased residential development could benefit local residents by providing local construction jobs and increasing commercial services. Further commercial development within rural service centers could also have the secondary benefit of encouraging the renovation and adaptive reuse of many of the historic buildings in Pescadero, making it an even stronger magnet for visitors.

2. Infrastructure

In order for more concentrated development to succeed in rural service centers or rural subdivisions, the constraints posed by the present service infrastructure would need to be overcome. At the present time, basic services such as water supply, sewage disposal and road access are seriously deficient in many of these areas. As discussed in more detail in the Water Supply Chapter, Pescadero has long struggled with its water supply problems. The limitations for septic systems and water supply in La Honda also presently preclude significant new development.[49]

The infrastructure limitations in the subdivided areas were a key land use issue during the Skyline study. Many of the existing lots in these areas could not accommodate septic systems or obtain adequate water supply to meet modern health standards. There are no sewers serving any of the rural subdivided areas. On the other hand, many of the rural subdivided areas are near major roads and could connect to the Skyline County Water District or small water systems if capacity became available. Significant investment would be necessary to overcome present constraints. In the past, State and Federal grants were often available for repair and expansion of community water systems, sewage treatment plant construction and the construction and repair of roads.

In recent years, however, these resources have become more limited, and local sources of revenue, both public and private, have become the major source for infrastructure improvements. There are constraints in obtaining these sources due to constitutional limitations and a general unwillingness on the part of the public to support new taxes or charges.[50] On the other hand, opportunities exist for residents of rural service centers and subdivisions to provide for their service needs through voluntary methods such as assessment districts.

There is a further constraint. Even if funding sources can be found to make infrastructure improvements, the long-term operating costs to maintain, inspect and repair the facilities may eventually outweigh the initial costs of installation.

3. Natural Resources

Concentration of new development within rural service centers and rural subdivisions would protect the natural resources of the surrounding rural area. By directing higher density development to these areas, the County could protect the vegetative, water, fish and wildlife resources that are abundant in the surrounding rural lands, as well as limit the potential impacts of development on valuable agricultural and timber soil resources. Policies favoring the concentration of development would also minimize the adverse environmental impacts associated with the construction of roads and other infrastructure improvements in undeveloped areas, thereby protecting visual resources.

The County would need to carefully assess the potential impacts of increased development in the subdivided areas on water resources. New sources of water would need to be found in order to serve increases in population. Some of the subdivided areas may wish to draw water from the upper reaches of streams that supply agricultural areas in the Coastal Zone, thereby potentially affecting downstream agricultural resources.[51]

4. Hazards

Many of the rural service centers and rural subdivisions have developed in areas that are absent of natural hazards and where access is easily available. A major exception to this is Pescadero, which is traversed by Pescadero Creek and has most of its existing developed area located within the creek's floodway. La Honda is also traversed by a perennial stream, but the floodplain[52] is not as wide. There are also potential geotechnical hazards in both La Honda and Pescadero. These are discussed in detail in the Natural Hazards Chapter.

Flooding hazards can provide opportunities for design of rural communities through setbacks from the flood plains and the creation of streamside open space buffers in these areas for recreational use by the community. The County has opportunities to avoid future hazardous situations in rural service centers by directing development and concentrating population away from hazardous areas and requiring mitigation

measures such as appropriate minimum lot sizes for any new development that occurs. This is particularly useful for geotechnical hazard areas in La Honda and other rural subdivisions. Concentration of development can also facilitate the provision of fire protection services and response time.

The constraints posed by hazards, particularly those in Pescadero, frustrate many of the opportunities for concentrated development unless expensive mitigation measures and/or public works projects are implemented. Development occurring without such mitigation creates the possibility of further ground water contamination, flood damage and other hazards to public health and safety.

5. Land Use Pattern

The County has the opportunity to encourage land uses that mutually reinforce each other in the rural area. For example, by concentrating housing in rural service centers and rural subdivisions, the impact of residential uses on agriculture, timber lands and other resources is minimized.

Conversely, there are land uses and levels of development that can conflict with each other. Too much commercial development in the rural service centers can nullify the residential amenities and inflate the price of land. An overabundance of commercial uses that cater to the recreational visitor trade can inflate rents and cause the departure of vital local services such as grocery stores, hardware stores, or other services needed by the surrounding resource oriented economy.[53]

There are also cases where the proximity of residential areas to park lands have created problems. A key concern is the amount of traffic to these areas, particularly on weekends. Residents of these areas have also expressed the feeling that their privacy is violated by hikers or equestrian users of trails, while hikers argue that the residential areas diminish the recreational amenities.[54]

The densities of residential development in the rural service centers and rural subdivisions can definitely create impacts on agricultural operations unless these very different land uses are properly buffered. The County would have opportunities to design appropriate buffering mechanisms when considering projects for infill or expansion of rural service centers and rural subdivisions. Many of these techniques are discussed in the Visual Quality Chapter.

B. RURAL LANDS

1. Economic

Because the rural lands contain important natural resources, such as valuable soils for agriculture, minerals and high quality timber resources, they have traditionally supported a local economy that is dependent on the conservation and use of these resources. There have

also been powerful constraints to more intensive development such as the absence of roads, water supply and sewage disposal systems, the absence of mechanisms to fund these infrastructure improvements and the remoteness from employment centers in the existing urban area.

The present rural land use pattern provides other economic opportunities. The County does not generally need to provide the same level of services to rural, relatively undeveloped lands as it does to the urbanized area. The population of the rural lands is low, and residents tend to be more self-reliant.

Agriculture remains an important segment of the San Mateo County economy, with a total 1982 production value of more than $144 million.[55] It is also an important source of employment for rural residents of the Coastal Zone. The agricultural economy of the rural area is affected by several key factors, including: (1) the availability of a reliable water supply for irrigation; (2) a dependable supply of farm laborers and a source of housing for them; (3) market demand for specific crops; (4) production costs for seeds, fertilizers, pesticides, and energy; (5) taxation policies; and (6) the presence of incompatible land uses.

County land use policy can support the economic health and viability of the County's agricultural industry in a number of ways. The construction of farm labor housing and water supply systems can be encouraged. Densities could be limited to protect agricultural areas from conflicting land uses and uses could be limited in areas containing valuable soils. Subdivision requirements could encourage protection of resource areas and give density incentives to development occurring in nonproductive areas.

The timber industry in San Mateo County is a source of materials for more rapidly growing areas in nearby counties of the Bay Area and provides some local employment for area residents. The harvest of timber provides some fiscal benefits to the County in the form of timber tax revenues. Timber is assessed for its value and then taxed at a fixed rate set by the State Board of Equalization. Beginning in fiscal year 1984-85, tax revenues from timber cut in San Mateo County will be returned directly to the County (minus State administrative costs).[56] This system differs from the old method of a timber tax guaranty which was determined by revenues collected in previous years and adjusted proportionately among counties. This direct return method may make it fiscally more attractive for the County to encourage harvesting of timber.

Like the agricultural lands, the use of land for the harvesting of timber provides opportunities for the use of valuable resources and does not require a high level of County services. Many of the County's timber lands are so remote that the only access is by narrow logging roads that are constructed and maintained by the property owner. County services become necessary only if subdivision of timber lands for residential uses occurs. The growing number and value of Christmas tree farms provides an additional opportunity for timber lands. This very profitable land use also attracts visitors to the area, and could spur interest in visitor-serving commercial facilities.

A key economic constraint for timber lands is the absence of facilities for processing the raw timber into finished lumber. There are no established sawmills in San Mateo County. The closest mill is in Davenport in Santa Cruz County. The absence of a local mill has contributed to an increase in the use of portable sawmill facilities. These sawmills are supposed to be used only by individual property owners for timber cut on their property. However, a number of violations have been reported, and lumber cut on other properties has been transported to portable sawmill sites.[57]

The many public and private recreational lands in the rural area attract a large number of visitors, creating additional opportunities for employment for local residents in visitor serving commercial facilities and services. A major fiscal constraint to consider for recreational lands is the potential loss of property tax revenues. When lands are purchased for public park use by agencies such as the County or MROSD, they become exempt from property taxation. On the other hand, it can be argued that when these lands are placed in permanent open space use, they require fewer services than if they were developed with other uses.

2. Infrastructure

The expansion of infrastructure can be a two-edged sword. On the one hand, it can facilitate the opportunities for certain land uses, particularly those related to development. On the other hand, by making infrastructure improvements, land uses oriented to the protection of and use of resources can be adversely affected.

Rural land uses such as agriculture, timber production, recreational uses, or general open space can function without significant investments in and maintenance of infrastructure. The rural lands also offer opportunities for uses such as solid waste disposal facilities which require large parcels to accommodate existing and future needs and to buffer its more noxious features from the community. The pattern of very low density development and minimal amount of paved-over land surface makes it unnecessary to provide major urban infrastructure such as large sewage collection and treatment facilities or expensive drainage improvements. On the other hand, lack of infrastructure such as a reliable water supply and storage system affects the productivity of agricultural lands dependent on irrigation, and the absence of roads makes it difficult for County residents to gain access to recreational opportunities. The ultimate constraints for new infrastructure, however, remain the exorbitant costs and lack of funding sources.[58]

3. Natural Resources

As discussed in detail in the Resource Management volume, rural San Mateo County contains an abundance of natural resources, some of which are unique and irreplaceable. The ability to use resources productively is greatly affected by land use decisions. For example, agriculture is the best use for certain soils, and protects and enriches this resource for future generations. The conversion of agriculture to residential or

commercial uses can permanently eliminate the benefits of the resource. Local planning efforts can protect agricultural soils and ensure economic viability by designating agriculture as the principle use of productive lands and surrounding areas that are strategically necessary for agricultural protection on the land use plan. Through such a "buffering" mechanism, the County could minimize the intrusion of incompatible surrounding land uses and give clear signals to property owners that agriculture is to be given priority during the development review process.

At the development review stage, the County could further protect agriculture through measures such as density limitations, land division requirements and buffering valuable soils from incompatible uses by requiring large minimum parcel sizes. There is debate over the optimum parcel size necessary to ensure long term agricultural viability. Too small a parcel size can result in the subdivision of productive lands into "ranchettes" (a very low density residential use). Too large a minimum parcel size can create economic hardships of farmers by limiting their land use options. One way that the County could resolve this issue would be through land division requirements that cluster development into small parcels while retaining the most productive soils and buffer areas in large parcels.

The shortage of water for irrigation during the summer months when the peak growing season occurs is a major constraint for agriculture. The impact of the diversion of surface stream water and the overallocation of water rights is a complex problem that is discussed in more detail in the Water Supply Chapter. The solution to this constraint is the key to the long-term maintenance of the viability of agriculture in the rural portion of the County.

Agriculture has the ability to degrade the natural resources of the rural area as well. Poor agricultural practices can result in erosion and subsequent adverse impacts on water quality in downstream areas. The use of pesticides and fertilizers could adversely affect water quality as well, and have additional impacts on wildlife. Birds, in particular, are affected by pesticides.

The County's land use planning efforts can encourage the productivity of the timber lands through general plan designations that reflect the presence of the resource, discourage residential uses in resource areas, and encourage retention of large parcels. These are important factors in the continuing economic feasibility of harvesting operations.

When rural lands are put into public or private recreational uses, the resources they contain are generally protected from development although some more intensive recreational activities require development of facilities. The very action of placing lands in public ownership removes the potential for development and works to protect visual and scenic resources, watersheds, and wildlife habitat. The principal constraint posed by placing land into recreational use is the potential loss of the ability to utilize agricultural and timber resources contained in those lands.

4. Hazards

As the Natural Hazards Chapter has documented, much of the rural portion of the County contains geotechnically unstable areas that are prone to landslides, debris avalanches and other hazards that can result from a seismic event. These areas are intrinsically unsuitable for intense concentrations of people through residential or commercial development and more suitable for lower intensity land uses.

Agriculture is one land use that can take place in hazardous areas without exposing a great number of people to risks. After all, most of the world's great agricultural areas are located in areas where periodic floods occur to replenish the soil with deposits of river silt. Cultivated agricultural lands are predominately located in the Coastal Zone, while the lands suitable for grazing are located in the foothill and mountainous areas. In the Coastal Zone, there are flood hazards in each of the major watersheds, but most particularly in the San Gregorio and Pescadero Creek valleys. The use of these lands for agricultural purposes minimizes the risk of public exposure to flooding hazards. The County could encourage this logical pattern of agricultural uses adjacent to major streams through its land use planning efforts.

The flooding hazard, which provides such an obstacle to development in the rural service centers, could provide an additional opportunity to the agricultural lands. If a solution to the flooding problem is sought in the form of offstream impoundments to defer flood waters, these impoundments could act as a reserve supply during the drier months for agricultural irrigation.

The Skyline area contains some of the best grazing lands in the Bay Area.[59] Many of these lands are also located in the areas of greatest seismic risk. Agriculture could be a logical land use designation for these areas. The open space quality of the area is also enhanced by use of the land for grazing.

The great majority of the County's timber lands are also located in areas of seismic risk and high fire hazards. The use of these areas for timber harvesting, rather than for residential or commercial development, minimizes the risk of public exposure to the hazards of these areas. At the same time, by designating the timber lands for controlled harvesting, the County could protect timber, scenic and watershed resources.

The use of land for timber harvesting is constrained by the potential devastating land disturbance effects of harvesting operations conducted without appropriate mitigation. Removing the vegetative cover of areas with steep slopes could damage water quality and precipitate landslides or other nonseismic problems, such as debris avalanches.[60]

The County has the opportunity to avoid the numerous natural hazards of the rural area when making decisions about the location of new facilities and services. If expansions of water, sewer or energy systems are necessary, a review of the excellent information base on County hazards

offers opportunities to avoid future problems resulting from poor siting. In many parts of the rural area, however, it would be difficult to find locations for new structures or utility systems without encountering site problems due to natural hazards. The County could consider designating many of the identified hazardous areas for General Open Space use, particularly those areas that provide watershed protection or serve as open space preserves for wildlife.

5. Land Use Pattern

Perhaps the key issue for the County's rural lands is how the land use plan will arrange the pattern of different land uses. The land use pattern can result in complementary land use arrangements or create conflicts that diminish the most productive uses of the rural lands.

Agricultural lands are very sensitive to surrounding land uses. They can work well with recreational and open space uses, providing there are adequate buffers between the two uses. Even cultivated areas can coexist with recreational uses. For example, in certain State parks on the Coast, cultivated agriculture is practiced to the edge of the coastal bluffs, and there are trails through these areas. Use of fencing and strategic setbacks adequately buffer the agricultural use from recreational visitors.[61] In the Skyline ridge areas, the use of open grasslands for grazing blends with the adjacent public open space lands and is compatible with the unique vistas of the area.

Although it is generally accepted that residential uses can disrupt adjacent agricultural operations, the reverse can also be true. Certain intensive operations such as greenhouses or canning operations can result in visual impacts on surrounding residential areas and/or potential hazards from the use of pesticides, machinery or the generation of noise.
Community aesthetics could also be disrupted by greenhouse operations that remain lighted at night.

Timber lands are also very sensitive to the encroachment of residential uses. Like agriculture, timber harvest operations are greatly dependent upon the resources remaining in large parcels. To encourage this, the County could design methods of minimizing the impact of subdivision of timber lands.

The rural recreational experience is often enhanced by a sense of separation from the civilized world. The rural area of the County presently offers a variety of recreational experiences, from organized campgrounds and team sports to wilderness hiking and camping. The rural area is

unique in that it is so close to very densely populated urban areas. The County has the opportunity to maintain this separation of urban and rural experiences through its land use planning efforts. To maintain a rural atmosphere, a separation of recreational lands from higher density residential and commercial areas could be promoted. On the other hand, recreational lands can blend with agricultural uses, particularly grazing lands on open ridges. Recreational lands in forested areas can

also coexist with timber production activities, provided there is adequate visual and noise buffering from areas used by hikers and campers. In certain cases, isolated commercial uses that provide services to visitors can fit with recreational uses.

Residential land uses tend to conflict with the use of adjacent land for recreational purposes, particularly if trails or activity areas are located close to private homes. There have been numerous complaints from residents who live adjacent to a trail that begins near the subdivided area at the entrance to Memorial Park, as well as incidents of reported harassment of hikers and equestrian users of the trail. The perception of land use conflict can work in reverse as well, with hikers complaining about the design of residences adjacent to park lands.

Many lands in general open space for resource protection are highly sensitive to adjacent residential and commercial development or timber harvesting uses. This is particularly true for lands in general open space for watershed protection. The County has the opportunity to continue protecting significant resource areas by requiring any new development or resource uses to be buffered in a manner that maintains the open space continuity.

The County can promote complementary land use patterns through the proper location of its institutional facilities and new utilities, particularly solid waste disposal facilities. These land uses could be directed to areas where they will have a minimal impact on surrounding rural resources. Utilities can be located in remote areas where there are potential conflicts with recreational, agricultural or timber harvesting uses if maximum effort is made to buffer their impact. Performance standards, large parcel sizes, and development review criteria are possible methods of achieving these goals.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING RURAL LAND USE

A. RURAL SERVICE CENTERS AND RURAL SUBDIVISIONS

1. Economic

County policy, as expressed in the LCP, encourages economic development in the rural service centers in the Coastal Zone, the revitalization of existing developed areas, the provision of visitor-serving commercial facilities and the solution to the flooding, water and sewage disposal problems that constrain further development within the two coastal rural service centers.[62] There are presently no comparable policies for the La Honda rural service center.

The absence of available land zoned for commercial use, combined with sewage disposal and water service limitations, are the most significant factors limiting economic opportunities for the rural subdivisions. It is very difficult to meet County Environmental Health requirements on many of the parcels in rural service centers and subdivisions.

The zoning of the rural lands surrounding rural service centers and rural subdivisions permits only very low density development. This reinforces the policy of concentrating development within existing developed areas and, thereby, facilitating the easier and less costly provision of services to more people than in more dispersed land use patterns. It also protects surrounding resource lands from residential land use conflicts.

2. Infrastructure

The County has tried two different approaches to solve the infrastructure constraints in the rural service centers and rural subdivisions: (1) permitting higher densities with the intent that permitted development would make the provision of infrastructure more economically feasible; and (2) lowering densities to the levels that can be accommodated within the existing infrastructure constraints.

The first approach has been tried in Pescadero and San Gregorio. The LCP policies for rural service centers encourage the solution of the water supply, sewage disposal and flooding hazard problems of these areas. LCP policies and current zoning regulations also encourage the infill of Pescadero and San Gregorio at relatively high densities. However, this level of development is higher than the existing services can accommodate and does not reflect the present difficulty in obtaining adequate water supplies and locating sewage disposal systems. It was hoped that the higher densities allowed by the zoning would allow adequate development to make necessary infrastructure improvements financially feasible. However, this has not been the case so far, and only a small amount of infill has actually occurred.

The second approach was tried in the Skyline area. The Skyline Area General Plan Amendment resulted in land use changes that lowered density in many of the subdivided areas and the La Honda rural service center, and resulted in the merger of contiguous substandard lots in the same ownership.[63] This approach basically recognized the constraints and attempted to adapt to them through greater minimum lot size requirements.

In both the Skyline area and the Coastal Zone, County policy has required that new infrastructure be the responsibility of a developer or the local community through means such as benefit assessment districts. The problem with assessment districts is the high costs to individual property owners. Providing new roads, water systems or sewage disposal systems can be very expensive. Because of the high costs, residents often will hesitate to form assessment districts even when improvements are badly needed by their community. Even when a community is willing to share in the costs of infrastructure improvements through assessment districts or other methods, there can be obstacles. For example, the La Honda community has been trying for years to obtain a grant for the improvement of the local water system, but is only now entering the engineering and design phase after obtaining funding and the necessary approvals from State agencies.

3. Natural Resources

Further concentration of development in rural service centers and rural subdivisions encouraged by existing policy would significantly protect the timber, agricultural, mineral and other resources that are abundant in the surrounding rural area. A key LCP policy, the designation of the urban/rural boundary line around San Gregorio and Pescadero, indicated a strong County commitment to the concept of concentrating development in existing developed areas so that surrounding agricultural and other resource lands will not be adversely disturbed.[64]

Skyline policies also call for the clustering of new development, the minimization of developmental impacts on surrounding resources and the monitoring of development to periodically assess whether the rate of growth in the Skyline area is adversely affecting the resources and rural character of the area.[65] The Visual Quality Chapter has documented how the existing design review procedures could be improved in order to enhance the visual resources of the rural area. Site planning for development proposed within existing subdivided areas or at their edges could work to enhance the surrounding visual resources, particularly in the Skyline Area subdivisions. The County could carefully evaluate its policies and regulations regarding water supply for rural service centers and rural subdivisions. Often, small water systems rely on the diversion of surface water for their supplies. The County has thus far never taken an active role in regulating this use of water, although the Skyline policies discourage the creation of new parcels adjacent to perennial streams during the review of subdivision requests. The Purisima Creek adjudication documented that users in the upstream portions of the watershed adversely affect the downstream supply for agricultural irrigation.[66]

The natural resources, particularly visual and water resources could also be damaged through strict application of County road standards. Roads of 22 to 28 feet in width are currently required by these standards for the subdivided areas.[67] When few dwelling units are served by rural roads, this scale of improvements is often unnecessary. The County has encouraged the provision of adequate roads through special road improvement requirements for the Skyline area. These requirements encourage the application of flexible standards in areas with sensitive terrain, in accordance with the Creative Road Design Guide, as long as the Director of Public Works makes the finding of adequate access.[68] To date, however, the Public Works staff has been requiring full improvements for new development proposed in the Skyline area. Applicants for building permits and subdivisions are asked to make the costly improvements. The Board of Supervisors, responding to the appeal of residents, has directed staff to amend these road requirements, to place greater emphasis on protection of the natural resources and rural character of the area.

4. Hazards

The policies of the LCP and Skyline area plans that encourage the clustering of new development within rural service centers and near existing developed areas also facilitate protection from hazards. The proximity

of developed areas to major roads makes access for fire vehicles easier. Road improvement requirements can assist in providing better access when new development occurs. Requirements for adequate fire flow and use of fire resistant building materials also minimize fire hazards.

The regulations governing development within the rural service centers and rural subdivisions provide adequate mechanisms for avoidance or mitigation of geotechnical, fire and flooding hazards during the consideration of proposals for new development. However, existing developed areas such as Pescadero, which is already located within a flood hazard area, would continue to be exposed to the hazard. Pescadero residents would receive post disaster protections from flooding events due to the County's participation in the National Flood Insurance program (see the Natural Hazards Chapter).

The Flood Hazard Ordinance requires detailed engineering studies for any new development proposed within a one-half mile radius of Pescadero to ensure that structures are adequately elevated above flood levels and do not increase the flood hazard in downstream areas.[69] This special exception has been made for Pescadero due to the historic pattern of development already located in the floodway. Existing structures in the floodway zone will be treated as nonconforming uses. The approach taken for the remainder of the County by this Ordinance is avoidance of new development in the floodway altogether.

This approach entails some risk that individuals will continue to be exposed to flooding hazards even though structural requirements protect new buildings from high flood waters. The County could reexamine this approach to more strongly encourage setbacks or avoidance of new development in flood hazard areas.

5. Land Use Pattern

Concern for the incompatibility between residential and surrounding resource uses such as agriculture was one of the prime determinants in adopting LCP policies encouraging concentration of development in rural service centers. The LCP also contains criteria for conversion of agricultural lands to other uses so that maximum consideration is given to the potential impacts on agricultural resources.[70]

It is useful to consider the concept of "buffering" when subdivided areas are located adjacent to timber or park lands. At the present time, the County has a policy to acquire small, inaccessible parcels in subdivided areas adjacent to County Parks when they become tax delinquent. The County could pursue the acquisition policies in such areas more aggressively and investigate the use of parks acquisition and development fund monies for this purpose.

The need to carefully evaluate the type of commercial uses allowed in the Coastal Zone and the impact of this pattern on local communities was required by the Coastal Act. The concept behind this was to locate more intensive recreational and visitor serving uses away from commercial

uses serving the local population. The Coastside Commercial Recreation District and the prioritization of land uses as specified in the LCP was the County's response to this requirement.[71] There could be a need for more specific criteria for prioritizing land uses in the remainder of the County.

In the Skyline area, existing policies and regulations encourage the preservation of the open space character surrounding the rural subdivisions and the clustering of new development in proximity to existing developed areas. They also establish a monitoring program to evaluate the potential cumulative impacts of development on the unique land pattern of the Skyline area.[72]

6. Summary of Problems

a. County policy encourages the infill and provision of visitor-serving facilities in the Coastal Zone. However, there are no similar policies for La Honda or for specific rural subdivisions. There is a general lack of land zoned for commercial use within rural service centers and rural subdivisions.

b. The lack of available infrastructure frustrates County attempts to encourage higher density development in rural service centers and rural subdivisions. Both County strategies for addressing this problem have drawbacks: (1) lowering densities frustrates infill goals, and (2) allowing higher density without infrastructure improvements creates unrealistic expectations for residents and potential developers. The costs of financing improvements also discourage individuals and communities from pursuing infrastructure improvements.

c. County policies encouraging infill could create demand on water supplies that adversely affect the rural watersheds. Presently, no comprehensive policies address the appropriate amount of water that should be taken from the watersheds. County policies for the provision of roads in the Skyline area could result in severe damage to resources and neighborhood amenity if applied without consideration of the Creative Road Design Guide. Existing County road improvement standards are overscaled to the needs of the area for road improvements.

d. The new County Flood Hazard Ordinance will continue to allow development in Pescadero when appropriate structural mitigation is demonstrated. This could result in the exposure of more residents to the flooding hazard.

e. There could be clearer policy direction to indicate appropriate areas for expansion of rural service centers and rural subdivisions and to specify how surrounding resource areas will be buffered from such expansions.

B. RURAL LANDS

1. Economic

Existing County plans, programs, and regulations for the rural lands are oriented toward protecting the resources upon which the rural economy depends, respecting the limitations imposed by natural hazards, and fitting new development to the terrain based on those constraints. The County has made particular efforts to protect and enhance the agricultural economy in the Coastal Zone through participating in Williamson Act contracts to reduce property tax assessments for parcels in agricultural use and through the density, subdivision, and development standards requirements of the Planned Agricultural district (PAD). These regulations have resulted in the maintenance of conditions that facilitate the continuance of agriculture.

The PAD offers protection to agricultural operations through strict limitation of uses allowed on prime lands and other lands suitable for agriculture and by maintaining large acreages when land division is proposed.[73] Farm labor housing is permitted subject to a planned agricultural permit. The LCP also encourages agriculture by requiring that agricultural lands be buffered from areas of residential, recreational, and/or resource extraction land uses and by encouraging solutions to water supply problems.[74] These policies have been effective in protecting the agricultural resource. However, no comprehensive solution to the problem of adequate agricultural water supply has as yet been implemented.

Outside the Coastal Zone, the agricultural value of lands zoned RM is recognized in the density matrix.[75] However, the density credits assigned such lands do not necessarily reflect the level of development that would be appropriate in order to continue the productivity of the prime grazing lands. The County could reexamine the RM density and development review criteria to see if added protections are needed for the grazing lands.

The LCP and Skyline area plans also encourage the maintenance of lands in agricultural use, and the County has provided funding for programs to promote this use through the Office of the Agricultural Commissioner, the Agricultural Advisory Committee (established by the LCP), and the U.C. Cooperative Extension Program. These programs have provided a high quality of service for a very small investment.

The County has been at the forefront of efforts to manage its timber resources, in recognition of the economic value of the timber industry to local residents and the Bay region as a whole. In 1977, the Timberland Preserve Zone (TPZ) was adopted by the County. Until 1982, the County had its own timber harvesting ordinance in addition to the TPZ. However, timber harvest permit authority has now been shifted to the State Department of Conservation as a result of the Timberland Production Act of 1982. The State incorporated County concerns in its regulations for harvesting and keeps the County informed of harvest

activities. Although local control of the harvesting process has been lost, the current procedures appear to adequately address County concerns. The County could continue to monitor harvesting activity to assure that local concerns are being met. It appears, however, that the economic vitality of the timber industry has not been altered by the change in State law. The TPZ continues to adequately regulate any proposed subdivision activity.

Each of the rural zoning districts allows Christmas Tree farms. Christmas tree operations produce revenues for the County through timber use taxes and encourage recreational visits to the rural area.

The County has cooperated with other agencies and private parties for the acquisition of land for public recreation and open space, maximizing the use of public funds for this purpose. The recreational acreage in public ownership in the rural area is a testimony to the effectiveness of this cooperation.

County zoning allows commercial recreation in the RM and PAD zoning districts with varying restrictions. Commercial uses are not permitted in the TPZ. In the RM district, hotels, motels and restaurants and other specified commercial recreation uses are permitted upon securing a use permit.[76] In the PAD, commercial recreation uses, including country inns and food/gasoline/telephone services are permitted subject to issuance of a planned agricultural permit, but only in areas that do not contain prime agricultural soils.[77]

2. Infrastructure

Existing County regulations could do more to consider the lack of infrastructure as a determinant of allowable densities in the rural lands. Only one infrastructure criterion, proximity to all-weather roads, is presently evaluated in the density matrix analysis that determines density in the RM, TPZ, and PAD districts. Other factors, such as water availability and the feasibility for septic systems, are not part of the density analysis.

Infrastructure limitations were a key issue during the Skyline Study, and reductions in density were subsequently made in the subdivided areas to reflect these limitations. The Skyline Study also examined the ability of the existing infrastructure system to serve further development in rural lands. There are several factors that limit the use of these facilities. For example, the Skyline County Water District has a policy requiring extension of water lines through an entire parcel as a condition of obtaining a connection. In many cases, and particularly for large parcels, this policy results in applicants choosing to find a well in order to avoid the costs of the improvements. In this case, the infrastructure is in place, but there are strong financial disincentives to use it.

When individual sites are proposed for development in the rural area, the responsibility for providing infrastructure belongs to each applicant. County regulations for providing on-site water, sewage disposal

systems and water storage for fire protection are adequate for ensuring that each new dwelling or subdivision is served by these facilities. However, a practical and equitable means of ensuring that on-and off-site road improvements can be made available to serve new development is yet to be devised by the County. The County has particularly struggled with its policies for road improvements in the Skyline area. An analysis of County road improvement requirements and the problems of financing them is contained in the Transportation Chapter.

One public works project that might be appropriate but which is not feasible under current regulations and funding is the provision of an agricultural water supply. County policy in both the LCP and Skyline documents has attempted to address the agricultural water problems which, outside of urbanization, is perhaps the greatest threat to continuance of the agricultural economy of the area. A specific solution such as a watershed management program which could address both flooding and water supply problems has been discussed, but has yet to be seriously considered due to inadequate funds.

3. Natural Resources

The County's agricultural lands in the Coastal Zone receive strong protection by the requirements of the PAD. However, as discussed in the Water Supply Chapter, a key resource for agriculture, water supply for irrigation, depends upon a variety of complex regulations. These regulations could do more to adequately protect the resource. The uncertainty of allocation of water rights under existing State law has led to two statutory adjudications in coastal watersheds. In dry years, water flow is inadequate for agricultural uses during the peak irrigation season.

LCP land use designations and development review requirements of the PAD are very effective in protecting agricultural soils, but only in the Coastal Zone. The County does not presently have clear policies to address the presence of agricultural lands located outside of the Coastal Zone. The Skyline area contains a significant amount of valuable grazing lands. These areas are indicated on the Existing Rural Land Use map and correspond to recent mapping efforts conducted by the State.[78] To provide protection for these resources, the County could amend the Skyline area plan and the RM zoning district to increase consideration of the value of these lands during review of development proposals.

Timber resources in San Mateo County are protected by the TPZ district's requirements regulating land divisions and density, the RM development review criteria and the State's timber harvesting regulations. The requirement that major land divisions in the TPZ zoning district can only occur upon adoption of a timber management plan by a four-fifths vote of the Board of Supervisors[79] helps maintain large parcel sizes for timber production. In the RM District, land divisions are required only to meet the development review criteria.

In the past, the County has encouraged the harvesting of timber and adopted regulations aimed at avoiding incompatible residential uses and retaining larger, more economically viable parcels. At the same time, standards were adopted so that visual and other environmental factors are protected. These regulations have served to protect both the timber industry and visual resources. By regulating timber harvesting so that it is not noticeable, the open space appearance of the area remains attractive enough for visitors while allowing some harvesting to take place.

The harvesting regulations are now administered by the State Department of Forestry, pursuant to the Timberland Production Act of 1982. The resource appears to be adequately protected by these regulations, and the State has been sensitive to impacts on scenic resources, slope stability, and water quality. The County could continue to monitor the State's enforcement procedures for timber harvesting to ensure that local concerns continue to be met.

LCP policies focus on potential impacts of timber harvesting on the visual resources of the Coastal Zone.[80] Skyline Area Plan policies did not address visual quality issues, but do encourage the conservation of timber resources by ensuring that land use designations are compatible with their protection.[81] All lands that were currently in Timber Preserve Zoning at the time of adoption of the Skyline policies were designated for Timber Production on the proposed land use map.

For recreational land uses, existing County ordinances are flexible, allowing the uses by right or by use permit in each of the three major rural zoning districts (PAD, RM and TPZ). The PAD and TPZ districts are designed for the use and protection of a particular resource. The RM is designed to consider the presence of many different resources, while allowing certain uses of those resources. Public or private ownership for recreational use, however, may result in the termination of agriculture, timber harvesting or mineral extraction. Policies in the LCP encourage the continuation and expansion of agriculture when public or private agencies acquire lands for recreational purposes.[82] A similar policy requiring the consideration of the maintenance of the agricultural use could be adopted by the County for other portions of the rural lands.

The County could also adopt policies and regulations that specifically define natural resource protections in areas designated General Open Space. The RM offers an incentive for private sector involvement by providing additional development bonuses for parcels when 80% or more of the parcel proposed for development is dedicated for permanent open space use.[83] No corresponding density bonus is available in the TPZ and TPZ/CZ districts. The largest area in general open space use, the San Francisco watershed lands, has adequate protection through the watershed agreements, which clearly specify the types of uses that can be allowed in the area. However, the term general open space does not clearly define these uses for other portions of the rural area, particularly for proposed uses such as solid waste disposal facilities.

4. Hazards

The County's regulations for the rural area effectively address the presence of hazards in a number of ways. The existing land use designations for the LCP and Skyline area plans are primarily low density and oriented to resource protection.

Limiting density is the single most effective way of avoiding hazards because it minimizes the number of people who can potentially be exposed to the hazard. The flooding problems of Pescadero provide a good example of how the concentration of population in hazardous areas can create problems. Fortunately, the County has avoided this situation almost entirely in the rural lands. The new County Flood Hazard Ordinance prohibits the location of new structures in designated floodway zones, except in the Pescadero area. This requirement should be easy to implement in the rural lands, where existing agricultural, recreational and open space land use designations are considered to be compatible.

When an actual development proposal is made, other hazard regulations come into play. Site-specific density limitations are determined through a density matrix analysis that evaluates the presence of geotechnical and flooding hazards, as well as proximity to all-weather road access, an important factor in fire protection. The RM districts require detailed development review criteria, which are used to evaluate a proposed project's ability to avoid or mitigate hazards. Projects proposed in the rural area must also undergo environmental review in accordance with the County's CEQA Guidelines. In many cases, this review will include a geotechnical feasibility analysis, which analyzes the extent of the hazard and makes recommendations for mitigating or avoiding it.

When new development is proposed in fire hazard areas, conditions of approval are set related to road access, water supply and fire resistant structural materials in accordance with the County Fire Ordinance. The access requirements, however, can be exempted for single family dwellings. The County could consider changing this exemption procedure. The Skyline policies encourage the clustering of residential units proposed in rural areas near existing developed areas in order to discourage dwellings in remote areas that have severe fire hazards.

Since the County can no longer regulate timber harvesting, it cannot assure that hazardous conditions are being avoided. Although State standards seem adequate to avoid hazardous conditions, the County could improve its efforts to monitor harvest activity to ensure that these standards are being met.

Many of the hazardous areas in the rural lands are also the most scenic and could be appropriate for acquisition for public recreational use or general open space. When the County considers the acquisition of park land, it must determine if the proposal is in conformity with the General Plan. Once a parcel is acquired, the County Parks Department prepares a park master plan, outlining future development such as trails, campgrounds and visitor centers. Public access to the most

severe natural hazard areas such as flood plains, active landslides and fault traces can be precluded in this plan. This process effectively addresses the concern for hazards when recreational land uses are proposed.

5. Land Use Pattern

Generally, the land use designations and zoning districts for the rural lands have encouraged a pattern of land use that is coherent, protects resources and is renowned for its beauty. Agricultural, timber production, recreational and open space uses can blend together to maintain productivity of the County's resource lands and provide for open space and recreation, while still allowing some residential and commercial development.

For the agricultural lands, the PAD successfully addresses the potential impacts of proposed land divisions of valuable agricultural parcels. Adequate buffering between residential and other uses can be required during project review. Additionally, the PAD requires that valuable agricultural soils be retained in large parcels. These requirements have been effective in preventing the breakup of large, economically viable agricultural parcels, a trend which has been the death knell of agriculture in other counties.

The PAD strictly limits the permitted uses on prime agricultural lands and other lands suitable for agriculture. (One of these uses, greenhouses, has resulted in land use conflicts with residential uses in Pescadero.) Uses not directly related to agriculture, such as public recreation and timber harvesting, are allowed subject to the issuance of a planned agricultural permit. In the issuance of such permits, the County must find that criteria for the conversion of agricultural lands have been met and must be granted an easement for the permanent protection of the agricultural portions of the property.[84] These criteria strictly protect prime agricultural soils, but are somewhat weak for other soils suitable for agriculture.

The County could investigate whether existing policies and ordinances adequately protect agricultural resources from other land use patterns such as recreational or timber production. The findings required by the PAD for conversion of agricultural soils could be expanded to the other rural zoning districts, including grazing lands in the Skyline area. They are currently zoned RM, which has much weaker protections for the division of agricultural lands. The RM also allows many different and potentially conflicting land uses.

In recognition of residential incompatibilities, the TPZ district requires very large parcel sizes for any minor land division and a timber management plan for major land divisions. These regulations have adequately mitigated this potential land use conflict.

The County presently allows Christmas tree farms as a use by right in the major rural zoning districts. This is a growing use in the rural area, as reflected by rapidly increasing values over the last few years.

County zoning, however, does not regulate Christmas tree operations. This could become a problem in terms of traffic generation or hauling operations if the volume of harvesting activity continues to accelerate.

Another inadequacy in County regulations is the regulation of the on-site milling of timber. The TPZ allows the on-site processing of timber products of up to 100,000 board feet without a permit.[85] This has encouraged the use of portable sawmills. A problem arises when lumber is brought from other sites to the location of a portable sawmill, creating noise, dust and traffic problems for the rural area. The County could consider special permits for portable sawmills as a method of better regulating this use and encouraging the local production of timber.

There are certain areas where timber lands are bordered by cultivated or grazing lands. These two uses can be compatible as long as adequate precautions are taken to protect water supplies from timber-related erosion and sedimentation, and harvesting machinery and trucks are kept from disturbing crops and/or livestock. However, the County can only advise the State on conditions of approval for harvesting permits.

Although residential and recreational uses are generally not compatible, other uses such as agriculture and general open space can be very compatible with recreation. Certain agricultural uses can enhance the recreational experience. All of the rural zoning districts permit agricultural uses. The key issue is whether agricultural uses are adequately buffered from human intrusion. The LCP contains policies which specifically require buffering between agricultural uses and recreational uses such as trails. The RM zoning district and Skyline policies do not specifically address buffering.

Timber production is not a use that combines well with recreation. However, timber harvesting can occur in scenic regions adjacent to recreational lands without disturbing the overall appearance of the landscape, as long as visual buffers are maintained between harvest areas and adjacent recreational lands, and timber-related truck traffic is directed away from recreational areas. Since harvesting activity is now regulated by the State, this may be more difficult to achieve than previously. The County could encourage such buffering when reviewing timber harvest permit referrals from the State.

The largest of the general open space areas, the watershed lands, are protected by the scenic and recreational easements.[86] Other general open space lands for resource protection have similar private restrictions built into the deeds of individual properties. However, those lands which do not have private agreements are subject to the underlying zoning requirements, which could allow uses that impact neighboring recreational, agricultural or timber lands. The County could more precisely define its policies for general open space lands to avoid such situations.

6. Summary of Problems

a. County policy has strongly encouraged the protection of the natural resources upon which the rural economy is dependent. However, County policy is not specific regarding the protection of agricultural uses outside the Coastal Zone.

b. One major obstacle to the continued health of agriculture is the lack of a comprehensive solution to the water supply problems in South Coast watersheds.

c. In the rural lands, there is a need for greater assurances that improvement requirements for roads serving residential development will minimize impacts on the natural resources of the area.

d. In the areas outside the Coastal Zone, the County does not specifically designate lands for agricultural use or address the appropriate size of parcels and means of buffering from incompatible land uses. Timber harvesting is regulated by the State, but the County needs to actively monitor harvesting activity to ensure that local concerns are met.

e. There are no policies to address the protection of agricultural lands purchased by public agencies for recreational purposes in areas outside of the Coastal zone.

f. County policies effectively consider hazards during review of new development proposals. However, stronger requirements for fire access for individual residential development proposals in the rural lands could be appropriate. Monitoring of State timber harvesting procedures would better ensure that hazardous conditions associated with timber harvesting are avoided.

g. The conversion of agricultural soils outside of the Coastal Zone is not specifically addressed by County policy. The many different land uses allowed in the RM District potentially conflict with agricultural uses.

h. The County may need to more carefully evaluate the proposed location of greenhouses and other intensive agricultural operations adjacent to agricultural areas.

i. Policies for the buffering of land uses outside of the Coastal Zone are not clearly defined, particularly for lands in general open space use. The County could consider adopting performance standards to regulate the buffering of more intensive uses that are located in general open space lands such as mineral extraction or solid waste disposal.

j. The County could also adopt regulations addressing the use of portable saw mills, which can significantly impact surrounding land uses. Regulating Christmas tree operations may become necessary in the future if warranted by traffic and other problems.

IV. ALTERNATIVES

A. RURAL SERVICE CENTERS AND RURAL SUBDIVISIONS

1. Maintain Existing Plans, Policies and Regulations

By maintaining existing plans, policies and regulations, the County would retain a strong policy direction that new residential and commercial development should be concentrated in the rural service centers and rural subdivisions in order to protect surrounding resource production lands and, particularly, agriculture. Existing regulations accommodate development based on the limitations of the terrain by requiring minimum parcel sizes and the provision of adequate sewage disposal, roads and water supply.

The drawback to existing policies and regulations is that the County will realize few opportunities for more development within the rural service centers and rural subdivisions due to service limitations. Existing policies do not specify actions for overcoming service constraints. The net effect is an inconsistency between policy and the practical implementation of policy, particularly for San Gregorio and Pescadero.

Existing policies for La Honda and the Skyline area rural subdivisions have basically recognized the constraints and attempted to adapt to them through greater minimum parcel size requirements. While this policy is a wise one in terms of recognition of environmental limitations, it also eliminates many opportunities for residential and commercial development.

2. Modify Existing Plans and Policies to Allow a Greater Level of Development

In order to encourage more intensive development within rural service centers and rural subdivisions, extensive modifications to existing plans, policies and regulations are necessary. For example:

a. The County could reexamine its policies related to the approval of sewage disposal systems and, particularly, those which prohibit "package" treatment systems.[87] The problem of locating individual septic systems within rural service centers and rural subdivisions has been one of the key factors limiting the intensity of development.

b. The County could actively seek to improve the water supply situation for the rural service centers and rural subdivisions through improved use of the abundant surface water resources generated in the mountainous areas, more efficient use of the Skyline County Water District and development of new well water sources for the District and other existing small water companies.

c. The County could seek sources of funding in order to install public sewer and water supply systems. However, even if funding was secured, expanding sewage treatment plant capacity and finding adequate water supply sources would create new constraints.

d. The County could review the urban/rural boundary around Pescadero to evaluate whether it needs to be modified or relocated in order to facilitate more development. A particular problem is the location of the existing rural service center boundary of Pescadero within the floodway of Pescadero Creek.

e. The County could attempt to combine the water supply solution with a flood control solution for Pescadero by implementing a watershed management system for Pescadero Creek. However, for such a system to succeed, several dams or impoundments would need to be constructed. This would have implications for water rights and County policies for the protection of riparian habitat.

The implementation of policies to allow a greater level of development would require extensive changes in existing County policies, major changes in environmental health policies, the significant expenditure of funds, both for installation of infrastructure and long-term maintenance of that infrastructure, and possible dramatic changes to the physical appearance of the rural service centers and rural subdivisions. New growth resulting from this strategy could also have impacts on surrounding resources.

3. Modify Existing Plans and Policies to Allow a Reduced Level of Development

The third major alternative would be for the County to accept the environmental and service constraints and reduce the level of development in rural service centers and rural subdivisions to the level allowed by those constraints. This strategy would be similar to that taken during the Skyline study, which resulted in downzoning actions in specific subdivided areas where septic system constraints were identified. Certain subdivided areas in the Coastal Zone and in the area east of Skyline Boulevard could be appropriate for similar downzoning action. It could also be appropriate for Pescadero.

This "carrying capacity" strategy would severely reduce opportunities for development, particularly in Pescadero. In order to recognize the constraints of the floodway zone that covers most of Pescadero, the County would have to consider the existing uses to be nonconforming, prohibit further development, and eventually phase out existing development. The adoption of the County Flood Hazard Ordinance in compliance with FEMA requirements has basically rejected this approach. In order to achieve the reduced development alternative, LCP policies that encourage concentration of development within rural service centers would need to be amended, and downzoning to reflect environmental constraints would also be required.

B. RURAL LANDS

1. Maintain Existing Plans, Policies and Regulations

Maintaining existing County plans, policies and regulations would keep

in place the LCP and Skyline area plans as the primary operational plans for the rural area.

The policy orientation of these documents has been to adjust the level of development to the service and environmental constraints of the rural lands, while providing maximum protection for the resources of the area. Existing area plans provide stronger protections for resources in the Coastal Zone than in the Skyline area, with particular emphasis on agriculture.

Maintaining existing plans, policies and regulations would allow a moderate level of growth (see Table 9.5) within this framework of resource protection. The three major rural zoning districts, the RM, TPZ and PAD would continue to be the principal implementation measures for the land use plan.

2. Modify Existing Plans and Policies to Allow a Greater Level of Development

This alternative could accommodate a range of development options, from a slight increase in the overall level of development to a significant level of growth that could literally alter the rural nature of the area.

The principal implications of allowing a greater level of development are: (1) possible threats to the rural resources which are the heart of the existing economy for the area, and (2) significant investments in infrastructure that would be needed to support the level of growth desired by the new plan. Changes in County land use designations would be necessary for the implementation of a greater level of development, and mitigation measures to offset impacts on resources created by such changes would need to be adopted, primarily through Zoning Ordinance amendments.

Greater levels of development could be encouraged through the following measures:

a. The density matrix for the RM, TPZ and PAD zoning districts could be amended to yield higher density credits to more areas.

b. The County could seek improvements to major roads such as State Highways 1, 35, 92 and 84 that would be necessary to accommodate significant new development.

c. Many of the minor roads of the rural area would need extensive improvements. The County could enforce existing recorded agreements, initiate assessment districts or pursue other funding sources to accomplish this.

d. The County could rezone areas for higher density residential and commercial uses.

e. The County could seek funding sources for the construction of new sewage treatment facilities necessary to accommodate significant new

development or alter existing environmental health regulations to permit alternative sewage disposal systems.

f. The County could seek funding sources for the construction of reservoirs or impoundments or make improvements to existing water systems in order to supply additional water needed to accommodate greater levels of development.

g. To minimize the impact of greater levels of development on resources, the County could amend existing rural zoning regulations to require clustering and adopt development review criteria to buffer resource lands from the impacts of development.

3. Modify Existing Plans and Policies to Allow a Reduced Level of Development

This alternative would require amendment of existing area plans and zoning ordinances to allow less development than the present Skyline and LCP policies permit. This would be the most appropriate alternative if further protection of resources is desired. However, many of the economic opportunities for provision of services to recreational visitors and rural housing opportunities could be lost through pursuing this strategy.

The County could most easily implement this strategy by granting fewer density credits in all the rural zoning districts, particularly for those areas that are remote or hazardous. The lowering of the allowable level of development would make significant investment in infrastructure unnecessary and provide further assurances to farmers and timber harvesters that the future of the area lies in resource production and use rather than urban development.

FOOTNOTES

[1] Specifically, land use data from the recently adopted LCP and Skyline documents was used and updated where possible by field visit. Maps from other agencies were most useful in preparing the rural land use map, such as the "Land Use and Land Cover Map" for San Mateo County (prepared in 1977) and the "Important Farmlands Mapping Series" prepared by the California Department of Conservation in 1983. The "Aerial/Map Volume of San Mateo County, California", prepared by Real Estate Data, Inc., containing aerial photos from 1970 onward, was also used as a reference.

[2] 1980 U.S. Census block data for the La Honda area indicated that 39% of the respondents work outside of the San Francisco-Oakland SMSA, indicating a potentially sizeable commute to Santa Clara County. A further indicator is a mean travel time of 37.9 minutes in the journey to work. This data also indicates that 34% of the respondents have a journey-to-work of 45 minutes or more.

[3] San Mateo County Planning Division, Housing Element of the General Plan, December 1982, p.40.

[4] San Mateo County Planning Division, Local Coastal Program: Volume I, Land Use Plan, p. 11.1.

[5] The growth in new employment between 1970 and 1980 in San Mateo, San Francisco, and Santa Clara Counties was as follows:

County	1970-80
San Mateo	46,600
San Francisco	25,100
Santa Clara	275,100

Source: ABAG, Projections-83, p. 20.

[6] According to data collected by ABAG and the State Board of Equalization, there has been some increase in employment and the number of businesses reporting taxable sales in Half Moon Bay since 1970. However, there is no reliable measure of these same statistics for the unincorporated rural area. A review of Certificates of Occupancy issued by the San Mateo County Building Inspection Section reveals that only 63 new dwelling units have been completed between 1980-84 in the unincorporated rural area outside of Montara, Moss Beach and El Granada.

[7] Local Coastal Program, pp. 3.5 - 3.7.

[8] San Mateo County Planning Division, Parks and Recreation Element of the General Plan, May 1978, p. 34.

[9] State of California - The Resources Agency, Department of Parks and Recreation, California State Park System Plan: An Element of the California Outdoor Recreation Resources Plan, March 1980, pp. 130-139.

[10] Jara Associates, Final Environmental Impact Report for Pescadero Creek Park, July 1975, pp. 134-138.

[11] According to the County's Office of Environmental Health, in many portions of the Skyline area subdivisions, a minimum of 20,000 square feet is necessary in order to meet the health standards for adequate percolation and expansion area for a septic system and drainfield.

[12] This figure is actually the number of Certificates of Occupancy issued by the Building Inspection Section of the Planning Division since 1980.

[13] 1980 U.S. Census (see Footnote 2).

[14]Again, this figure is the number of Certificates of Occupancy issued since 1980. It does not reflect any Certificates of Occupancy issued inside the La Honda Rural Service Center.

[15] Local Coastal Program, pp. 11.3 - 11.10.

[16] Information on the pattern of land use by the Costanoans and by succeeding generations of Spanish, Mexican and American Settlers has been synthesized from San Mateo County--It's History and Heritage, prepared by the San Mateo County Historic Resources Advisory Board in cooperation with the Planning Division, January 1983, pp. 1-44.

[17] The specialty crops of Coastal San Mateo County are predominately brussels sprouts, artichokes, cut flowers and pumpkins. They are "specialty" crops, because their climate and irrigation needs and soil depths and types are particularly well met by a Coastal Zone location.

[18] A report entitled "The Productivity of Bay Area Rangeland," prepared by People for Open Space (POS), a non-profit, tax-exempt citizen organization based in San Francisco in May 1980, indicates that Bay Area grazing lands "are some of the most productive in California" due to their long growing season, adequate winter rainfall and fertile soils. The productivity of grazing lands is measured by their ability to sustain livestock.

[19] The grazing lands shown on the Existing Rural Land Use Map were derived from mapping done by the California Department of Conservation during their Important Farmlands Mapping Series. This description meets their definition of important grazing lands.

[20] One measure of the "uniqueness" of the artichoke and brussels sprouts crop is the percentage of the nationwide crop that is locally produced. San Mateo, Santa Cruz and Monterey Counties produce 85% of the nation's artichokes and brussels sprouts, according to the LCP Land Use Plan, p. 5.12.

[21] In order to enter into the TPZ, a property owner must place the entire parcel under his/her ownership into the zoning district. Since property lines do not automatically follow vegetative community boundaries, it is possible that prime grazing lands could be within parcels zoned TPZ.

[22] Previously, timber was harvested in San Mateo County upon issuance of a permit pursuant to the County's Timber Harvesting Ordinance. On July 1, 1983, however, pursuant to SB 856, which amended the Public Resources Code related to forest practices, the State Board of Forestry assumed all permit authority for the harvesting of timber. The Board administers such permits consistent with locally proposed rules for harvesting that were established by agreement between the State and the affected county prior to the effective date of the new law.

[23] The number of active harvests was obtained from County files, updated by a survey of permits issued since July 1, 1983, by the State Board of Forestry. "Active" files are those for which a timber harvesting permit has been issued, dating back to no more than three years.

[24] Harry Dean, County Parks Department, personal communication.

[25] See Footnote 6.

[26] County of San Mateo, Department of Environmental Management, Planning and Development Division, Skyline-Santa Cruz Mountains Area Study, Final Draft, Approved by the Board of Supervisors, June 14, 1983, p. 2.12.

[27] Walt Shellstrom, State Board of Equalization, Timber Tax Division, personal communication.

[28] County of San Mateo Department of Agriculture, "San Mateo County Agricultural Crop Report", 1983.

[29] Local Coastal Program, p. 11.4.

[30] Congress authorized funds in 1980 for acquisition of Sweeney Ridge, which is located within the City of Pacifica. The National Park Service completed the purchase of the property in early 1984 after several years of administrative delays.

[31] This data was obtained from the staff report prepared on the expansion proposal by George Bergman of the County Planning staff.

[32] Douglas Nadeau, Planner, Golden Gate National Recreation Area, personal communication, October 27, 1983.

[33] State of California, Department of Parks and Recreation, California State Park System Plan, March 1980, pp. 137-139.

[34] Local Coastal Program, Policy 1.20, p. 1.5P.

[35] County of San Mateo, Department of Environmental Management, Planning and Development Division, Skyline Area General Plan Amendment, Policies 1.2, 2.3, 2.4 and 2.5, pp. 1.1P, 2.1P and 2.2P.

[36] Skyline Area General Plan Amendment, Policies 2.1 and 2.2, p. 2.1P.

[37] Skyline Area General Plan Amendment, Policies 1.1 and 1.3, p. 1.1P and 1.2P.

[38] Skyline Area General Plan Amendment, Policies 5.4 - 5.9, p. 5.1P and 5.2P.

[39] San Mateo County Ordinance Code, Division VI (Planning), Part I (Zoning), Chapter 20.A, p. 117.

[40] San Mateo County Ordinance Code, Chapter 34, p. 252.

[41] San Mateo County Ordinance Code, Chapter 20B, p. 151.

[42] San Mateo County Ordinance Code, Chapter 21.A, p. 173.

[43] San Mateo County Ordinance Code, Division VI (Planning), Part Two.

[44] San Mateo County Ordinance Code, Section 14.5. Added by Ordinance No. 2600, August 21, 1979.

[45] California State Park System Plan, pp. 133-36.

[46] The sales tax in San Mateo County is 6 1/2 cents on each dollar spent. Of this amount, only one cent is directly returned to the County General Fund. If the sale occurs in incorporated areas, the County receives only 5 percent of each cent, or .05% of each dollar spent. Sales taxes were the County's second highest source of revenue (after property taxes) in the 1983-84 fiscal year.

[47] Transient occupancy taxes accounted for over $900,000 in revenues in 1982-83, according to the 1983-84 San Mateo County Budget.

[48] A review of ABAG's Projections '83 employment data for the census tracts that are roughly coterminous with the rural area of San Mateo County, indicates that approximately 81% of all jobs are in agriculture, forestry, mining, retail trade, and services.

[49] The Cuesta La Honda Guild, an association of property owners in the La Honda community that manages the water system, has tried for several years to obtain the necessary financing and approvals to expand their water system. As of this writing, they have obtained financing and are preparing preliminary engineering work. The proposed improvements will be designed primarily to correct deficiencies in the existing system and will not allow a significant number of new connections.

[50] Pursuant to Proposition 13, a two-thirds majority vote is now required to impose any new taxes. This requirement makes it extremely difficult to adopt new financing mechanisms for infrastructure. For example, in Santa Clara County in 1983, a tax measure to construct a new jail facility failed, even though it was approved by 55% of the voters. One mechanism that has been used in the financing of infrastructure in individual subdivisions or neighborhoods has been the benefit assessment district. This mechanism provides the opportunity for residents of a defined area to

assess themselves for the costs of improvements desired by the community. It is popular because it depends on voluntary community support, establishes a funding source outside of the County General Fund, and results in no costs to local governments beyond establishing the district and administering how the money is spent. The problem with this approach is that local residents are often unwilling to assume additional costs to finance local services.

[51] In recent years, there has been increasing concern that the water rights allocations in certain of the South Coast watersheds are overdrawing available water supplies and limiting the amount of surface streamflow available for agricultural users in the Coastal Zone.

[52] The difference between a floodway, the actual path of floodwaters, and a flood plain, the spillover area beyond the floodway, is explained in more detail in the Natural Hazards Chapter.

[53] The potential conflict between recreationally-oriented commercial, and commercial facilities designed to serve local residents is discussed in the LCP on page 11.27.

[54] The land use conflict is discussed in the Skyline-Santa Cruz Mountains Area Study, pp. 2.24-2.25.

[55] Table 9.8 in the Background Section provides a more detailed breakdown of agricultural crop values in San Mateo County.

[56] Conversation with Walt Shellstrom, State Board of Equalization, Timber Tax Division, December 1983.

[57] Conversation with Bill Rozar, San Mateo County Planning Staff.

[58] An excellent discussion of the energy costs involved in agricultural production is found in "Bay Area Agricultural Production Issues," a background report prepared for the People for Open Space Farmlands Conservation Project, February 1980.

[59] People for Open Space, "The Productivity of Bay Area Rangeland," Special Report No. 3, May 1980.

[60] See the Natural Hazards Chapter (Chapter 15) for an extensive discussion of the various geotechnical hazards found in the County.

[61] A good example of where this has been successfully implemented is in agricultural portions of the Ano Nuevo State Reserve.

[62] Local Coastal Program, Policies for Chapters 1 and 2.

[63] Skyline Area General Plan Amendment, Policy 2.4, p. 2.1P.

[64] Local Coastal Program, Policy 1.13, p. 1.3P.

[65] Skyline Area General Plan Amendment, Policies 1.1, 1.2, 2.1, 2.6, pp. 1.1P 2.2P.

[66] An adjudication is an investigation of the allocation and use of water rights in a specific watershed by the State Division of Water Rights in response to a formal request by one or more water rights users in that watershed. The result of an adjudication may be a reallocation of allowable water usage based on a finding of overdrafting of available supplies.

[67] County road standards are defined in Board of Supervisors Resolution 36129, adopted in 1976.

[68] Road standards to be specifically applied to the Skyline Area were adopted by the Board of Supervisors in Ordinance No. 2838, adopted June 14, 1983.

[69] County Ordinance No. 03002, Section 6328.27.

[70] Local Coastal Program, Policy 5.8, p. 5.3P.

[71] San Mateo County Ordinance Code, Chapter 16.5.

[72] Skyline Area General Plan Amendment, Policies 1.1 and 1.3, pp. 1.1P-1.2P.

[73] San Mateo County Ordinance Code, Chapter 21A, Sections 6352, 6353, 6355, 6356.

[74] Local Coastal Program, Chapter 5, Policies 5.8, 5.15, and 5.21-5.29.

[75] San Mateo County Ordinance Code, Chapter 20-A, Section 6317.

[76] Ibid., Section 6315.

[77] San Mateo County Ordinance Code, Chapter 21-A, Section 6353.

[78] The State has recently completed maps of the County's "Important Grazing Lands" as part of its "Important Farmlands Mapping Series." Important Grazing Lands are defined as those lands which contain vegetative material that is suitable for the grazing or browsing of livestock.

[79] San Mateo County Ordinance Code, Chapter 34-B, Section 6770.

[80] Local Coastal Program, Policies 7.9, 7.13, pp. 7.2-7.4P.

[81] Skyline Area General Plan Amendment, Policy 2.1, p. 2.1P.

[82] Local Coastal Program, Policy 5.8, p. 5.3P.

[83] San Mateo County Ordinance Code, Chapter 20-A, Section 6318.

[84] San Mateo County Ordinance Code, Chapter 21-A, Section 6361.

[85] San Mateo County Ordinance Code, Chapter 34-B, Section 6754.

[86] These easements and details of the agreements between the County and other agencies for managing the watershed lands are discussed in detail in the Parks and Recreation Resources Chapter.

[87] Alternative sewage treatment systems are discussed in the Wastewater Chapter.

RURAL LAND USE APPENDICES

APPENDIX A – SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX B - TOPICS FOR FUTURE CONSIDERATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on March 27, April 8 and 10, 1985, the following background data was added to the Rural Land Use Chapter.

A. INFORMATION UPDATE

Staff has updated Tables 9.8, 9.9 and 9.10 of the Rural Land Use Chapter to reflect the latest information available.

B. CHARACTERISTICS OF CATTLE OPERATIONS

1. Type of Cattle Operations

Like many other industries, the cattle industry has evolved into specialized components. There are three basic production levels in the industry, as described below.

a. Cow-Calf Operations

A cow-calf operation is basically a factory for producing new calves. The cow-calf operator maintains a herd on a year-round basis, marketing all calves except for those that are retained as replacement heifers (mature cows and bulls).

b. Stocker Operations

The stocker operator is sort of a "middleman" in the cattle business. The stocker buys calves after they have been weaned and pastures them until they have put on enough weight to be sold to feed lots. A stocker operation predominantly relies on natural grazing lands for its source of feed.

c. Feed Lot Operations

Once the cattle have been fattened through grazing on natural grasslands, they are sold to feed lots, where they are fed higher protein grains for 3-4 months in preparation for slaughter.

2. The Cattle Business Cycle

Like many other commodities, cattle are subject to the fluctuations of prosperity and recession created by market supply and demand. Data on cattle production reflect this, showing dramatic increases and decreases in, for example, the number of calves annually produced over a ten-year period.

Generally, the cycle proceeds in the following manner. High beef prices encourage the expansion of herds. As the herds build up, requiring more range land and/or feed, pressures mount for slaughter in greater numbers. This increases the supply of meat, resulting in lower beef prices. Lower prices result in further liquidation of herds, creating even lower prices. Finally, herds dwindle to a level where scarcity begins to drive prices up again and the cycle repeats.

3. Costs of Production

a. Cow-Calf Operations

The cow-calf operation is much more capital intensive than a stocker operation due to the costs of land and the facilities needed to house, feed, and/or graze the herds. Prices have increased markedly in recent years due to feed costs, and higher agricultural wage rates, interest rates, transportation, and energy costs. Many of the cow-calf operators remain in business due to the fact that they have owned their land for many years, by increasing production without increasing costs, by postponing needed repairs on their facilities, and/or by seeking or using outside sources of income. The following is a list of the costs involved in maintaining a cow-calf operation. This excludes land acquisition costs:

Summary of Cow-Calf Operation Costs

- Feed
- Labor
- Interest on Operating Capital
- Transportation
- Veterinary Services
- Other Operating Costs
  - Utilities
  - Repairs
  - Insurance
  - Miscellaneous
- Fixed Costs
  - Personal Property Taxes
  - Depreciation
  - Interest on Investment

b. Stocker Operations

These operations face fewer capital costs and often are conducted on leased grazing lands. However, in spite of their flexibility, they often face greater risk due to the margin between purchase price of calves and sales of the yearlings after fattening. Thus, timing is very important to the stocker because the price per pound could dramatically rise or fall during the fattening of the animal. Stocker operational costs include the following:

Summary of Stocker Operation Costs

Horses and Equipment
Interest on Investment
Depreciation
Rent of Range
Labor
Transportation
Veterinary Services, Medicine, Etc.
Other Operating Costs
    Repairs
    Fuel
    Insurance
Interest on Cattle

4. Sources

Johnson, Walter et al., "Cow-Calf Economics," Cooperative Extension, University of California, December, 1984.

Markegard, Gary, "Beef Production in Humboldt County," Humboldt County Farm Advisor Report, 1981.

Roberts, Marty, "The Productivity of Bay Area Rangeland," People for Open Space Farmlands Conservation Project, May, 1980.

C. PROTECTION OF AGRICULTURE FROM SPECULATION

One of the most significant public policy issues for California in the coming decades will be the loss of productive agricultural land to urbanization. As our state's and region's population grows, there will be increasing pressures on remaining agricultural lands at the urban fringe. Already hundreds of thousands of acres of some of the most productive agricultural lands in the nation have been lost to urbanization.

Perhaps the classic example of this has occurred in the Santa Clara Valley. This wide, alluvial plain of two large drainages (Guadalupe River and Coyote Creek) contains some of the finest agricultural soils in the State and excellent growing conditions. This resource and the threats to it were recognized as early as 1954, when a plan was adopted for protecting agriculture. The two principle features of this plan were (1) adoption of an exclusively agricultural zoning district; and (2) establishment of development policies which directed urban growth to a series of identified urban nodes that would be surrounded by productive agricultural areas. Although this was visionary for its time, it failed because repeated "exceptions" were made that allowed encroachment of suburban-density residential development into productive agricultural areas. This process, which later became known as "leapfrogging," accelerated the conversion of agricultural lands and led to additional requests for further "exceptions." When residential subdivisions were developed, surrounding agricultural areas were re-assessed to reflect their higher

potential market value, resulting in further increases in property taxes. If this was not enough incentive to encourage a farmer to convert his land, the presence of suburban neighbors tended to create complaints about the use of pesticides, noise and dust from farm machinery, etc. There also tended to be increases in vandalism of crops and farm facilities. Finally, as the real estate boom progressed, most landowners could not resist the large speculative returns offered for their land, even though many sincerely wanted to maintain their farms.

The urban/rural boundary is a mechanism by which a similar situation can be avoided in San Mateo County. Defining a clear line of demarcation between urban and rural land uses gives signals to property owners and potential speculators that the County is serious about the protection of its resource lands and identifies those areas where efforts for further development should be concentrated. The maintenance of an urban and rural distinction is the best way that agriculture can survive in San Mateo County.

D. LAND USE CONFLICTS BETWEEN TIMBER OPERATIONS AND OTHER USES

As explained in more detail in the text of the Rural Land Use Chapter, key conflicts between recreational and timber production uses include the potential visual blight resulting from cutting operations, noise, dust, and traffic safety problems associated with logging trucks. There could also be adverse impacts to watercourses due to siltation caused by upstream erosion from exposed slopes after a timber harvest. These factors strongly conflict with the recreational experience, which is normally associated with escape from similar urban problems. On the other hand, the presence of too many recreational users in the County's timber producing regions could affect the viability of the timber production industry.

Timber management is an important component of recreational lands, particularly in cases where deteriorated forest conditions can create public safety problems. Some management of the wilderness areas of Pescadero Creek Park became necessary after the storm damages that occurred in 1982, resulting in blocked stream channels and, in some instances, severe downstream erosion. In situations like this, some timber removal became necessary.

APPENDIX B

TOPICS FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topics were identified relating to the Rural Land Use Chapter which are most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

1. Evaluate specific sites for infill development and funding mechanisms for infrastructure improvements in rural service centers and subdivisions (Skyline, LCP).

2. Identify the types of significant land use conflicts that can occur at the edge of the urban/rural boundary and evaluate strategies for resolving them (Skyline, LCP).

3. Pursue new land use designation categories for different agricultural uses (e.g., floriculture, greenhouses, grazing lands, etc.) (LCP, Skyline).

10

Water Supply

Background ▪ Issues

WATER SUPPLY BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

Perhaps no other aspect of infrastructure is more vital to public health and welfare than an adequate and potable supply of water. Without it life cannot be sustained. Since the beginning of concentrated settlements, water has been a necessary resource and an important factor in determining the location and intensity of land uses. The need to provide an adequate supply to meet the demands of growing populations is a primary planning concern.

This Chapter of the General Plan describes water supply sources and water quality, inventories water suppliers, analyzes relevant issues affecting the supply and, finally, provides policies to guide the actions of decision-makers concerning water supply management.

B. STATE PLANNING LAW

Section 65302(d) of the California Government Code requires the development of "a conservation element for the conservation, development and utilization of natural resources including water and its hydraulic force . . ." Section 65302(d) goes on to say, "that portion of the conservation element including waters shall be developed in coordination with any countywide water agency and with all district and city agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared."

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing General Plan Documents

a. Conservation and Open Space Element (1973)

The 1973 Conservation and Open Space Element of the General Plan discussed water primarily as a natural resource, although there is also a limited discussion of the supply of water. The background data and issue statements applicable to water supply provided information used in compiling this Chapter. The goals and objectives of this Element have been examined and, where relevant, incorporated into this Chapter. This Chapter, when approved, will replace the Water Supply portion of the Conservation and Open Space Element.

b. Area Plans

The San Bruno Mountain General Plan Amendment, the Montara-Moss Beach-El Granada Community Plan, the Emerald Lake Hills Community

Plan, the Local Coastal Program, and the Skyline General Plan Amendment each contain particular water supply policies. The Water Supply Chapter is more generalized and applies to the entire County. Section 65300.5 of the Government Code requires that these distinct portions of the General Plan be consistent.

2. Other Sections of the Updated General Plan

While this Chapter discusses the supply and distribution of water for various purposes, it does not discuss the ecological importance of water (see the Vegetation, Water, Fish and Wildlife Resources Chapter). Further, this Chapter does not discuss the management and disposal of sewage (see the Wastewater Chapter).

D. RELATION TO OTHER COUNTY PLANS

The San Mateo County Comprehensive Water Resources Management Plan was developed in response to State legislation requiring San Mateo County to prepare a plan for coordinating and managing the supply and distribution of water, and for coordinating and managing the treatment and disposal of wastewater from all sources. Its preparation was managed by the Peninsula Water Agency through a steering committee comprised of many representatives with an interest in water management. In 1978, the Comprehensive Water Resources Management Plan was adopted by the Board of Supervisors, and staff was directed to incorporate the policies contained therein into the General Plan. Much of the information contained in the Plan provided background data for use in preparing this Chapter.

E. DEFINITIONS AND WATER MEASUREMENTS

Terms used in this Chapter which require explanation are listed below:

ACRE-FOOT - A standard measurement of volume equivalent to the amount of water required to cover one acre one foot deep. One acre-foot is equivalent to 325,851 gallons.

AQUIFER - Any geologic formation of sufficient porosity and permeability to store, transmit and yield water to springs and wells.

POTABLE - Water which is suitable, safe or prepared for drinking purposes.

MILLION GALLONS/DAY(mgd) - A rate of flow of water.

ONE MILLION GALLONS - 3.0689 acre-feet.

II. EXISTING WATER SUPPLIES

A. URBAN AREAS

1. Sources of Water

Nearly 90% of the water supplied to the Bayside and the northern portion of the Coastside is provided by the San Francisco Water Department (SFWD) through contractual agreements.[1] This supply originates from local reservoirs and the Sierra Nevada with the Sierra system of reservoirs (primarily the Hetch-Hetchy Reservoir) providing the bulk of the supply. Water from the Hetch-Hetchy is transported through an elaborate system of pipelines (each 47.5 miles long), tunnels and reservoirs, and results in a supply of 335,000 acre-feet per year.[2] This supply is supplemented by water from Alameda County reservoirs at about 32,400 acre-feet per year and the Crystal Springs, San Andreas and Pilarcitos Reservoirs in San Mateo County, which yield about 14,500 acre-feet per year.[3] The total amount available to the San Francisco Water Department is 382,000 acre-feet per year.[4] As indicated in Table 10.1, this supply should remain constant through 2010.

Local surface water and groundwater sources are used to supplement San Francisco Water Department water. These local sources are especially important in Half Moon Bay, Daly City, South San Francisco, San Bruno and the southeastern portion of the County.[5] For additional information on the description and location of these local sources, see the Vegetative, Fish, Water and Wildlife Chapter.

2. Water Quality

Crystal Springs Reservoir and San Andreas Lake are supplied via the Hetch-Hetchy Aqueduct with imported water which, because of its softness and low quantity of total dissolved solids (TDS), is of very high quality. This low level of TDS, however, causes corrosion in metal pipes, and to counteract this, lime is added.

Most inorganic and organic compounds generally present in surface water which may have adverse health effects on consumers are removed or destroyed by standard methods of water treatment. Table 10.2 provides an analysis of substances present in major County reservoirs. There are, however, other contaminants not easily removed from drinking water supplies. These include trihalomethene precursors, toxic organics and asbestos fibers.[6] Recent technological advances have allowed researchers to begin evaluating and monitoring the effect of these constituents upon health and establish levels of contamination.

As for asbestos fibers, this is a substance seemingly present in California surface waters.[7] While asbestos is a known carcinogenic when inhaled, its effect when ingested in drinking water is less well known and standards of allowable concentrations have not been developed. While most asbestos can be removed with standard water treatment methods, extremely high concentrations sometimes present in untreated water can be delivered to the consumer.

TABLE 10.1

SAN FRANCISCO WATER DEPARTMENT SUPPLIES
1980 and 2010

SOURCE	1980 (Thousands of Acre-Feet Per	2010 year)
Hetch-Hetchy Capability	335.0	335.0
Local Reservoir Yield		
Alameda County	32.5	32.5
San Francisco Peninsula	14.5	14.5
TOTAL (Thousands of Acre-Feet/Year)	382.0	382.0
TOTAL (Millions of Gallons/Day)	341 mgd	341 mgd

Source: Water Action Plan Central and South San Francisco Bay Area, 1982.

TABLE 10.2

WATER QUALITY OF MAJOR RESERVOIRS

RESERVOIR	TOTAL DISSOLVED SOLIDS (mg/l)	HARDNESS (mg/l)	ALKALINITY (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)	MANGANESE (mg/l)	SODIUM (mg/l)
Crystal Springs Reservoir	92	52	44	15.2	3.4	0.08	0.02	8.7
San Andreas Lake (filtered water)	105	60	56	13.6	6.3	0.08	0.02	11.7
Pilarcitos Lake	121	62	62	16.0	5.4	0.05	0.02	17.7
Lake Lucerne	302	87	48	16.1	11.5	3.88	0.05	48.5
Domestic Water Quality Standards	500[1]	---[2]	---	---	---	0.30	0.05	20.0[3]

	POTASSIUM (mg/l)	CHLORIDES (mg/l)	SULFATES (mg/l)	FLUORIDES (mg/l)	NITRATES (mg/l)	ACIDITY (mg/l)	TURBIDITY (mg/l)	COLOR (mg/l)
Crystal Springs Reservoir	0.9	9	10.4	0.08	0.40	7.8	11.0	5
San Andreas Lake (filtered water)	0.9	12	12.5	0.98	0.30	8.3	0.1	0
Pilarcitos Lake	0.7	21	8.1	0.02	0.10	8.0	0.9	0
Lake Lucerne	4.4	89	31.6	0.10	1.70	7.4	67.0	200
Domestic Water Quality Standards	---	250[1]	250.0[1]	1.40-2.40	45.00	6.0-9.0	5.0	15

Notes:
1. Maximum contaminant levels recommended by California Department of Public Health. Higher levels may be tolerable.
2. Hardness: 0-60 = soft; 61-120 = moderately soft; 121-180 = hard; 181+ = very hard.
3. Maximum level suggested by the Environmental Protection Agency to accommodate limited sodium intake diets.

Sources: California Department of Public Health, "1977 California Domestic Water Quality and Monitoring Regulations."

San Francisco Water Department, "Annual Mineral Analysis," 1981, for Crystal Springs Reservoir, San Andreas and Pilarcitos Lakes.

Leeds, Hill, and Jewett, Inc., Comprehensive Water Resources Management Plan, San Mateo County, January 1978, Table IX-3; for Lake Lucerne and South Coast Streams.

3. Water Suppliers

This section describes the administrative organization of the many types of entities supplying water, inventories water suppliers, and examines supply capacity.

a. Administrative Organization

(1) County Water District

A county water district, as authorized by Section 3000 et seq. of the California Water Code, can furnish water for any present or future beneficial use along with acquiring, appropriating, controlling, conserving, storing and supplying water.[8] The district can also generate and sell hydroelectric power at wholesale rates, drain and reclaim lands and use any land or water under district control for recreation purposes. In addition, this district can be annexed to or included within other districts, cooperate and contract with the state to control and distribute water, and construct and operate water works; and, finally, the district can issue general obligation and revenue bonds, issue warrants and negotiable notes, and levy assessments on taxable property.[9]

(2) County Waterworks Districts

A county waterworks district, authorized by Section 55000 et seq. of the Water Code, can supply water for irrigation, domestic, industrial or fire protection purposes, or acquire and conserve water from any source. Unlike a county water district, this type of district can also treat or reclaim saline water. In addition, this district can include unincorporated County areas or one or more incorporated areas of cities; however, it cannot overlap with other districts. This district can issue general obligation bonds, revenue bonds, charge rates for use and supply of water or water service and, levy assessments on taxable property.[10]

(3) Improvement Districts

An improvement district is created by a special act of the Legislature and not by petition, as are the districts previously discussed. This district is empowered to provide a range of services in addition to the production, storage, treatment and distribution of water. Other services include providing street and highway lighting facilities, sewage and garbage facilities, drainage and reclamation of land, and police and fire services. Of the two improvement districts operating in San Mateo County, the Estero Municipal District can provide parks and recreational facilities, small craft harbors, acquire and construct utility facilities and provide bridges and viaducts; the Guadalupe District cannot.[11]

(4) Municipalities

Cities or towns have the administrative power to provide water distribution and treatment facilities, police and fire protection, sewage and refuse disposal, and street lighting. They can also levy assessments on taxable property and issue bonds.[12]

(5) Private Water Companies

A private water company, operating under the regulations of the California Public Utilities Commission (PUC), is a profit-oriented entity providing water at established rates approved by the PUC.

b. Inventory of Water Suppliers

Approximately twenty-two entities supply water to urban incorporated and unincorporated areas in the County. A listing of these suppliers, their source of supply, the number of connections and rate of consumption is provided in Table 10.3. The map of Water Suppliers illustrates the service area for each supplier.

c. Availability of Service

(1) Factors Affecting Availability

(a) Suburban Purchasers Litigation

Suburban water suppliers purchasing water from the San Francisco Water Department have been involved in litigation with the Department which began as a rate case, with suburban purchasers contending they were being charged more than San Francisco users. This contention was upheld, and a uniform rate increase went into effect. When the Department appealed this decision, the suburban purchasers amended their initial challenge to assert that suburban water users were entitled to water at cost. The revised challenge went on to say that the Department is setting rates for suburban suppliers above cost.

A proposed settlement of this ligation is now being considered by suburban purchasers, to be in effect for 25 years. It commits the San Francisco Water Department to provide up to 184 mgd per year, 39 million gallons over the 145 mgd used by suburban purchasers in FY 82-83.[13] The proposed settlement also provides a method for the suburban purchasers to decide how to allocate the additional 39 mgd.

TABLE 10.3

WATER SUPPLIERS IN URBAN AREAS

WATER SYSTEM	SOURCE OF SUPPLY	NUMBER OF CONNECTIONS	AVERAGE DAILY RATE (mgd)[3]	
County Water Districts				
Coastside County Water District[1]	Pilarcitos Lake, Wells, Denniston and San Vicente Creeks		3,772	1.4
North Coast County Water District[1]	SFWD and San Pedro Creek		10,867	3.2
Westborough County Water District[2]	SFWD		3,305	1.0
Belmont County Water District[2]	SFWD		7,200	3.2
County Waterworks Districts				
San Mateo County Waterworks District	SFWD, Cal Water		286	0.1
East Palo Alto County Waterworks District	SFWD		3,950	1.7
Improvement Districts				
Guadalupe Valley Municipal Improvement	SFWD		N/A	N/A
Estero Municipal Improvement District	SFWD		6,545	0.1
Municipal Water Departments				
Daly City Municipal Water Department	SFWD, Wells		20,056	7.3
Brisbane Municipal Water Department[1]	SFWD		N/A	N/A
San Bruno Municipal Water Department[2]	SFWD, NCCWD, Wells		11,000	4.2
Millbrae Municipal Water Department	SFWD, Wells		6,515	2.7
Burlingame Municipal Water Department	SFWD		8,719	4.2
Hillsborough Municipal Water Department[2]	SFWD		3,967	3.1
Redwood City Municipal Water Department	SFWD		18,627	8.3
Menlo Park Municipal Water Department	SFWD		3,600	3.8

TABLE 10.3 (Continued)

WATER SUPPLIERS IN URBAN AREAS

WATER SYSTEM	SOURCE OF SUPPLY	NUMBER OF CONNECTIONS	AVERAGE DAILY RATE (mgd)[3]
Mutual Water Companies			
Palo Alto Park Mutual	SFWD	625	N/A
Cordilleras Mutual	SFWD	16	N/A
Private Water Companies			
Citizens Utility Company	Wagner Canyon, Wells, Montara Creek	1,367	.3
California Water Service	SFWD, Daly City Aquifer, Bear Gulch Creek		
South San Francisco		14,026	6.6
San Mateo		24,180	10.2
San Carlos		9,343	3.6
Bear Gulch Vicinity		16,235	8.6
Other			
O'Connor Tract Cooperative	Wells	N/A	N/A
San Francisco International Airport	SFWD	221	1.7

Notes: 1. Serves both rural and urban areas.
2. No unincorporated areas served.
3. Average daily consumption rates are rounded to the nearest tenth.
4. The following abbreviations are used in this table:

N/A - Data not available
SFWD - San Francisco Water Department
NCCWD - North Coast County Water District
Cal Water - California Water Service

(b) Scenic River Designation of Tuolumne River

The Tuolumne River is being considered for designation as a Wild and Scenic River, a designation given by Congress to free flowing rivers with extraordinary scenic, recreational, fishing or wildlife values. Because this river supplies the Hetch-Hetchy Reservoir, it is possible that a scenic designation would adversely affect its use as a major source of potable water. At this writing, the designation issue is under discussion.

(2) Availability of Water Service to Serve Future Development

Water service in urban areas is generally available and suppliers can accommodate present and future service connections. However, water service in the Mid-Coast area is limited. The Coastside County Water District cannot provide new water connections and has a sizable waiting list. In addition, the City of Burlingame indicates that it can accommodate new connections but future demand will exceed supply because of increased industrial demand for water. For additional information on the availability of water service, see Table 10.4.

B. RURAL AREAS

1. Sources of Water

Almost all of the water in the rural South Coast area is provided by streams, creeks and groundwater. These sources are entirely dependent upon rainfall for replenishment, although many of the watersheds yield a constant flow throughout the year. The mean annual streamflow for watersheds in the area is indicated in Table 10.5. Water from these streams and creeks is often diverted at many points by private property owners and water companies for domestic, agricultural and livestock use. Farmers and ranchers in the area have been developing small storage reservoirs for irrigation and stock watering purposes for many years. Eight such reservoirs, formed by dams large enough to require regulation by the State, have a total storage capacity of 2,602 acre-feet. Table 10.6 illustrates these reservoirs.

Other small reservoirs in the area and their storage capacities are indicated by affected watersheds in Table 10.7. Private water companies in the area providing at least 100 connections also use small surface reservoirs. Skylonda Mutual Water Company and Cuesta La Honda Guild each maintain small reservoirs. Skylonda maintains one reservoir and four storage tanks with a combined capacity of over 20 acre-feet. The Guild maintains a 15 acre-feet reservoir. Recoverable groundwater in the area is generally confined to the lower alluvial valleys of streams such as Pescadero and San Gregorio Creeks.[14]

10.1M

SAN MATEO COUNTY GENERAL PLAN

WATER SUPPLIERS

BOUNDARY OF WATER SUPPLIERS

0 4000 8000 16000 32,000 FEET

99 320ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

BRISBANE WATER DEPT.
DALY CITY MUNICIPAL WATER DISTRICT
CALIFORNIA WATER SERVICE CO.
WESTBOROUGH COUNTY WATER DISTRICT
SAN BRUNO MUNICIPAL WATER DEPT.
NORTH COAST COUNTY WATER DISTRICT
MILLBRAE MUNICIPAL WATER DEPT.
BURLINGAME MUNICIPAL WATER DEPT.
SHELTER COVE WATER SYSTEM
SHAMROCK RANCH WATER SYSTEM
HILLSBOROUGH MUNICIPAL WATER DEPT.
ESTERO MUNICIPAL IMPROVEMENT DISTRICT
CALIFORNIA WATER SERVICE CO.
REDWOOD CITY MUNICIPAL WATER DEPT.
CITIZENS UTILITIES COMPANY
COASTSIDE COUNTY WATER DISTRICT
BELMONT COUNTY WATER DISTRICT
CALIFORNIA WATER SERVICE CO.
MENLO PARK MUNICIPAL WATER DISTRICT
SAN MATEO COUNTY WATER WORKS DISTRICT #3
PALO ALTO PARK MUTUAL WATER CO.
EAST PALO ALTO COUNTY WATER WORKS DISTRICT
REDWOOD CITY MUNICIPAL WATER DEPT.
CORDILLERAS MUTUAL WATER CO.
O'CONNOR TRACT MUTUAL
COASTSIDE COUNTY WATER DISTRICT
KINGS MOUNTAIN PARK MUTUAL WATER CO.
CALIFORNIA WATER SERVICE CO.
MENLO PARK MUNICIPAL WATER DEPT.
SKYLINE COUNTY WATER DISTRICT
CALIFORNIA WATER SERVICE CO.
MARTINS BEACH WATER SYSTEM
TUNITAS BEACH LAND CO. WATER SYSTEM
SKY LONDA MUTUAL WATER CO.
LA HONDA VISTA MUTUAL WATER CO.
WOODSIDE MUTUAL WATER CO.
LOS TRANCOS COUNTY WATER DISTRICT
COASTSIDE COUNTY WATER DISTRICT
CUESTA LA HONDA GUILD
REDWOOD TERRACE MUTUAL SYSTEM
COUNTY SERVICE AREA #7
MEMORIAL COUNTY PARK WATER SYSTEM
PORTOLA IMPROVEMENT ASSOC. MUTUAL WATER CO.
LOMA MAR MUTUAL WATER CO.
DEARBORN WATER SYSTEM
PORTOLA STATE PARK WATER SYSTEM
BUTANO CANYON MUTUAL WATER CO.
BUTANO STATE PARK WATER SYSTEM
ANO NUEVO STATE RESERVE WATER SYSTEM

SAN FRANCISCO BAY
PACIFIC OCEAN
SANTA CLARA COUNTY
SANTA CRUZ COUNTY

TABLE 10.4

AVAILABILITY OF WATER SERVICE TO SERVE
FUTURE URBAN AREA DEVELOPMENT

WATER SUPPLIER	UNINCORPORATED AREA SERVED	AVAILABILITY OF SERVICE[1]
Estero Municipal Improvement District	--	A
Daly City Municipal Water Department	Broadmoor Village	A
Brisbane Municipal Water Department	--	A[2]
Westborough County Water District	--	A
North Coast County Water District	San Pedro Terrace	A
Millbrae Municipal Water District	--	A
Coastside County Water District	El Granada, Miramar, Princeton	L[3]
California Water Service	Colma, Highlands/Baywood Park, North Fair Oaks, Selby, Ladera, Menlo Oaks, West Menlo Park	A
Hillsborough Municipal Water Department	--	A
Burlingame Municipal Water Department	Burlingame Hills	A[4]
Palomar Park County Water Works District	Palomar Park	A[5]
Redwood City Municipal Water Department	Emerald Lake Hills	A[6]
Menlo Park Municipal Water Department	Land near Stanford Accelerator	A[7]
Palo Alto Park Mutual	--	A
East Palo Alto County Waterworks Dist.	--	A
San Francisco Airport	--	A

Notes:

1. A - Water service available.
   L - Water service limited.
2. Pending construction of new development on the northeast ridge of San Bruno Mountain, additional storage will be required.
3. Demand exceeds supply; currently large waiting list.
4. Demand will exceed supply due to increasing industrial demand; facility expansion underway.
5. Housing Element, San Mateo County Planning Division, 1982.
6. Extension to Emerald Lake Hills Area will be user financed.
7. Sewer capacity may limit future connections.

TABLE 10.5

MEAN ANNUAL STREAMFLOW BY WATERSHED
1970 - 1980

WATERSHED	MEAN ANNUAL FLOW (Acre-Feet Per Year)
Purisima-Tunitas	9,880
San Gregorio	22,410
Pomponio	2,430
Pescadero	25,600
Butano	7,650
Gazos	4,440

Source: Skyline-Santa Cruz Mountains study.

TABLE 10.6

MAJOR DAMS IN SOUTH COAST AREA

DAM	WATERSHED	STORAGE CAPACITY (Acre-Feet)
Johnson	Arroyo de Leon	30
Pomponio Ranch	Pomponio Creek	256
Lake Lucerne	Arroyo de los Frijoles	455
Bean Hollow No. 2	Arroyo do los Frijoles	900
Bean Hollow No. 3	Arroyo de los Frijoles	461
Green Oaks No. 1	Green Oaks Creek	287
Lake Elizabeth	Green Oaks Creek	113
Coastways	Ano Nuevo Creek	100
TOTAL		2,602

Source: Comprehensive Water Resources Management Plan.

TABLE 10.7

SMALL RESERVOIRS BY WATERSHED

WATERSHED	NUMBER OF SMALL RESERVOIRS OR STOCKPONDS	TOTAL STORAGE (Acre-Feet)
Purisima	4	103
Lobitos	3	80
Tunitas	1	4
La Honda/San Gregorio	21	463
Pomponio	4	276
Pescadero	13	405
Butano	14	1,549
Gazos	6	382
TOTAL	66	3,262

Source: Skyline-Santa Cruz Mountains Area Study, 1982.

These valleys offer little permeability and can support only a limited number of domestic and stock watering wells. Firm estimates of groundwater production are unavailable, yet the amount available is known to be minor when compared with the quantity of water obtained by stream diversion.[15] The town of Pescadero, some of the small mutual water systems, and some recreational uses obtain supplies from wells.

2. Water Quality

The quality of surface waters in the South Coast area is generally satisfactory for domestic and agricultural uses.[16] Water in many of the creeks is excessively hard and it may be necessary to soften these supplies for domestic use. These waters are also high in sodium. Table 10.8 illustrates a chemical analysis of surface waters in this area.

Groundwater quality in the vicinity of the Skyline-Santa Cruz Mountains is considered high in dissolved minerals, such as manganese and iron, which causes a metallic taste and brown color.[17] Groundwater quality around the town of Pescadero is quite poor and has been a problem for some time. Over 60% of the wells have been contaminated by fecal coliform bacteria as a result of septic system failure, a high water table and heavy clay soils.[18] The Pescadero groundwater also has high concentrations of nitrates, a known cause of methemoglobinemia or "blue-baby" disorder affecting infants under six months old.[19]

3. Water Suppliers

a. Administrative Organization

Water suppliers in rural areas include the same administrative organizations as suppliers in urban areas and, in addition, the following types of entities:

(1) County Service Area

A county service area, authorized by Section 25210.1 et seq. of the County Government Code, is a special district governed by the Board of Supervisors. Services provided can include water service, supply and distribution systems, police and fire protection, refuse and garbage collection, library services, lighting, and several other activities.[20] In addition, the service area can include all or any part of a city when legislative approval is given. Finally, a service area can issue bonds, charge fees and levy assessments.[21]

(2) Mutual Water Company

A mutual or cooperative water company, organized under the nonprofit corporation law of California, is a private entity organized primarily to sell, distribute, supply, or deliver water for domestic or irrigation purposes to its shareholders.

TABLE 10.8

WATER QUALITY OF SOUTH COAST STREAMS

SOUTH COAST STREAMS	TOTAL DISSOLVED SOLIDS (mg/l)	HARDNESS (mg/l)	ALKALINITY (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)	MANGANESE (mg/l)	SODIUM (mg/l)
Butano Creek	238	133	118	34.2	11.5	.93	.05	27.1
San Gregorio Creek	592	312	216	73.1	31.4	.07	.05	65.0
Purisima Creek	498	306	244	84.6	23.0	.16	.05	48.5
Gazos Creek	218	106	80	24.2	11.2	.20	.03	26.8
Pescadero Creek	422	225	184	59.1	18.8	.33	.05	51.0
Pomponio Creek	549	222	110	36.5	32.0	.88	.10	81.8
Tunitas Creek	728	322	219	82.1	43.3	.19	.05	108.0
Domestic Water Quality Standards	500[1]	---[2]	---	---	---	.30	.05	20.0[3]

	POTASSIUM (mg/l)	CHLORIDES (mg/l)	SULFATES (mg/l)	FLOURIDES (mg/l)	NITRATES (mg/l)	ACIDITY (pH units)	TURBIDITY (units)	COLOR (units)
Butano Creek	2.6	28	32.9	.20	.10	8.0	8.5	45
San Gregorio Creek	4.8	82	131.0	.40	.02	8.2	0.5	15
Purisima Creek	5.0	53	85.5	.30	.02	8.3	1.7	15
Gazos Creek	2.8	32	42.7	.20	.10	7.9	2.1	15
Pescadero Creek	4.4	51	81.2	.20	.04	8.0	2.3	15
Pomponio Creek	5.6	100	159.0	.10	3.60	7.5	16.0	80
Tunitas Creek	4.4	156	140.0	.30	.02	8.1	2.3	20
Domestic Water Quality Standards	---	250[1]	250.0[1]	1.40-2.40	45.00	6.0-9.0	5.0	15

Notes:
1. Maximum contaminant levels recommended by California Department of Public Health. Higher levels may be tolerable.
2. Hardness: 0-60 = soft; 61-120 = moderately soft; 121-180 = hard; 181+ = very hard.
3. Maximum level suggested by the Environmental Protection Agency to accommodate limited sodium intake diets.

Sources: California Department of Public Health, "1977 California Domestic Water Quality and Monitoring Regulations."

San Francisco Water Department, "Annual Mineral Analysis, " 1981, for Crystal Springs Reservoir, San Andreas and Pilarcitos Lakes

Leeds, Hill, and Jewett, Inc., Comprehensive Water Resources Management Plan, San Mateo County, January 1978, Table IX-3; for Lake Lucerne and South Coast Streams.

b. Inventory of Suppliers

Table 10.9 provides an inventory of water suppliers in the rural areas. Because of the vast number of mutual and private water companies in operation, only suppliers with at least ten connections have been included.

c. Availability of Water Service for Future Development

Water service in rural areas is limited and the majority of suppliers cannot accommodate a significant number of additional service connections. However, Skyline County Water District can accommodate roughly twice the current number of connections. Similarly, Los Trancos County Water District can accommodate a modest number of new connections but has no plans for expansion. Additional information on the availability of water service by water supplier appears in Table 10.10.

C. WATER DEMAND

1. Domestic Water Demand

Water demand in the County is expected to increase moderately by the year 2000 for most geographical subareas. Demand in the Mid-Coast area is expected to more than double from 1.5 mgd in 1980 to 3.2 mgd in 2000. Demand in the South Central Bayside is expected to increase from 1980 levels of 16.3 mgd to 18.3 mgd by 2000. For information on demand in specific geographical areas, see Table 10.11.

Present and future demands for residential and commercial use were calculated by multiplying per capita water use values by population statistics. Water use values were determined from "weighted historic values of per capita water use modified to account for rising standards of living, changes in housing patterns and conservation measures."[22] Population statistics were taken from ABAG-Projections '83. For additional information on population statistics and land use, see the Social and Economic Setting section and the Land Use chapters.

2. Industrial Water Demand

Present and future industrial water demand was calculated for areas with significant industrial uses, by multiplying water use values by projected acreage according to the type of use. Industrial demand for most areas is expected to increase moderately except for Foster City, which will increase significantly from .47 mgd in 1980 to 1.30 mgd in 2000. San Carlos and Redwood City are other areas where the demand is expected to increase significantly. San Carlos is expected to escalate from its 1980 level of .68 mgd to 1.14 mgd in 2000, and Redwood City from 1.0 mgd in 1980 to 1.6 mgd in 2000. Menlo Park and East Palo Alto are also expected to increase from 1.02 mgd in 1980 to 1.39 in 2000. For anticipated demand in other areas, see Table 10.12.

TABLE 10.9

WATER SUPPLIERS IN RURAL AREAS

WATER SYSTEM	SOURCE OF SUPPLY	NUMBER OF CONNECTIONS	AVERAGE DAILY CONSUMPTION RATE (mgd)
County Water Districts			
Los Trancos County Water District	San Francisco Water Department	236[1]	---
Skyline County Water District	San Francisco Water Department, Well	400	.10
County Service Areas			
County Service Area No. 7	Alpine Creek	67	.01
Mutual Water Companies			
Redwood Terrace Mutual	Well	26	---
Woodside Mutual	California Water	65±	---
Skylonda Mutual	La Honda Creek, Well	152	.025
Loma Mar Mutual	Pescadero Creek	35	
Butano Canyon Mutual	Springs, Stream, Butano Creek	84	.0004
Portola Improvement Assoc. Mutual	Springs	35	
La Honda Vista Mutual	La Honda Creek	13	---
Kings Mountain Park Mutual	Purissima Creek	25	---
Private Water Companies			
Cuesta La Honda Guild	Woodham Creek, Mindego Creek, Springs	310	.07
Martins Beach	Well	35	---
Tunitas Beach Land Company	Spring	20±	---

Note: 1. Skyline-Santa Cruz Mountains Study.

TABLE 10.10

AVAILABILITY OF RURAL WATER SERVICE

WATER SUPPLIER	UNINCORPORATED AREA	AVAILABILITY OF SERVICE[1]
Skyline County Water District	Redwood Park Subdivision Quail Lane Area Sierra Morena Woods Subdivision	A[2]
Skylonda Mutual Water Co.	Skylonda Subdivision	L[3]
La Honda Vista Mutual Water Co.	La Honda Vista Subdivision	L[4]
Portola Improvement Association Mutual Water Co.	La Honda Vista Subdivision	L[5]
Woodside Mutual Water Co.	--	L
County Service Area No. 7	La Honda-Redwood Subdivision	L[6]
Cuesta La Honda Guild	La Honda	L[7]
Butano Canyon Mutual Water Co.	Butano Falls	L
Los Trancos Co. Water District	Los Trancos Woods/Vista Verde	L[8]
Redwood Terrace Mutual System	Rural South Coast	L[9]
Kings Mountain Park Mutual Water Co.	Area in Vicinity of Skyline	L[10]
Martins Beach Land Co.	Tunitas Beach Area	A
Loma Mar Mutual Water Co.	Area in Vicinity of Memorial Park	A[11]

Notes: 1. A - Water service available. L - Water service limited.

2. Approximately 400 additional connections can be accommodated. Service availability beyond that questionable and linked to manner in which large vacant parcels are subdivided.

3. Can accommodate eight additional connections.

4. Has had same number of connections for many years and unlikely to increase.

TABLE 10.10 (Continued)

AVAILABILITY OF RURAL WATER SERVICE

Notes (Continued):

5. Needs a second source of water to accommodate new connections.

6. Does not have adequate storage capacity to accommodate new connections; ability to accommodate current demand hindered by adverse weather.

7. Ability to accommodate new connections hindered by deteriorating water mains. System has reached operational capacity (see Skyline Area General Plan Amendment).

8. Cannot accommodate additional connections; lack of funding/contractual agreements limit facility expansion.

9. Has enough water to accommodate existing demand; members have decided against any future growth so facilities won't be expanded.

10. Original charter limits number of connections to current number; no plans for expansion.

11. Can accommodate an additional 95-105 connections; however, no demand for new connections.

TABLE 10.11

PROJECTED DOMESTIC WATER DEMAND

GEOGRAPHICAL AREA[1]	GALLONS PER CAPITA/DAY[2]			PROJECTED DEMAND (mgd)		
	1980	1990	2000	1980	1990	2000
Midcoast[3]	96	108	121	1.5	2.1	3.2
North County	98	100	102	12.1	13.0	13.3
North Bayside	124	124	124	10.6	10.9	10.7
North Central Bayside	129	129	129	6.1	6.0	5.8
Central Bayside	153	153	153	17.7	18.5	18.2
South Central Bayside	132	132	132	16.3	16.8	18.3
South Bayside	197	197	197	13.8	13.9	14.2
Rural Unincorporated	100	100	100	0.5	0.5	0.6
TOTALS				78.6	81.7	84.3

Notes: 1. Composition of Geographical Areas:

Midcoast - Half Moon Bay, Montara,* Moss Beach,* El Granada,* Princeton.*

North County - Pacifica, Daly City, Broadmoor,* Brisbane, Colma, San Bruno Mountain.*

North Bayside - South San Francisco, Country Club Park,* San Bruno.

North Central Bayside - Burlingame, Burlingame Hills,* Millbrae.

Central Bayside - San Mateo, Highlands,* Hillsborough, Foster City.

South Central Bayside - Belmont, San Carlos, Redwood City, North Fair Oaks*, Devonshire*, Palomar Park,* Emerald Lake Hills,* Harbor Industrial.*

South Bayside - Atherton, East Palo Alto, Menlo Park, Woodside, Portola Valley, Skyline Area,* Stanford Lands,* Ladera,* Sequoia Tract,* Menlo Oaks*, West Menlo Park.*

(*unincorporated areas)

2. Values taken from Water Action Plan Central and South San Francisco Bay Area.

3. Values taken from Local Coastal Program.

TABLE 10.12

PROJECTED INDUSTRIAL WATER DEMAND

AREAS	PREDOMINANT TYPE OF USE	DEMAND GENERATION FACTORS[1] (Gallons/Acre)	PROJECTED ACREAGE[2]			PROJECTED DEMAND (mgd)		
			1980	1990	2000	1980	1990	2000
Granada, Princeton, Montara, Moss Beach	---	2500	---	---	60	---	---	.14
Brisbane	Industrial Park	1265	215	285	355	.27	.36	.45
South San Francisco	Heavy Industrial	2015	1235	1404	1404	2.49	2.83	2.83
San Francisco International Airport	Airport	50 gallons/ passenger	---	---	---	2.81	3.65	4.32
Burlingame	Light Industrial	4525	330	375	385	1.49	1.70	1.74
Foster city	Light Industrial	3790	125	344	344	.47	1.30	1.30
Belmont	Light Industrial	4535	90	120	150	.41	.54	.68
San Carlos	Light Industrial	3040	225	315	375	.68	.96	1.14
Redwood City	Light Industrial	3790	260	335	410	1.00	1.30	1.60
Menlo Park/East Palo Alto	Light Industrial	2570	395	470	540	1.02	1.21	1.39
TOTALS[3]			2,875	3.648	4,023	10.64	13.85	15.59

Notes: 1. Demand generation factors taken from San Mateo County Local Coastal Program, Public Works Component, for Granada, Princeton, Montara, Moss Beach, and Water Action Plan for other areas. Values are in gallons per acre except for San Francisco International Airport, which is in gallons per passenger.

2. Projected acreages taken from Water Action Plan, page 103, except for Granada, Princeton, Montara, Moss Beach, which was taken from the Local Coastal Program, Public Works Component.

3. Totals do not include minor industrial use in other geographical areas.

3. Agricultural Demand

The agricultural demand for water is subject to economic uncertainties associated with growing and marketing crops. Because of this, the Comprehensive Water Resources Management Plan projections used in this report illustrate two growth scenarios. Low growth statistics represent no change in acreage with a gradual change in crop patterns. High growth statistics represent an increase in acreage caused by the expansion of outdoor and indoor floriculture, while other crops acreage remains at present levels. Demand projections were developed by multiplying water consumption by crop type times projected crop acreages.

In the Mid-Coast area, total demand for crop irrigation under the low growth scenario will decrease from the 1980 level of 2,638 acre-feet to 2,422 acre-feet in 2000. Under the high growth scenario, total water demand will moderately increase from 1980 levels of 2,770 acre-feet to 3,020 acre-feet in 2000.

In the South Coast area, total demand under a low growth scenario is expected to increase moderately from 1980 levels of 4,959 acre-feet to 5,882 acre-feet in 2000. However, under the high growth scenario, total demand is expected to almost double from 1980 levels of 5,610 acre-feet to 10,590 acre-feet in 2000. For more specific information on crop irrigation demands in both the Mid and South Coast areas, see Tables 10.13 and 10.14. Existing and projected agricultural land use and water requirements by watershed are shown in Table 10.15.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING WATER SUPPLY

A. FEDERAL

1. Environmental Protection Agency (EPA)

The Environmental Protection Agency, established in 1970 by the Environmental Protection Act, is responsible for executing Federal laws protecting the environment. This responsibility includes drinking water quality, air and water pollution, and solid wastes, including wastewater.

EPA's Office of Research and Development provides grants to conduct research, including the development and demonstration of projects which will provide a dependable and safe supply of drinking water to the public. State and local governments, public agencies, educational institutions, non-profit organizations and individuals are eligible to apply. Past grant amounts have averaged $145,000.[23]

The EPA Office of Water provides formula grants for use in developing and implementing public water system supervision programs adequate to reinforce the requirements of the Safe Drinking Water Act. State agencies designated by the Governor are eligible applicants. Past grant amounts have averaged $589,000.[24]

TABLE 10.13

PROJECTED DEMAND BY CROP TYPE IN MID-COAST AREA

	PROJECTED ACREAGE						PROJECTED DEMAND (Acre-Feet)					
	Low Growth Rate			High Growth Rate			Low Growth Rate			High Growth Rate		
CROP TYPE	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Miscellaneous Truck[1]	392	344	296	417	417	417	294	258	222	312	258	313
Pasture[2]	12	6	0	13	10	7	24	12	0	36	12	14
Brussels Sprouts[3]	200	100	0	223	167	111	160	80	0	178	80	89
Artichokes[4]	40	20	0	45	34	23	68	34	0	77	34	39
Outdoor Flowers[5]	635	635	635	665	723	781	1,588	1,588	1,588	1,663	1,807	1,953
Greenhouses[6]	112	124	136	112	124	136	504	558	612	504	558	612
TOTAL	1,391	1,229	1,067	1,475	1,475	1,475	2,638	2,530	2,422	2,770	2,749	3,020

Notes:
1. Water Value = 0.75.
2. Water Value = 2.00.
3. Water Value = 0.80.
4. Water Value = 1.70.
5. Water Value = 2.50.
6. Water Value = 4.50.

Source: Comprehensive Water Resources Management Plan.

TABLE 10.14

PROJECTED DEMAND BY CROP TYPE IN SOUTH COAST AREA

	PROJECTED ACREAGE						PROJECTED DEMAND (Acre-Feet)					
	Low Growth Rate			High Growth Rate			Low Growth Rate			High Growth Rate		
CROP TYPE	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Miscellaneous Truck[1]	904	904	904	904	904	904	678	678	678	678	678	678
Pasture[2]	304	228	152	342	342	342	608	456	304	684	684	684
Brussels Sprouts[3]	755	566	377	849	849	849	604	453	302	679	679	679
Artichokes[4]	700	700	700	700	700	700	1,190	1,190	1,190	1,190	1,190	1,190
Outdoor Flowers[5]	669	934	1,199	817	1,444	2,166	1,673	2,335	2,998	2,043	3,610	5,415
Greenhouses[6]	19	31	51	48	199	392	86	140	230	216	896	1,764
Mushroom Farm[7]	4	5	6	4	5	6	120	150	180	120	150	180
TOTAL	3,355	3,368	3,389	3,664	4,443	5,359	4,959	5,402	5,882	5,610	7,887	10,590

Notes:
1. Water Value = .75.
2. Water Value = 2.00.
3. Water Value = .80.
4. Water Value = 1.70.
5. Water Value = 2.50.
6. Water Value = 4.50.
7. Water Value = 30.00.

Source: Comprehensive Water Resources Management Plan.

TABLE 10.15

EXISTING AND PROJECTED AGRICULTURAL LAND USE
AND WATER REQUIREMENTS BY SOUTH COAST WATERSHEDS

WATERSHED	1975 AGRICULTURAL ACREAGE	1975 AGRICULTURAL WATER REQUIREMENTS (Acre-Feet)	2000 AGRICULTURAL ACREAGE	1975 AGRICULTURAL WATER REQUIREMENTS (Acre-Feet)
Purisima-Tunitas	399	563	833	1223
La Honda-San Gregorio	223	312	543	797
Pomponio	70	100	205	301
Pescadero	638	900	736	1081
Butano	355	502	472	695
Bean Hollow	747	1055	1281	1886
Gazos	63	90	101	151
Ano Nuevo	855	1210	1188	1752
TOTAL	3350	4732	5359	7886

Source: Skyline-Santa Cruz Mountains Area Study, 1982.

2. Economic Development Administration

The Economic Development Administration provides grants for use in the construction of such public facilities as water systems, access roads, port facilities, and other similar activities in areas where economic growth is behind that of the rest of the nation. States, counties, and other political subdivisions and certain private or public non-profit organizations are eligible to apply.[25]

3. Bureau of Reclamation

The Bureau of Reclamation is a division within the Department of Interior. This agency locates, constructs and operates facilities to store, divert and develop waters to reclaim arid and semi-arid lands.

4. Safe Drinking Water Act of 1974

The Safe Drinking Water Act addresses the safety of drinking water supplies throughout the United States and establishes national drinking water standards. While the Environmental Protection Agency has the primary responsibility for establishing standards, the states are responsible for enforcing these standards as well as supervising public water systems and sources of drinking water.

B. STATE

1. Agencies

a. Department of Water Resources

The Department of Water Resources was established to protect, conserve, develop and manage California's water. "It has a major responsibility for supplying suitable water for domestic use, irrigation, industry, recreation, power generation and fish and wildlife."[26] The activities of the Department are divided into eight major divisions: Water Conservation, Land and Right-of-Way, Energy, Flood Management, Safety of Dams, Planning, Design and Construction, and Operations and Maintenance.

(1) Water Action Plan, Central and South San Francisco Bay Area

The Water Action Plan for the Central and South San Francisco Bay Area was developed by the Department of Water Resources in 1982. This area was one of ten identified by the Department as potentially having critical water supply problems. The study evaluated present and future water demands and available water supplies for the San Francisco Water Department service area and analyzed the adequacy of the supplies for future consumption. The Plan indicates that the San Francisco Water Department will have sufficient water supplies to meet demand for San Mateo County beyond the year 2010. The Plan also indicates that future supplemental water requirements for San Francisco

Water Department can best be met through cooperative water management actions including exchanges, transfers, service area adjustment and planning for deficiencies during critical dry periods.

b. State Water Resources Control Board (SWRCB)

The State Water Resources Control Board is responsible for establishing overall policy and direction for water quality and surface water rights. Nine regional water quality control boards assist in performing water quality functions.

2. Legislation

a. California Safe Drinking Water Act

The California Safe Drinking Water Act establishes drinking water standards and regulations to ensure the quality of public and private water systems that have five or more service connections or that regularly serve an average of 25 people daily for at least 60 days out of the year. The Act delegates enforcement authority to the County Environmental Health Division for water systems of less than 200 service connections. The Act does not apply to untreated water irrigation canal systems used solely for agricultural operations. Nor does it apply in areas where water service is primarily intended for agricultural rather than domestic use except where necessary to protect the public health.

b. State Water Rights Law

The State Water Code (Division 1, Chapter 2, Article 3) empowers the State Water Resources Control Board (SWRCB) to adjudicate water rights. This authorization also includes regulating the taking of surface water either by appropriative or riparian rights. Surface water taken by appropriative rights requires a permit and is subject to the procedures of Title 23 of the State Administrative Code. Water taken by riparian rights requires no permit; however, this method does require the filing of a statement of diversion and use every three years.

c. Urban Water Management Planning Act (1983)

A statewide concern with the conservation and efficient use of urban water supplies prompted the enactment of AB 797, the Urban Water Management Planning Act. This legislation requires every urban water supplier providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an urban water management plan according to prescribed requirements by December 31, 1985. Once prepared, this plan will be filed with the Department of Water Resources.

d. Davis-Grunsky Act

The Davis-Grunsky Act authorized State financial assistance for local water projects. This program, administered by the Department of Water Resources, provides seven types of loan and grant assistance for projects involving the development of new water supplies. The Department can make grants of up to $400,000 for any one project.[27] While larger grants are available, they must be authorized by the Legislature. Only cities, counties, districts or other political subdivisions are eligible to receive assistance.

e. State Drinking Water Bond Law of 1984

The State Drinking Water Bond Law of 1984, authorized State loan and grant assistance for eligible water projects. The program is administered by the Departments of Water Resources and Health Services. The program provides loan and grant assistance to eligible water suppliers to construct, improve or rehabilitate domestic water systems to meet, at a minimum, safe drinking water standards. Eligible projects are prioritized according to severity of contamination or supply problems.

C. REGIONAL

1. Local Agency Formation Commission (LAFCo)

Local Agency Formation Commissions were established to govern the boundary changes of all local governments, except school districts. LAFCo's are empowered to, among other things, review and approve or disapprove annexations and detachment of a territory, incorporation of cities, and the formation and dissolution of special districts. They also determine spheres of influence or ultimate service area boundaries for each city and special district in the county. Prior to assigning a particular sphere, comprehensive studies are developed which include an assessment of the existing infrastructure, including water supply districts.

2. Association of Bay Area Governments (ABAG)

a. Environmental Management Plan (1978)

The San Francisco Bay Area Environmental Management Plan, developed by the Association of Bay Area Governments (ABAG), addresses, among other issues, water supply. This plan, taking into account the 1976-77 drought, contains three policies which seek to conserve existing water supply and establish a mechanism to ensure efficient water use in the future: (1) establishing a Water Management Coordinating Committee to provide a forum for discussion and possible resolution of issues affecting agencies concerned with water management; (2) reducing residential water demand to a moderate level through water savings programs designed to retrofit existing housing with water savings devices and mandate such devices in all new construction; and (3) encouraging the reuse of wastewater where cost-effective.[28]

b. First Annual Report on Environmental Progress (1979)

The 1979 Update of the Environmental Management Plan addresses the status of the Water Supply Management Plan policies described above. Two of the three policies were approved and certified by the State Water Resources Control Board and the Environmental Protection Agency. Specifically, these policies call for establishing the Water Management Coordinating Committee and reusing wastewater, a policy which is being examined through the Regional Reclamation Study.[29]

3. San Francisco Water Department (SFWD)

The San Francisco Water Department service area includes most of the urban areas in San Mateo County, cities in Santa Clara County, and cities in Alameda County. Water is supplied to these areas in accordance with contractual agreements. This regionally significant municipal utility is owned and operated by the City and County of San Francisco.

D. COUNTY

1. General Plan Policies

a. Conservation and Open Space Element (1973)

The Conservation and Open Space Element of the General Plan discusses water resources, including the beneficial and degrading uses of water, alternative water resource management techniques, and local water suppliers and governmental agencies concerned with water management. It also analyzes relevant issues and sets forth goals, objectives and policies designed to conserve and manage water resources, protect water quality, encourage the reuse of wastewater, establish flood plain management programs, study water aquifers, monitor turbidity in watersheds, establish a Countywide water agency and planning document, and finally, establish criteria to determine primary value water resource areas and manage primary water resources.

b. Area Plans

(1) San Bruno Mountain General Plan Amendment (1976)

The San Bruno Mountain General Plan Amendment contains policies to guide the preparation of specific plans. Policies indicate that water quality and usage must be addressed in specific plans. Other policies identify the San Francisco Hetch-Hetchy Water System as the source of supply for the plan area and call for phased water supply facilities with the development needs of each planning area.

(2) Emerald Lake Hills Community Plan (1977)

The Emerald Lake Hills Community Plan contains policies which seek to develop a water distribution system to serve dwellings and provide for fire protection by encouraging the County to work with Redwood City to coordinate the installation of water lines with the construction of the sewer system, examine alternatives for ownership of the water distribution system, and finance and schedule the replacement of water lines.

(3) Montara-Moss Beach-El Granada Community Plan (1978)

The Montara-Moss Beach-El Granada Community Plan includes policies which seek to provide Montara and Moss Beach with an adequate water system by encouraging the consolidation of water districts and reducing the size of water service areas to correspond to the limits of urban development.

(4) Local Coastal Program (1980)

The Local Coastal Program and policies are divided into 12 components to address the many issues confronting the County's Coastal Zone. Four components address water supply: the Locating and Planning New Development Component, the Public Works Component, the Agriculture Component, and the Recreation and Visitor-Serving Facilities Component.

(a) Locating and Planning New Development Component

The Locating and Planning New Development Component of the Local Coastal Program is designed to restrict new development to those areas already developed and/or served adequately by public services and facilities. Policies addressing water supply limit residential building permits based upon adequate water facilities and encourage monitoring water availability for new development in rural areas.

(b) Public Works Component

The Public Works Component limits the development or expansion of public works facilities to an amount which does not exceed that needed to serve the buildout of the LCP Land Use Plan. The Component requires: (1) all public utilities, governmental agencies, or special districts wishing to undertake public works projects to obtain a development permit; (2) phasing of public works facilities consistent with need; (3) reserving capacity for priority land uses; (4) monitoring of first phase public works projects; and finally, (5) establishing criteria for service area and special district boundaries.

The Component also sets forth more specific regulations and policies governing water supply. In urban areas (Midcoast), water supply guidelines seek to ensure that Phase I water capacities do not exceed development which can be sewered and also meet the needs of floriculturists, monitor Phase I capacities, reserve water supplies for priority land uses, establish quality control for groundwater, establish criteria for any facilities wishing to use Pillar Point Marsh, Denniston Dam, Crystal Springs or Andreas Lake to increase water supplies, and finally, establish criteria for water suppliers wishing to expand service area boundaries.

The Component also establishes guidelines for any new water system developed for the town of Pescadero. These policies seek to control future supplies of water to an amount sufficient to serve the buildout allowed by the LCP Land Use Plan, reserve capacity for priority land uses, limit permits for new connections, monitor use consumption, set forth criteria for groundwater sources used to increase water supply, confine water connections to use within the rural service center boundaries, and finally, examine the need to change current sewage disposal practices which impact new sources of water.

(c) Agriculture Component

The Agriculture Component of the Local Coastal Program seeks to provide an adequate and dependable supply of water for agricultural uses through policies and regulation which protect agricultural water supplies, establish priorities for issuance of appropriate water rights permits, monitor agricultural water supplies; establish criteria for the development of on-stream dams, encourage the use of small water impoundments, require water allocations for floriculture operations, monitor wells, and finally, require a grading permit for water impoundments.

(d) Recreation and Visitor Serving Facilities Component

The Recreation and Visitor Serving Facilities Component of the Local Coastal Program seeks to encourage the provision of drinking water at recreation and visitor serving facilities and require these facilities to connect to public or community water systems wherever they exist.

(5) Skyline Area General Plan Amendment (1983)

The Skyline Area General Plan Amendment contains policies designed to address upstream water diversions for residential use and the impact of this practice upon downstream agricultural water supplies through policies that require the

provision of water supplies through either wells, springs, or connections to a water district rather than using stream water in order to obtain building permits and final subdivision map approval, restrict the location of vertical wells or springs used for domestic water supply near alluvial sediments, require drought-tolerant vegetation for new development landscaping, prohibit the creation of nonagricultural parcels near streams, and finally, eliminate stream diversion devices from consideration as providing adequate domestic water sources.

2. Other County Plans and Policies

a. Skyline-Santa Cruz Mountains Area Study (1983)

The Skyline-Santa Cruz Mountains Area Study formed the basis of the recently adopted Skyline Area General Plan Amendment. During consideration of the Study, the Board of Supervisors directed that those policies not adopted for immediate incorporation be reconsidered during the preparation of the General Plan update. Policies of the Study relevant to water propose: to establish conditions of approval for new development which encourage using existing infrastructure and discourage stream diversions for domestic supplies; investigate methods of funding existing water systems and off-stream agricultural water supplies for irrigation purposes; and, finally, monitor water conditions, trends, and proposals for stream diversion in order to better manage the resources of each watershed in the study area.

b. Comprehensive Water Management Resources Plan (1978)

The Comprehensive Management Water Resources Plan (CMWRP) was developed in response to State legislation that required San Mateo County to prepare a plan to coordinate and manage the supply and distribution of water for residential, commercial, industrial or other purposes and to coordinate and manage the treatment and disposal of wastewater from all sources. The Plan recommends three concepts and courses of action to meet both existing and future water demands; specifically, water conservation programs; maximum use of reclaimed water in areas where there is a suitable demand; and finally, phased expansion of existing water facilities to meet demands for additional water supplies.

c. Combined Agricultural/Domestic Water Supply Plan for the Pescadero Region (1977)

The Combined Agricultural/Domestic Water Supply Plan for the Pescadero region developed preliminary engineering designs, cost estimates and implementation requirements for a water supply system for the town of Pescadero and the proposed farm worker housing project. The plan identified the apparent best agricultural/domestic project as a dam and reservoir system in the Arroyo de los Frijoles supplied by winter surplus runoff from the Butano and Pescadero Creeks.

d. Capital Improvement Program, Department of Public Works

Included in the Department of Public Works 1983-87 Capital Improvement Program are projects affecting water supply in the Palomar Park County Waterworks District and County Service Area No. 7. The Palomar Park District has a program description to construct new storage and pump station facilities and to replace pipeline. Service Area No. 7 has a program description to rehabilitate the system depending upon receiving permission from the DWR to divert water from Alpine Creek.

3. County Ordinances

a. Water Supplies Ordinance

The San Mateo Ordinance Code (Division IV, Chapter 4) addresses water supplies which include all works and facilities designed, constructed or employed to collect, store, treat or distribute water for domestic use by 200 or less connections. The regulations establish definitions and set forth requirements for purity, chlorination and chemical disinfection.

b. Well Ordinance

The San Mateo Ordinance Code (Division IV, Part 2, Chapter 5) addresses the use of vertical and horizontal wells which provide potable water supplies. The regulations establish definitions, outline permit requirements and well construction, repair and demolition standards, set up administrative procedures, and finally, condition the issuance of building permits on written certification that the premises is served by an adequate potable water supply. This requirement, however, is void where building sites are served by an existing public utility system.

The Ordinance Code (Division III, Part 2, Chapter 7) regulates the location and construction of wells in areas subject to flooding, run-off or served by septic tanks.

c. Water Conservation Ordinance

Chapter 7 of the County Ordinance Code implements the Conservation Element of the Comprehensive Water Resources Management Plan and also carries out certain water conservation objectives of the State Water Code by: requiring meters on all new water service connections provided by the water agency, requiring pool and hot tub covers, outlining water conservation devices and practices for all new or remodeled structures or facilities and accompanying landscaping operations, setting forth water saving concepts for use in irrigating agricultural fields and greenhouses, and finally, outlining water conservation practices in times of shortages.

WATER SUPPLY ISSUES

I. ADEQUACY OF WATER SUPPLIES TO ACCOMMODATE CURRENT AND FUTURE DEMAND

A. URBAN AREAS

With few exceptions, water supplies are adequate to meet demand in urban areas. For Bayside and North County cities and unincorporated areas, where water is provided almost exclusively by the San Francisco Water Department and then resold by various purveyors, service is generally available to accommodate existing and future demand. However, in the Mid-Coast area, water supplies are not sufficient. For Montara and Moss Beach, which are served by Citizen Utilities Company, local springs and wells are sources of supply. However, these sources are near their limit. According to the Local Coastal Program, it is unlikely that future water requirements, generated by buildout projections, can be accommodated by Citizen Utilities Company. Attempts to locate additional groundwater sources have failed to produce supplies of sufficient quantity.[30]

The areas served by the Coastside County Water District are in a similar situation. This District provides water service for the City of Half Moon Bay and the unincorporated areas of El Granada, Princeton and Miramar. The District obtains water from the Denniston Project, wells and Pilarcitos Lake. Yet the safe yield of these sources falls short of the current consumption rate of 1.4 mgd (500 mg/yr). The situation is further hampered by the insufficient capacity of water transmission lines. According to the Coastside County Water District Water Supply Evaluation Report, transmission system deficiencies occur in the southern portion of Half Moon Bay and the Miramar-El Granada area. In these areas, segments of the transmission system are at or near capacity.[31] To alleviate this situation, additional supplies of water and upgraded transmission lines are necessary.

B. RURAL AREAS

Unlike urban areas, the majority of small rural water suppliers are less able to accommodate existing and future demand for water supplies. Although most of the systems surveyed in Table 10.10 indicate they can serve current demand, inadequate storage capacity often hinders the provision of service. As the Skyline-Santa Cruz Mountains Study indicated, the Cuesta-La Honda system often experiences water shortages during the late summer months, a typical problem of small systems. The ability of these systems and groundwater sources to accommodate future demand is poor. Of those systems surveyed, 77% indicate a limited ability to accommodate any significant growth. Most can only accommodate small numbers of new connections primarily due to aging and deteriorating

equipment, licensing restrictions limiting the amount of water diverted from streams, rising operational costs and a lack of funding to make capital improvements. Only the Skyline County Water District can accommodate a significant number of new service connections, roughly double the present amount.

Nor can wells be counted on to satisfy future water requirements. As the Skyline Study indicates, this source would be unable to yield the quantity or quality necessary to accommodate the significant increases in water requirements that a sizeable amount of new development would create. This is especially true for the rural service center of Pescadero.

Although domestic water for Pescadero is currently provided by wells, historical problems with quality and quantity preclude this source from accommodating the demand from a significant amount of new development. Wells tapping groundwater resources use an aquifer in the Pescadero Creek basin; however, this same aquifer is contaminated by fecal coliform bacteria from septic tank effluent and nitrates from fertilizers. Despite attempts to locate alternative water supplies, either by creating an earthfill dam and reservoir or drilling test wells to locate new groundwater sources, no new supplies of sufficient quantity have been discovered.

II. OPPORTUNITIES AND CONSTRAINTS AFFECTING WATER SUPPLIES

A. PROVIDING ADEQUATE WATER SUPPLIES IN URBAN AREAS

1. Bayside

a. San Francisco Water Department Settlement Agreement

While the pending settlement negotiation between suburban purchasers and the San Francisco Water Department will resolve many longstanding issues, it also raises new questions over the adequacy of distribution techniques. The pending settlement finally dismisses the long-standing litigation between suburban purchasers and San Francisco Water Department and accomplishes several tasks including the establishment of: (1) a water rate formula linking suburban payments to the cost of capital improvements that actually benefit suburban customers; (2) an auditing system to verify that suburban purchasers are not paying more than the agreed price; (3) a semi-annual meeting to discuss mutual concerns, trends, etc., and finally, (4) a water conservation plan which would allocate water between San Francisco and Peninsula cities during shortages.

However, the settlement agreement raises concerns about proposed water distribution techniques. As Tables 10.11 and 10.12 indicate, water demand is expected to increase moderately in most urban areas. It is reasonable then to assume that the amount of water used by suburban purchasers will exceed the 144.6 mgd used in fiscal year 1982-1983. In anticipation, the settlement agreement provides an additional 39.4 mgd. The agreement, however, does not allocate the

additional 39.4 mgd. Rather, the agreement allows suburban purchasers the option of developing a method among themselves for distributing the additional water. Unless such a method is developed, the 39.4 mgd will be distributed to needy suburban purchasers on a first-come, first-served basis. Under this scenario, it is conceivable that a few suburban purveyors could receive a disproportionate share of the water and possibly deplete the allocation. Once the guaranteed amount of 184 mgd is consumed, more water will be available but at a higher cost. To remedy the situation, the suburban purchasers need to develop a more equitable allocation system than a first-come, first-served basis.

b. Emerald Lake Hills Water Distribution System

The urban neighborhood of Emerald Lake Hills is served by a water distribution system long plagued by inadequate mains and insufficient water pressure. Most areas are served by two-inch mains, and a number of homes are served by private water lines of unknown quality or size.[32] Inadequate water pressure also is a problem. Because new development has connected into these substandard sized main, water pressure diminished as more development occurred. This situation hampers not only everyday water use but emergency situations as well. Fire protection is undermined since hydrants cannot be installed on small lines. Although some of the worst mains have been replaced with new six-inch mains and the impact of new development upon water pressure is constantly examined as a part of the development review process, the distribution system remains quite inadequate and improvements are necessary.

c. Adequacy of Water Supplies During Emergencies

Because the primary source of water for urbanized San Mateo County is the Hetch-Hetchy aqueduct system, a system failure would have an adverse effect. Water service interruption can occur from natural disasters or deteriorated facilities. Hetch-Hetchy transmission lines span many miles and are susceptible to direct shear or horizontal forces from earthquakes. Hetch-Hetchy facilities are also susceptible to failures caused by age and weakened pipes, leaks, and chemical and electrolytic corrosion.[33] Water service interruption could occur in two areas, either within San Francisco Water Department service area (basically the Peninsula) or east of the San Francisco Bay. In the event of a system outage within the SFWD service area, water purveyors in San Mateo County would not have adequate storage capacity to provide service during the emergency. According to the DWR's Water Action Plan: Central and South San Francisco Bay Area, "most municipalities and agencies that purchase water from San Francisco Water Department do not provide storage for their distribution systems, but withdraw water directly from the pipelines at rates necessary to satisfy instantaneous demands." The Plan goes on to say that "with no storage, these municipalities would experience a virtual water supply cutoff in the event of an outage to the San Francisco Water Department System."[34]

In the event of a system failure east of the San Francisco Bay, the Plan indicates that the local reservoirs, Crystal Springs, Calaveras and San Antonio, could be relied upon to provide supplies adequate to meet emergency consumption requirements. Such requirements assume consumption rates of one-third of average daily requirements for a period of up to five days. To address the situation of an outage within the SFWD service area, water purveyors need to develop emergency techniques and plans to minimize water service interruption.

2. Expansion of Coastside Facilities

a. Citizen's Utilities Company

Citizen's Utilities Company cannot expand its facilities to better accommodate current and future water demand. Present water sources, local wells and springs are near capacity; however, expansion to increase supplies is hindered by low-yielding groundwater sources and regulatory restrictions. According to the Local Coastal Program, wells attempting to tap deep groundwater sources failed to produce satisfactory quantities. Further attempts to increase the production from shallow aquifers raise the threat of either permanently lowering the water table or causing salt water intrusion. While major creeks exist in the vicinity which could serve as supplemental sources, the right to take water from them belongs to the Coastside County Water District. Nor can nearby Crystal Springs Reservoir serve as a source. Because the Reservoir is supplied via the Hetch-Hetchy aqueduct system, private utilities are prohibited by law from using this source.

b. Coastside County Water District

Unlike Citizen's Utilities Company, the Coastside County Water District can expand its facilities to secure additional water supplies. As indicated earlier, this District cannot adequately accommodate current and future demands for water. To alleviate this situation, the District has developed a proposal for a three-phase project which will take water from the Upper Crystal Springs Reservoir via a 5.1 mile pipeline[35] over Cahill Ridge to the Half Moon Bay Treatment Plant. Accessory facilities involve intake and lift pumps, a surge tank and an expanded water treatment plant. Phase 1 of the project, a transmission pipeline, will use new connection fees to finance the work.[36] Financing plans for subsequent phases must be developed. Completion of Phase 1 will allow the District to issue from 610-878 new connections, and significantly reduce the sizable waiting list.[37] This project will create many environmental impacts, although most will be mitigated. However, the final EIR indicates that vegetation removal, traffic disruption and the consumption of nonrenewable energy resources are unavoidable adverse environmental effects. Any project to expand water supply facilities has growth inducing ramifications. This project will induce growth to the extent that the "reduction in the waiting list would directly lead to increased development."[38] This would apply to those units which have already

obtained all other necessary permits and could be constructed immediately if connections were available.

3. Coordinating Urban Water Supplies with Land Use Plans

One way to furnish adequate water supplies in urban areas is to encourage the capacity of public water systems to correspond to the level of development proposed in the land use plan. When public water systems are deficient in capacity, development will often be hampered. Similarly, when excessive water capacities are available, more intense levels of development than desired can result. By synchronizing the capacity of public water systems with the desirable level of development, urban water supplies can be used more efficiently. Such comprehensive water supply management planning could allow public water systems to better anticipate necessary expansions, arrange to obtain additional water entitlements in a timely fashion, and plan a program for necessary capital financing.

B. PROVIDING ADEQUATE WATER SUPPLIES IN RURAL AREAS

1. Coordinating Water Supplies with Rural Land Use Plans

Water supplies to accommodate rural development are provided by wells, streams and public water systems. The potential of developing large public water systems in rural areas which stimulate high levels of growth is of concern. Recently adopted rural land use plans emphasize the protection of resources while allowing a low level of development. However, the capacity of these large systems can undermine the intent of the land use plan. Because these water systems can accommodate hundreds of service connections, they have a clear potential to induce growth at higher than desired levels. Types of water supply facilities more appropriate for low level rural development are individual wells or, in some instances, small water systems. These facilities are generally less costly and are better suited to accommodate rural community development objectives.

2. Quality and Reliability of Rural Water Sources

The quality and reliability of wells, streams and small water systems is often of concern. The following sections discuss the advantages and disadvantages of these sources.

a. Wells

Using wells as a water source has certain advantages. They provide a relatively economical way of obtaining water, require low maintenance if the quantity and quality are adequate, are reasonably reliable during droughts, especially when exceeding a depth of 20 feet, and do not involve water rights, a permit process associated with using surface water. Wells, however, do have some disadvantages. Locating a subsurface water source is more of an art than a science, as there is no reliable way to predict the best site for a well unless a costly hydrogeological study is performed. Also, once a subsurface water

source is tapped, it must yield an amount acceptable to County standards: 5 gallons per minute (gpm) or 2.5 gpm with adequate storage.[39] Wells can also adversely affect surface streamflow if located too close to stream floodplains. Well water is also susceptible to contamination from many sources, although not all of these pose health threats. Often well water contains concentrations of iron and manganese which give a metallic taste, harshness and brown color. These constituents are more a nuisance than a threat and are easily removed. However, other constituents such as nitrates and fecal bacteria pose more serious health threats. The groundwater underlying the town of Pescadero is well known to be contaminated by these constituents. Once groundwater is contaminated, it is difficult if not impossible to correct. Because groundwater flows so slowly, much slower than surface water, a contaminated aquifer may remain polluted indefinitely, even if the source of pollution is removed.[40]

b. Surface Water

Quantity and quality are benefits associated with using an aboveground source. Stream flows are abundant during the wet season of November through May and can produce significant amounts of water. The San Gregorio and Pescadero watersheds average 22,410 acre feet and 25,600 acre feet per year, respectively. The high quality of stream water also makes it an attractive source. South Coast streams contain a low level of constituents making it generally satisfactory for use; however, these waters are also excessively hard and contain high amounts of sodium. There are, however, some disadvantages in using stream water. A significant drawback is the complete dependence upon rainfall for replenishment. It is a "feast or famine" situation where the weather either produces a significant amount of stream water or none at all. Another drawback is the regulatory process required to appropriate water from streams. State law requires various licenses, permits and statements of diversion before taking water from streams by either appropriative or riparian rights.

Often this administrative process can take from eight months to two years to complete.[41] An additional disadvantage in using stream water is that its removal can adversely impact fish and other wildlife along with agricultural uses. (For more information on the impact on fish, see the Vegetative, Water, Fish, and Wildlife Resources Chapter.) Impacts of water removal from streams on agricultural uses are discussed later in this Chapter.

c. Small Water Systems

Small water systems also have advantages and disadvantages. The water provided is usually of high quality as the majority of these purveyors obtain water from streams and creeks. Local control is another advantage. These systems are owned by the people receiving the service. The main disadvantage of this water source is quantity. Often these small systems have inadequate storage capacity and/or transmission systems that prevent them from meeting demand.

Moreover, this situation is not easily remedied due to a lack of funding for necessary capital improvements.

3. Limited Agricultural Water Supplies

Climate and upstream diversions are key factors limiting the amount of South Coast surface water supplies available for agricultural uses. During the wet season, an abundant amount of rainfall contributes to the high volume of streamflow. However, during the dry summer season when precipitation levels decline, streamflows diminish accordingly. This inconstant supply of water is further reduced by upstream diversions. As the Skyline Area Study documented, upstream domestic diversions tend to lessen this already inconstant supply of water, thus diminishing the usefulness of remaining flows for crop irrigation purposes. Dependence upon the uncertainty of the weather and domestic water needs have limited the amount of water available for agricultural uses.

4. Storage Capacity for Agriculture Uses

The usefulness of limited South Coast water supplies for agricultural irrigation purposes is further reduced by a lack of storage facilities. Tables 10.7 and 10.15 indicate present agriculture water requirements for watersheds in this area total 4,732 acre feet, yet total storage of existing small impoundments is 3,262 acre feet. While this data implies a need for more impoundments, few are constructed because of permit processing time and construction costs. Estimates indicate that securing permission to appropriate stream water can take from eight months to two years, depending upon the amount diverted and the volume of protest raised. Obtaining approvals to construct the impoundment further lengthens the time involved. Construction is also expensive. A 49 acre-foot impoundment can cost from $92,000 to $153,000. This represents a significant outlay for the small profit margin of $300/acre typically realized by farmers.[42] Competition for scarce rural water resources could be lessened by minimizing the reliance upon stream flow as a water source for nonagricultural users and establishing new methods of financing the construction of small water impoundments.

5. Diverse Number of Suppliers

A proliferation of small water suppliers exist in the rural area primarily as mutual water systems. While all these purveyors share a common objective, to provide efficient water service, the current fragmented arrangement can impede this objective. It has often been suggested that these small systems consolidate operations in order to provide centralized management and coordinated scheduling to make necessary improvements and repairs, especially those suppliers with service areas in proximity to one another such as Cuesta La Honda, Redwood Terrace Mutual and County Service Area #7.

There are, however, problems with such a centralized delivery system. The physical plants of many mutuals need repair and/or upgrading which makes consolidation less attractive. Existing administrative

arrangements involving water allocations, entitlements, etc., would require examination and reorganizing, a lengthy, complicated process. Financing the ongoing operations and maintenance of a centralized system is yet another problem. It would probably require establishing a special district or an assessment mechanism to impose fees upon residents benefiting from the service. Also, the attitudes of the affected residents would be a concern. As the Skyline Area General Plan Amendment indicates, "experience has shown that small mutually-owned water systems have a strong community spirit that resists absorption by larger agencies."[43]

Although consolidating small water systems would create several regulatory and financial problems, creating still more small systems is not an appropriate solution. Given the operational and financial problems currently facing these small operators, it seems appropriate to discourage the development of additional systems.

C. MAKING MORE EFFICIENT USE OF WATER SUPPLIES THROUGH CONSERVATION AND RECLAMATION

1. Water Conservation

Potable water is not an inexhaustible resource as evidenced by the drought of 1976-1977. More efficient use can reduce demand by saving water. Interior water use in new construction can be reduced by 30% when water savings devices are used. The most common reduction methods include low flow shower heads, faucets and low flush toilets. Similarly, an additional 7% could be saved through the insulation of hot water pipes and the use of low-flow dish and clothes washers.[44] Exterior domestic water use can also be reduced by using low water plant materials and avoiding overwatering lawns.

Water conservation in agricultural uses can also be achieved by using more efficient irrigation methods. Shortening irrigation runs, leveling land, and using drip irrigation systems are techniques more efficient than wetting an entire field of crops. While there are problems with the last technique, namely, cost and the short life span of the plastic tubing equipment, it is nonetheless a viable solution.

2. Wastewater Reclamation

Reclamation and reuse of wastewater is an effective method of conservation. It involves using treated wastewater for irrigation and groundwater recharge. Golf courses, cemeteries and parks often use reclaimed water to irrigate landscape areas. There are, however, public health concerns over quality. Of principal concern is the level of bacteria present in the wastewater. Current standards allow relatively high levels of coliform bacteria (23 coli/100 ml) to exist in wastewater used for landscape irrigation, thereby creating situations of possible contamination during application. To lessen this threat, such spraying should occur when the public is not present. Similar concerns exist over wastewater used for spray irrigation of food crops. Although standards allow

wastewater with much less bacteria (2.2 coli/100 ml)[45] to be used, concerns exist over ingestion of such food products irrigated with reclaimed sewage.

Groundwater recharge also raises health concerns. Using wastewater to replenish low level groundwater basins can create situations where the eventually reclaimed water supply contains containments.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING WATER SUPPLY

A. PROVIDING ADEQUATE WATER SUPPLIES IN EMERALD LAKE HILLS

The inadequate water distribution system in Emerald Lake Hills is addressed by the Emerald Lake Hills Community Plan. The policies of the Plan recognize the need to improve the system and seek to develop techniques to finance the replacement of inadequate water lines.

B. EXPANDING COASTSIDE FACILITIES

The issue of expanding Citizen's Utilities Company (CUC) water supplies is not easily resolved by current regulations and policies. The Public Works Component of the Local Coastal Program addresses the issue by recommending the consolidation of CUC with Coastside County Water District. This is encouraged basically because no additional sources are available to the utility. While such a merger would be beset with a number of regulating and engineering problems, this is the best apparent solution.

As for the growth inducing consequences that increased water supplies for the Coastside County Water District would create, the Public Works Component of the Local Coastal Program adequately addresses the issue. The policies of this Component effectively control the expansion of public services in order to allow growth to occur in urban and rural areas. This is accomplished by requiring the sizing and phasing of transmission lines, pump stations and treatment facilities to coincide with available sewer capacities, water demand projections and the availability of funds. It is anticipated that the proposed facility expansion would also correspond to growth rates proposed in the Half Moon Bay Local Coastal Program.

C. COORDINATING WATER SUPPLIES WITH LAND USE PLANS

Ensuring that the capacity of public water systems corresponds to the level of development promoted in the land use plan is a key strategy in the Local Coastal Program. This coordinated approach supports land use decisions and allows for logical and orderly development.

D. LARGE PUBLIC WATER SYSTEMS

The potential of large public water systems to stimulate higher levels of development than allowed in rural land use plans is considered by LAFCo. When such systems are proposed for development via the formation of

special districts, LAFCo must review and either approve or deny the proposal. This review includes, among other things, an examination of the project's compatibility with the level of development called for in applicable land use plans. This coordinated approach is desirable as it helps to shape the logical and orderly development of a given area.

E. QUALITY AND RELIABILITY OF RURAL WATER SOURCES

The quality and reliability of rural water sources is governed by various County regulations. The following sections will discuss the adequacy of these regulations.

1. Wells

Wells are adequately regulated by general provisions in the County Ordinance Code concerning water purity along with other relevant code provisions pertaining to wells and ordinances implementing the Skyline Area General Plan Amendment. Sections 4660 et seq., and 4670 et seq. of the Ordinance Code ensure the quality of well water by requiring disinfection and chlorination. Sections 3341 et seq. and Sections 4700 et seq. of the Code adequately regulate the location, construction and production of both vertical and horizontal wells. Section 3342(e) of the Ordinance Code addresses the adverse impacts of wells located too close to stream floodplains by requiring wells to be located 20 feet away from this source. However, this distance requirement applies only to streams located within the Skyline Study area. This requirement needs to be expanded to include stream areas outside of the Skyline area.

2. Small Water Systems

The quality of water supplied by small water systems is adequately regulated by the provisions of the State Safe Drinking Water Act, enforced locally by the Environmental Health Division. Water quality is further regulated by Ordinance Code sections cited earlier.

F. LIMITED WATER SUPPLIES

Stream diversions and their ability to diminish flows used downstream is not easily addressed by regulations. While the State has methods to monitor the amount taken by appropriative right, the riparian right is less well regulated. A key problem is a lack of information to evaluate the amount of water used. The Skyline Area Study determined that statements of riparian diversion filed with the Department of Water Resources "often contain inaccurate data or no data at all." Also information when submitted is in inconsistent units of measurement,[46] so it is common for no accurate information to exist on the amount of riparian use.

The situation is further compounded by a riparian owner's claim to unspecified amounts of water. Instead of a given amount, riparian owners can take any amount of water as long is it does not interfere with the water requirements of other riparian owners.[47] This type of entitlement seems too flexible and does little to assist water management planning.

To address the issue, the Department of Water Resources has realized the need to begin updating and standardizing units of information on riparian water use.

The County has addressed the issue of limiting stream diversions in the Skyline Area General Plan Amendment, its implementing ordinances and the Local Coastal Program. Minimizing the impact upstream domestic diversions have on agricultural water supplies is addressed by changes to the Subdivision Ordinance to implement the Skyline Area General Plan Amendment. The Subdivision Ordinance prohibits land divisions from creating nonagricultural parcels that border streams along with prohibiting the transfer of riparian water rights to these new nonagricultural parcels. The Skyline Area General Plan Amendment also seeks to minimize the amount of water diverted upstream by amending the Environmental Health Code to prohibit the use of stream infiltration galleries and horizontal wells within the Skyline Area. The Agriculture Component of the Local Coastal Program also contains policies which address upstream diversions. These policies prohibit land divisions from creating nonagricultural parcels which border streams and require an on-site well source for water. The Component policies prohibit these newly created nonagricultural parcels from re-acquiring riparian rights.

G. STORAGE CAPACITY FOR AGRICULTURAL USES

The construction of small impoundments is also addressed in the Agriculture Component of the Local Coastal Program. Policies encourage their creation and prioritize any funding to projects involving water-short watersheds. Other County efforts on this issue involve streamlining the regulatory process. Small impoundments of 49 acre feet or less are exempt from obtaining a grading permit, provided they comply with other ordinance requirements.

H. DIVERSE NUMBER OF SUPPLIERS

Consolidating the diverse number of small rural water suppliers is neither encouraged nor discouraged by current County policy. While the Skyline Area Study sought to discourage the creation of new, small systems, there are no adopted guidelines on this issue. Recognizing that operational and financial constraints often hinder the provision of services, the creation of more small water systems seems questionable.

I. MORE EFFICIENT USE OF WATER SUPPLIES

1. Water Conservation

More efficient use of water through conservation is adequately addressed by the Water Conservation Ordinance. The ordinance focuses on interior water reduction by requiring, in all new or remodeled structures, low flush toilets which do not exceed 3.5 gallons per flush; flow restrictors to limit the flow of water; and pressure-reducing valves limiting water pressure to 80 pounds per square inch. The ordinance also encourages exterior water conservation for domestic and agricultural use. Domestic

applications involve the use of drought tolerant plants, controlled water application systems and collecting and using run-off water where possible. For water saving techniques for field crops and floriculture, the ordinance basically advocates efficient irrigation systems for both types of crops and collecting runoff for later use.

2. Wastewater Reclamation

Reclamation and reuse of wastewater is also addressed in the Water Conservation Ordinance. New or remodeled car washes using more than 25 gallons of water per vehicle must have a waste washwater recycling system. Field crops and floriculture are encouraged to use reclaimed wastewater when quality, environmental, health and economic conditions permit. In addition, all new commercial and industrial structures must use water recirculation systems, provided the cost of the water saved outweighs the cost of installing the systems.

The ordinance, however, does not address the quality of reclaimed wastewater used to irrigate public landscaped areas. It does not set forth standards for allowable levels of bacteria nor procedures to ensure safe application of the water.

J. SUMMARY OF PROBLEMS

1. Lack of plans and supply networks for use during water emergencies.

2. Lack of financing to fund water supply projects in rural areas.

3. Need to expand the Skyline Area General Plan Amendment requirement that prohibits the location of wells closer than 20 feet from streams to encompass streams Countywide.

4. Need to discourage the creation of small rural water systems.

5. Need to incorporate into the Ordinance Code allowable levels of bacteria for wastewater used to irrigate public landscaped areas.

IV. ALTERNATIVES

A. PROVIDING ADEQUATE WATER SUPPLIES DURING EMERGENCIES

An alternative to address the problems of emergency water service interruptions caused by system failure could involve a system of interconnections between appropriate water systems. This approach might involve the exchange of water from the Alameda County Water District or the City of Hayward. Interconnections of this type have been accomplished in the past during the drought of 1976-1977. During that emergency, temporary pipelines tapping other systems were developed to serve Marin County.

Another alternative could involve the use of water wells. Under this option, local wells could be constructed, carefully sited to reduce the risk of contamination, and stocked with water supplies in anticipation of future emergencies.

B. FINANCING INFRASTRUCTURE IMPROVEMENTS IN RURAL AREAS

1. Small Water Systems

a. Funding Programs

Funding the improvements to small rural water systems could make use of Federal and State funding programs. The State Safe Drinking Water Loan and Grant Program, administered by the Departments of Water Resources and Public Health, can be used to construct, improve or rehabilitate domestic water systems so they meet safe drinking water standards. Federal funding programs to construct water systems are also available. The Economic Development Administration provides grants to construct facilities such as water systems in areas where economic growth is behind that of the rest of the nation. The Environmental Protection Agency also provides grants for the development and demonstration of projects to provide safe drinking water.

b. Special Assessment Districts

Forming special assessment districts is another option to finance water system improvements. This technique has been used to finance a variety of public service and maintenance needs. Residents of an area generally initiate proceedings by obtaining signatures of 60% of the residents affected. Following approval by the Board of Supervisors and establishment of the financing mechanism, the Department of Public Works administers the district.

2. Small Agricultural Impoundments

a. Funding Programs

There are also funding programs available to finance the construction of agricultural water impoundments. The Agricultural Conservation Program, administered by the Agricultural Stabilization and Conservation Service, provides grant assistance for eligible farmers of up to 60% of the cost of water facility construction, not to exceed $3,500.00 per fiscal year.

The Soil and Water Loan Program also provides financial assistance to eligible farmers to construct water projects. This program, administered by the Farmers Home Administration, is available only when conventional financing is unobtainable. It provides loans up to a maximum of $200,000 at current interest rates with a maximum of 40 years to repay.

b. Assessment Districts

As discussed earlier, the formation of a special assessment district is also an optional approach to finance the development of water impoundments.

WATER SUPPLY FOOTNOTES

[1] Leeds, Hill and Jewett, Inc., Comprehensive Water Resources Management Plan, 1978, p. VI-1.

[2] Department of Water Resources, Water Action Plan - Central and South San Francisco Bay Area, 1982, p. 46.

[3] Ibid.

[4] Ibid.

[5] Leeds, Hill and Jewett, p. VI-1.

[6] Water Action Plan, p. 57.

[7] Ibid.

[8] Department of Water Resources, General Comparison of Water District Acts, Bulletin 155-77, 1978, p. 33.

[9] Ibid., p. 35.

[10] Ibid., p. 37.

[11] Ibid., pp. 167, 173.

[12] Jenks and Adamson, San Mateo County Water Quality Management Program, 1973, p. 3-1.

[13] Water District Draft Agreement, 1984, p. 6.

[14] Leeds, Hill and Jewett, p. VIII-4.

[15] Ibid.

[16] San Mateo County Planning Division, Conservation and Open Space Element, 1973, pp. 4-9.

[17] San Mateo County Planning Division, Skyline-Santa Cruz Mountains Area Study, 1982, p. 5.6.

[18] Ramlit Associates, Nonpoint Pollution Control Needs for Agricultural Lands in the San Francisco Bay Area, p. 9.

[19] Ibid., p. 7.

[20] Department of Water Resources, Water District Acts, p. 24.

[21] Ibid., p. 25.

[23] Department of Water Resources, Water Action Plan, p. 102.

[23] Catalogue of Federal Domestic Assistance, p. 714.

[24] Ibid., p. 704.

[25] Ibid., p. 95.

[26] Attorney's Directory of Services and Information: Federal, State and County Government, 1982, p. 209-10.

[27] Department of Water Resources, State Financial Assistance for Local Water Projects under the Davis-Grunsky Act, 1968, pp. 1-16.

[28] Association of Bay Area Governments, San Francisco Bay Area Environmental Management Plan, 1978, pp. IV-I/IV-13.

[29] Association of Bay Area Governments, San Francisco Bay Area Environmental Management Plan: 1979 Update - First Annual Report on Environmental Management Progress, 1979, pp. 92-93.

[30] San Mateo County Planning Division, Local Coastal Program: Public Works Component, 1980, p. 2.45.

[31] James S. Teter, Coastside County Water District: Water Supply Evaluation, 1981, p. V-7.

[32] San Mateo County Planning Division, Emerald Lake Hills Community Plan, 1977, p. 11.

[33] Department of Water Resources, Water Action Plan: Central and South San Francisco Bay Area, 1982, p. 83.

[34] Ibid., p. 86.

[35] Environmental Impact Planning Corporation, Final Environmental Impact Report Addendum: Proposed Crystal Springs Water Supply Project, Coastside County Water District, Half Moon Bay, California, 1983, p. 15.

[36] Ibid., p. 20.

[37] Ibid., p. 18.

[38] Ibid., p. 81.

[39] Rex Goff, Principal Water Specialist, Conversation on Water Supply Sources, March 1984.

[40] Pat Schifferle, Arnold Peters, and Katrina Bell, Is Our Water Safe to Drink? (Assembly Office of Research), April 1983, pp. 32-33.

[41] San Mateo County Planning Division, Skyline-Santa Cruz Mountains Area Study, 1982, p. 5.55.

[42] Ibid., p. 5.65.

[43] Ibid., p. 5.57.

[44] Department of Water Resources, Water Action Plan: Central and South San Francisco Bay Area, 1982, p. 115.

[45] William Jopling, "Public Health Criteria for Reclaimed Water Reuses," Proceedings: Third Annual Conference California Association of Reclamation Entities of Water, June 1975, p. 75.

[46] Skyline, p. 5.51.

[47] Ernest A. Engelbert, ed., Competition for California Water: Alternative Resolutions, 1982, p. 170.

WATER SUPPLY APPENDIX

APPENDIX A – SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on February 20 and March 7, 1985, the following background data was added to the Water Supply Chapter.

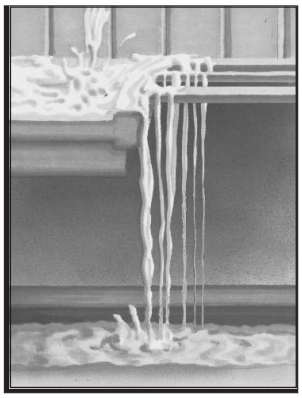
Material Requirements for Small Rural Water Suppliers

Staff has reviewed Ordinance 02880 which enacts the Uniform Plumbing Code as it applies to the use of plastic pipe for potable water systems. Plastic pipe is not approved for use in residential construction except for underground drainage and venting installations outside of the structure. The Ordinance, however, allows a variety of other materials for potable water systems such as brass, copper and different types of iron. The Ordinance also allows asbestos cement pipe, which meets recognized standards for use in cold water distribution systems outside a building.

11

Wastewater

Background ▪ Issues



WASTEWATER BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

The Wastewater Chapter of the General Plan is concerned with all existing and proposed wastewater facilities in San Mateo County. Although the focus of the General Plan is on the unincorporated areas of the County, most wastewater treatment and disposal systems in the urban area are regional, serving both cities and unincorporated areas. In the rural areas (as well as in some urban areas), on-site disposal systems (septic tanks) are used. The Chapter reviews these systems and assesses the adequacy of existing and proposed facilities to accommodate planned growth levels. Finally, Federal, State, regional, and local programs pertaining to wastewater management are surveyed.

B. STATE PLANNING LAW

The California Government Code requires that each city and County adopt a general plan, consisting of at least nine required elements, to guide its physical development. Section 65302(a) requires that the Land Use Element designate the general location of various land uses, including liquid waste disposal facilities.

Although wastewater management is not included as one of the nine mandatory elements, Section 65303(e) of the Government Code lists several additional elements which local governments may adopt, including Public Services and Facilities. This element would cover " . . . general plans for sewerage, refuse disposal, drainage and local utilities, and rights-of-way, easements, and facilities for them." The trend in general plans in California today is toward comprehensiveness, and it is appropriate to include wastewater management, an essential service for urban development, in the General Plan.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

The existing County General Plan does not contain a wastewater element. However, several area plans contain policies on wastewater management. These area plans are: the San Bruno Mountain General Plan Amendment, the Emerald Lake Hills Community Plan, the Montara-Moss Beach-El Granada Community Plan, the Local Coastal Program and the Skyline Area General Plan Amendment. The policies in this Chapter will be consistent with those area plan policies pertaining to wastewater but generally at a broader level of detail. In addition, the Wastewater Chapter is closely related to the Land Use Chapter. Information on availability of wastewater treatment facilities is essential for determining land use designations.

D. RELATION TO OTHER COUNTY PLANS

Some of the major studies, consulted in the development of this Chapter, include: (1) Comprehensive Sewerage Study, Project A (1968), which recommended consolidation of all wastewaters collected along the Bayside between Millbrae and Menlo Park for treatment at a single plant; (2) San Mateo County Water Quality Management Program (1973), which recommended regional consolidation of sewerage systems throughout the County into six systems, three along the Bayside and three on the Coast; (3) Water Quality Control Plan for the San Francisco Bay Basin (1975), which the Regional Water Quality Control Board uses to evaluate local plans for sewerage facility improvements; (4) San Mateo Mid-Coastside Wastewater Management Plan (1975), which provided for the construction of a new consolidated sewage treatment plant in Half Moon Bay serving the City of Half Moon Bay and the El Granada and Montara Sanitary Districts. The major local sewerage project undertaken by the County in recent years is the development of a sewerage collection and conveyance system for Emerald Lake Hills, described in (5) Emerald Lake Hills Wastewater Management Study (1978).

II. EXISTING WASTEWATER SYSTEMS

Two methods of wastewater treatment and disposal are reviewed in this chapter: sewerage systems and septic systems. Sewerage systems are comprised of the interdependent assemblages of pipes, conduits and physical facilities employed in the collection, transport, treatment and disposal of wastewater in urban areas. Septic systems are underground wastewater systems used to treat domestic wastes on individual sites. Septic systems are generally used in rural areas where providing sewerage service is not feasible, although they are currently being used in some urban neighborhoods in San Mateo County.

A. INVENTORY OF URBAN TREATMENT FACILITIES

1. Overview of the Urban Wastewater System

The urban sewerage system is normally made up of three major components: the collection system, the treatment facility, and the disposal system.

a. Collection Systems

The collection system is the system of pipes designed to gather wastewater from homes and businesses and transport it to a treatment facility. Wastewater is transported through the system by gravity wherever possible and augmented by pumps where necessary. Each generator of wastewater is equipped with a drain line that connects to lateral sewer lines. Lateral lines, in turn, empty into larger trunk lines. From the trunk lines the wastewater flows into interceptors that finally transport the wastewater to the treatment facility.

b. Treatment Facilities

Once the wastewater arrives at a treatment facility, it is processed to remove as much of the waste as possible before the effluent is discharged into the receiving waters. This treatment process basically accelerates the natural process by which water purifies itself. There are three general levels of treatment that can be employed by a wastewater treatment facility to remove the material carried in the wastewater: primary, secondary and advanced.

Primary treatment removes all settleable and floatable solids from incoming wastewater. Following primary treatment, secondary treatment of wastewater utilizes the bacteria that are present in the sewage to reduce the suspended solids and the biochemical oxygen demand (BOD),[1] of the wastewater. Tertiary or advanced treatment adds a chemical filtration and settlement process to primary and secondary treatment wastewater to further remove solids still present in the wastewater.

c. Disposal Methods

Two final products are created as the result of wastewater treatment: the treated wastewater, or effluent, and the removed solids, or sludge. The effluent can be discharged into receiving waters or reclaimed for nondomestic uses. Four basic methods of sludge disposal are available to wastewater treatment operators: disposal by sanitary landfill, land application, composting, and incineration. Sludge disposal by sanitary landfill entails the burial of wastewater solids at a solid waste disposal site. Land application is the utilization of sludge as a soil enricher for agricultural land, park land or disturbed land (such as construction sites, gravel pits, strip-mined lands or clear-cut forests). Composting refers to the decomposition of organic wastes in sludge until a final nuisance-free product is created. Composted sludge is also used as a soil enricher. Incineration of sludge involves drying and burning processes that reduce wastewater solids to ash.

2. Existing Wastewater Facilities in San Mateo County

a. Types of Wastewater Agencies

Sewage collection, treatment, and disposal services are provided by a variety of local agencies in San Mateo County, including municipal governments, special districts, and county districts. Municipal governments build, operate and maintain facilities where the service area covers the entire municipality. The cities of Pacifica, Millbrae, and Burlingame, for example, operate and maintain their own collection and treatment facilities. In other areas, special districts and joint powers agencies are used to provide collection, treatment, or both. The types of wastewater agencies in addition to municipalities found in San Mateo County are:

(1) County Sanitation District

A county sanitation district is empowered by Section 4700 et seq. of the California Health and Safety Code, to build, maintain and operate treatment plants and related collection facilities. The district boundaries can include both incorporated and unincorporated lands. Bonds may be issued, and taxes may be levied. If all the territory of a sanitation district is unincorporated, the governing board is the Board of Supervisors. The Crystal Springs, Devonshire, and Scenic Heights County Sanitation Districts were formed under this law.

(2) Sanitary District

A sanitary district is empowered by Section 6420 et seq. of the Health and Safety Code to perform activities similar to a County Sanitation District. This entity may plan, build and maintain necessary treatment plants and collection facilities in both unincorporated and incorporated territories. Fees, other service charges and taxes may be levied. A sanitary district is governed by an elected board. In San Mateo County, examples are the Granada Sanitary District and Montara Sanitary District.

(3) Improvement District

The Estero Municipal Improvement District and Guadalupe Valley Municipal Improvement District were established under special State laws that define their areas of jurisdiction.

(4) Sewer Maintenance District

A sewer maintenance district is empowered by Section 4860 et seq. of the Health and Safety Code to maintain, operate and repair wastewater collection lines. This entity may operate in both incorporated and unincorporated lands, and may cause taxes to be levied. The governing body is normally the Board of Supervisors. Sewer maintenance districts in San Mateo County formed under this section include those for Burlingame Hills, Emerald Lake Heights, Kensington Square, and Oak Knoll.

(5) Maintenance District

Maintenance districts are empowered by Section 5820 et seq. of the California Streets and Highways Code to provide lighting, landscaping and sewer system improvements. These districts may include both incorporated and unincorporated territory and can be established and governed by the Board of Supervisors or by a city council. The Fair Oaks Sewer Maintenance District and Harbor Industrial Sewer Maintenance District were formed under this authority.

(6) Joint Powers Agencies

Under California law, two or more cities, counties, and/or special districts are authorized to jointly exercise powers that they are granted individually. The terms of this joint exercise of powers are governed by a written agreement. Thus a city and a county, for example, or a county and a sanitary district may jointly operate sewage collection and treatment facilities. In San Mateo County, joint powers agencies include Sewer Authority Mid-Coast (two sanitary districts and a city), the South San Francisco-San Bruno treatment plant (two cities), the San Mateo-Estero Municipal Improvement District treatment plant (a city and an improvement district), and the South Bayside System Authority (three cities and a sanitary district).

b. Collection System Operators

At present, there are 28 agencies that provide wastewater collection services in San Mateo County. These include 17 special districts, 10 municipalities and the San Francisco International Airport. The San Mateo County Department of Public Works administers nine of the special districts. The map on page 11.6 illustrates the service area boundaries for each collection agency and regional treatment plant. Table 11.1 provides a listing of the collection system agencies served by each treatment plant. It also indicates which treatment plant and collection system operators serve unincorporated areas.

c. Treatment Plants

Wastewater treatment for each sewered area in San Mateo County is provided by 11 treatment plants, two of which are located outside of the County.[2] These plants are listed in Table 11.2, along with their level of treatment, design flow, recent average flow, and outfall location. In an effort to meet Federal and State water quality objectives, a number of entities have consolidated all or a portion of their operations. For example, the South Bayside System Authority serves the West Bay Sanitary District, and the cities of Belmont, San Carlos, and Redwood City. Three of these agencies, in turn, provide collection services for unincorporated areas in the South County.

d. Treatment Capacity

Each wastewater treatment plant has been designed to treat a projected amount of wastewater to a desired level before discharging the effluent into receiving waters. This is referred to as the plant's treatment capacity, or design flow (see Table 11.2). Several factors affect the treatment of wastewater and therefore the quality of the effluent. One factor is the weather; during heavy rains, treatment plants receive more influent than they can treat,

11.1M

SAN MATEO COUNTY GENERAL PLAN

WASTEWATER SERVICE AREAS

- TREATMENT PLANT
- BOUNDARIES OF TREATMENT PLANT SERVICE AREA
- BOUNDARIES OF COLLECTION SYSTEM OPERATORS

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

CITY OF SAN FRANCISCO – SOUTHEAST TREATMENT PLANT
BAYSHORE SANITARY DISTRICT
GUADALUPE VALLEY MUNICIPAL IMPROVEMENT DISTRICT
CITY OF BRISBANE
NORTH SAN MATEO COUNTY SANITATION DISTRICT
BROADMOOR
UNINCORPORATED COLMA
TOWN OF COLMA
CITY OF DALY CITY
WESTBOROUGH COUNTY WATER DISTRICT
SOUTH SAN FRANCISCO – SAN BRUNO WASTEWATER TREATMENT PLANT
CITY OF SOUTH SAN FRANCISCO
CITY OF SAN BRUNO
AIRPORTS COMMISSION, CITY AND COUNTY OF SAN FRANCISCO
CITY OF PACIFICA
CITY OF MILLBRAE
CITY OF BURLINGAME
CITY OF BURLINGAME
BURLINGAME HILLS SEWER MAINTENANCE DISTRICT
TOWN OF HILLSBOROUGH
CITY OF SAN MATEO – ESTERO MUNICIPAL IMPROVEMENT DISTRICT
TOWN OF HILLSBOROUGH
ESTERO MUNICIPAL IMPROVEMENT DISTRICT
CITY OF SAN MATEO
CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
SOUTH BAYSIDE SYSTEM AUTHORITY
CITY OF BELMONT
CITY OF SAN CARLOS
HARBOR INDUSTRIAL SEWER MAINTENANCE DISTRICT
DEVONSHIRE COUNTY SANITATION DISTRICT
SCENIC HEIGHTS COUNTY SANITATION DISTRICT
EMERALD HEIGHTS SEWER MAINTENANCE DISTRICT
CITY OF REDWOOD CITY
OAK KNOLL SEWER MAINTENANCE DISTRICT
KENSINGTON SQUARE MAINTENANCE DISTRICT
FAIR OAKS SEWER MAINTENANCE DISTRICT
WEST BAY SANITARY DISTRICT
SEWER AUTHORITY MID-COAST
MONTARA SANITARY DISTRICT
GRANADA SANITARY DISTRICT
CITY OF HALF MOON BAY
CITY OF PALO ALTO
EAST PALO ALTO SANITARY DISTRICT

PACIFIC OCEAN

SAN FRANCISCO BAY

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

BRISBANE
SIERRA POINT
OYSTER POINT
SAN BRUNO
PACIFICA
MORI POINT
POINT SAN PEDRO
MONTARA POINT
PILLAR POINT
HILLSBOROUGH
BURLINGAME
COYOTE POINT
FOSTER CITY
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
MENLO PARK
PORTOLA VALLEY
EEL ROCK
SEAL ROCK
MUSSEL ROCK
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINT
AÑO NUEVO POINT

TABLE 11.1

SEWERAGE COLLECTION SYSTEMS WITHIN EACH TREATMENT PLANT SERVICE AREA,
SAN MATEO COUNTY

TREATMENT PLANT OPERATOR	COLLECTION SYSTEM OPERATOR	SERVES UNINCORPORATED AREA	COUNTY DISTRICT
North San Mateo County Sanitation District	City of Daly City	X	
	Town of Colma		
	Westborough County Water District		
City of Pacifica	City of Pacifica		
Sewer Authority Mid-Coast	City of Half Moon Bay		
	Montara Sanitary District	X	
	Granada Sanitary District	X	
City of San Francisco-Southeast Treatment Plant	City of Brisbane		
	Bayshore Sanitary District		
	Guadalupe Valley Municipal Improvement District	X	
South San Francisco-San Bruno	City of South San Francisco	X	
	City of San Bruno		
Airports Commission, City and County of San Francisco	San Francisco International Airport	X	
City of Millbrae	City of Millbrae		
City of Burlingame	City of Burlingame		
	Burlingame Hills Sewer Maintenance District	X	X
	Town of Hillsborough (part)		

TABLE 11.1 (continued)

SEWERAGE COLLECTION SYSTEMS WITHIN EACH TREATMENT PLANT SERVICE AREA, SAN MATEO COUNTY

TREATMENT PLANT OPERATOR	COLLECTION SYSTEM OPERATOR	SERVES UNINCORPORATED AREA	COUNTY DISTRICT
City of San Mateo-Estero Municipal Improvement District	Town of Hillsborough (part)		
	City of San Mateo		
	Crystal Springs County Sanitation District	X	X
	Estero Municipal Improvement District		
South Bayside System Authority	City of Belmont		
	City of San Carlos		
	Harbor Industrial Sewer Maintenance District	X	X
	Scenic Heights County Sanitation District	X	X
	Devonshire County Sanitation District	X	X
	City of Redwood City		
	Emerald Lake Heights Sewer Maintenance District	X	X
	Fair Oaks Sewer Maintenance District	X	X
	Kensington Square Sewer Maintenance District	X	X
	Oak Knoll Sewer Maintenance District	X	X
	West Bay Sanitary District	X	
City of Palo Alto	East Palo Alto Sanitary District		

Source: San Mateo County Planning Division.

TABLE 11.2

SUMMARY OF WASTEWATER TREATMENT FACILITIES SERVING SAN MATEO COUNTY

TREATMENT FACILITY	TREATMENT LEVEL	DESIGN FLOW[1]	AVERAGE FLOW[1]	OUTFALL LOCATION
North San Mateo County Sanitation District	Secondary	8.0 mgd	7.6 mgd	Pacific Ocean
City of Pacifica	Secondary	3.3 mgd	2.5 mgd	Pacific Ocean
Sewer Authority Mid-Coast	Secondary	2.0 mgd	1.3 mgd	Pacific Ocean
City of San Francisco Southeast Plant	Secondary	85.0 mgd	74.0 mgd	San Francisco Bay
Cities of South San Francisco and San Bruno	Secondary	13.0 mgd	8.2 mgd	San Francisco Bay
San Francisco Airport				
Sewage Treatment	Secondary	2.2 mgd	.9 mgd	San Francisco Bay
Industrial	Secondary	1.2 mgd	.8 mgd	San Francisco Bay
City of Millbrae	Secondary	3.0 mgd	2.0 mgd	San Francisco Bay
City of Burlingame	Secondary	4.7 mgd	3.3 mgd	San Francisco Bay
City of San Mateo/Estero Municipal Improvement District	Advanced	13.6 mgd	10.8 mgd	San Francisco Bay
South Bayside System Authority	Advanced	24.0 mgd	18.0 mgd	San Francisco Bay
City of Palo Alto	Advanced	30.6 mgd	24.0 mgd	San Francisco Bay

Notes: 1. Dry weather flows, in million gallons per day.

Source: San Mateo County Planning Division.

causing untreated wastewater to be discharged into the receiving waters. Another factor influencing wastewater treatment is the type of land use generating the wastewater. Typically, certain heavy commercial or industrial uses create wastes that require more extensive treatment than residential uses. Other factors include water conservation practices and water requirements peculiar to certain land uses.

3. Sewage Treatment Demand in Unincorporated Areas

Because most wastewater systems serve more than one collection district, the availability of treatment plant capacity is normally allocated by agreement between the constituent districts and the treatment facility. Plant capacity and district allocation agreements are based on population and land use projections for the service districts. The treatment plant authority serving unincorporated communities in San Mateo County, the potential development of these areas, and the availability of sewage capacity are described below and summarized in Table 11.3.

a. North San Mateo County Sanitation District (NSMCSD)

The North San Mateo County Sanitation District Treatment Plant serves the unincorporated neighborhoods of Broadmoor and Colma. NSMCSD provides service primarily to residential users; contributions from commercial and industrial facilities are minor. The wastewater is given secondary treatment and discharged into the Pacific Ocean. Wastewater solids are transported off-site for land disposal.

Wastewater generated by Broadmoor and Colma users is collected by the NSMCSD collection system. Potential development in the unincorporated area served by this plant is very limited. Presently, treatment capacity is very limited at this plant and is allocated on a first-come, first-served basis.

b. Sewer Authority Mid-Coast (SAM)

The SAM treatment plant serves the unincorporated communities of Montara, Moss Beach and El Granada, as well as the City of Half Moon Bay. SAM users are primarily residential with minor commercial and industrial contributors. Wastewater is collected by one of three collection systems and conveyed to Half Moon Bay for secondary treatment and disposal. Each collection district served by SAM has been allocated a fixed amount of the plant's treatment capability. In addition, each district is required to reserve some treatment capacity for land uses given priority by the Coastal Act and the Local Coastal Program. Over 3,600 additional residential units can be developed in the unincorporated portions of SAM's service area, as well as some additional commercial and industrial development. However, capacity to serve all of this potential development is not presently available.

TABLE 11.3

AVAILABILITY OF SEWAGE TREATMENT CAPACITY FOR FUTURE DEVELOPMENT OF UNINCORPORATED AREAS, SAN MATEO COUNTY

TREATMENT PLANT	UNINCORPORATED AREA	POTENTIAL DEVELOPMENT[1] RESIDENTIAL (Dwelling Units)	COMMERCIAL (Acres)	INDUSTRIAL (Acres)	AVAILABILITY OF SEWERAGE TREATMENT CAPACITY[2]
North San Mateo County Sanitation District	Broadmoor	Neg.	--	--	L
	Colma	20	--	3	L
Sewer Authority Mid-Coast	Montara-Moss Beach-El Granada	3,650	12	12	L
City of San Francisco-Southeast Treatment Plant	Guadalupe Valley	--	--	240	A
Cities of South San Francisco and San Bruno	McLellan Nursery	--	--	--	A
	Country Club Park	Neg.	--	--	A
Airports Commission - City and County of San Francisco	San Francisco International Airport	--	--	260	A
City of Burlingame	Burlingame Hills	Neg.	--	--	A
City of San Mateo	Highlands/Baywood Park	100	--	--	A
South Bayside System Authority	Harbor Industrial Park	--	--	Neg.	L
	Emerald Lake Hills	800	--	--	F

TABLE 11.3 (continued)

AVAILABILITY OF SEWAGE TREATMENT CAPACITY FOR FUTURE DEVELOPMENT OF UNINCORPORATED AREAS, SAN MATEO COUNTY

TREATMENT PLANT	UNINCORPORATED AREA	POTENTIAL DEVELOPMENT[1] RESIDENTIAL (Dwelling Units)	COMMERCIAL (Acres)	INDUSTRIAL (Acres)	AVAILABILITY OF SEWERAGE TREATMENT CAPACITY[2]
South Bayside System Authority (continued)	Palomar Park	40	--	--	L
	Devonshire	120	--	--	L
	Sequoia Tract	Neg.	--	--	L
	North Fair Oaks	Neg.	--	--	L
	Kensington	Neg.	--	--	L
	West Menlo Park	10	--	--	L
	Ladera	Neg.	--	--	L
	Menlo Oaks	10	--	--	L
	Weekend Acres	10	--	--	L

Notes: 1. Development potential is based on existing zoning of buildable vacant parcels. Scattered individual parcels not included. Sources include San Mateo County Housing Element (1982), A Little About Lots (Lewis and Knox, 1982), area plans, and data on file in the Planning Department offices.

2. Code for availability of sewerage capacity:

A = Capacity available.
F = Sewerage system under development.
L = Capacity limited.

Source: San Mateo County Planning Division.

c. San Francisco Southeast Plant

The San Francisco Southeast Treatment Plant is expected to treat wastewater from the unincorporated portion of the Guadalupe Valley, south of the Crocker Industrial Park and west of the City of Brisbane. This area contains approximately 240 acres zoned for industrial use and is expected to be annexed to Brisbane when it becomes developed. Adequate plant capacity to serve this area is presently available.

d. South San Francisco-San Bruno

The South San Francisco-San Bruno Water Quality Control Plant provides service to portions of the unincorporated neighborhood of Country Club Park and other unincorporated pockets. The plant provides secondary treatment, discharges to San Francisco Bay, and contracts with a private sludge composting operation for sludge removal. Wastewater generated in unincorporated areas is collected by the municipal collection system. A small amount of infill development is possible in the unincorporated areas served by this plant, and adequate treatment capacity is available for these areas.

e. Burlingame

The Burlingame Hills unincorporated area obtains its wastewater treatment service from the Burlingame Municipal Wastewater Utility. Wastewater is given secondary treatment at the Burlingame plant and transferred to South San Francisco where it is discharged through an outfall that also serves South San Francisco-San Bruno, Millbrae, the San Francisco International Airport and the Merck Chemical Company. Sludge is dewatered and transported to a sanitary landfill for disposal. Under the terms of a 1975 agreement between the City of Burlingame and the County-administered Burlingame Hills Sewer Maintenance District, the City authorized the District to dispose of its sewage into the City's collection system and treatment plant. The District maintains all sanitary sewerage facilities within its boundaries. A negligible amount of infill development is possible in this area. Adequate sewerage capacity is available for this development.

f. San Mateo-Foster City

Wastewater generated in the unincorporated neighborhoods of San Mateo Highlands and Baywood Park is collected by the County-operated Crystal Springs County Sanitation District and transported to the San Mateo-Foster City plant for treatment. The land use composition of the service area is essentially residential and commercial with few industrial contributors. The San Mateo-Foster City plant provides advanced treatment. Some of the effluent is reclaimed and used for landscape irrigation at Coyote Point County Park. The residual sludge is burned and disposed at a sanitary landfill. The

plant has adequate capacity to accommodate the additional residential development that is possible in the unincorporated Highlands/ Baywood Park area.

g. South Bayside System Authority (SBSA)

The SBSA treatment plant serves seven County districts that provide collection systems for the unincorporated neighborhoods of Palomar Park, Devonshire, North Fair Oaks, Kensington, West Menlo Park, Ladera, Emerald Lake Hills, Menlo Oaks, Weekend Acres and the Harbor Industrial Area. Wastewater flowing through SBSA is given advanced treatment before being discharged into San Francisco Bay. Residual sludge is dewatered and transported off site for disposal. The majority of the SBSA service area is residential and commercial, with a number of industrial uses concentrated along the U.S. 101 corridor. Industrial dischargers are subject to permit and pretreatment requirements.

The County operated collection districts that empty into SBSA contract with one of the four plant owners with capacity rights (see Table 11.1). The Emerald Lake Heights Sewer Maintenance District, for example, has purchased a fixed amount of capacity from Redwood City. The Devonshire County Sanitation District has an agreement with the City of San Carlos. Sewer connections within the original district are permitted automatically. Connections for undeveloped lots outside the district must first obtain approval from the City of San Carlos.

Recently, SBSA embarked on a locally-funded expansion program which will add capacity to treat another 2 million gallons of wastewater per day. This expansion should ease current limitations of treatment capacity allocated to unincorporated areas. However, arrangements for distributing the costs of this additional capacity are still under discussion.

B. INVENTORY OF RURAL TREATMENT SYSTEMS

1. On-Site Wastewater Systems

On-site wastewater systems provide treatment and disposal of domestic wastes on individual sites. There are three basic types of treatment systems: septic tanks, biological treatment units and chemical treatment units. A treatment system is usually used in combination with a soil absorption field. Types of soil absorption fields include drainfields, seepage pits, leaching chambers, absorption mounds and evapotranspiration beds. The predominant type of wastewater system used in the rural communities of San Mateo County is the septic tank and dual drainfield.

2. Description of the Septic Tank and Dual Drainfield System

The septic tank and dual drainfield is an underground system which uses gravity to transport household wastes from the home through pipes to an underground septic tank. In the septic tank, bacteria in the sewerage breaks down the organic matter and separates the wastes. Solids settle at the bottom of the tank, scum and grease rise to the top, and a layer of cleaner wastewater or clarified effluent is left in between. This effluent then flows through a main subsurface pipe to a diversion valve which directs the effluent to alternating drainfields via perforated distribution lines. These drainfields, composed of trenches filled with coarse gravel, permeable building paper and soil act to absorb the effluent. The bacteria in the soil then breaks down the organic material and recycles the nutrients. Each drainfield is alternated every 6-12 months to allow the soils to recover their infiltrative capacity.

3. Causes of Septic System Malfunction and Failure

Water quality problems and public health hazards result from the malfunction and failure of on-site wastewater systems. If effluent harboring disease-causing organisms either surfaces or reaches groundwater used for human consumption, typhoid, hepatitis and other gastrointestinal illnesses may result. Common reasons for septic system failure are unfavorable site conditions, inadequate design and planning, poor maintenance practices, the age of the system, and the materials used to construct the system.

a. Unfavorable Soil Conditions for Septic Systems

The infiltrative capacity of the soil has the greatest effect on the efficiency of the septic system. If the drainfield is constructed on soils which are too thin, dense or wet, soil penetration will be difficult and wastewater will divert back to the surface. When effluent is unable to percolate down through the soil mantle, wet and/or lush grassy areas in the leachfield area emerge.

Drainfields constructed on soils which are too porous or slopes which are too steep cause wastewater to run too fast to be purified. Effluent draining from slopes often surfaces at the base of the slope in what appear to be "springs."

b. Inadequate Design of Septic Systems

If the drainage of a septic tank drainfield is to function properly, it must be designed specific to the conditions of the site and to allow for the largest potential flow. Both the infiltrative capacity of the soil and the number of bedrooms in the home determine the size of the trenches needed for the drainfield(s). If the trenches are undersized, the soil mantle will not accept the wastewater, and the system will overflow creating wet, foul-smelling areas and generally unhealthy conditions.

Even proper planning, however, does not guarantee the continuous operation of the system. Soil that is constantly inundated with effluent can lose its infiltrative capacity as solids and biological growths clog up the soil pores, gradually reducing the efficiency of the system.

c. Improper Location of Septic Systems

The horizontal movement of wastewater through soils is also a potential problem involved in the drainage of septic tank drainfields. Once wastewater reaches the groundwater table, the flow shifts laterally. If a septic system is located too close to surface water sources such as wells, streams, reservoirs and drainageways, there is potential for the wastewater to infiltrate and contaminate the water source.

d. Poor Maintenance Practices

Homeowners have traditionally maintained and operated their own septic systems. Septic system maintenance, however, has been generally inadequate, as most homeowners are not concerned with the efficiency of their systems until they fail. The most common cause for failure is the carryover of settled solids and scum into the drainfield area. This results from inadequate pumping of the septic tank, which is needed every 3 to 5 years to remove the accumulated sludge. Obstructed drainfield lines can slow wastewater drainage from household fixtures and cause odor problems in the drainfield area.

4. Unincorporated Areas of San Mateo County Using Septic Systems

Many of the homes in San Mateo County which are currently using septic systems were initially built as summer or recreation homes and consequently have systems which were not designed to accommodate year-round live-in families. Most of these systems predate the enactment of the 1969 County regulations governing the approval of individual disposal systems and have undersized septic tanks, inadequate area for expansion and undersized, crowded drainfields. Unincorporated areas using septic systems are listed in Table 11.4. General area characteristics which have contributed to septic system failure will be discussed for the Bayside, Skyline Area and Coastal Zone.

a. Bayside

The unincorporated areas of the urban Bayside currently using septic systems are Country Club Park, Palomar Park and parts of Emerald Lake Hills. Many of the systems in these areas are failing because they were constructed on small irregular sized lots on rocky hillsides or streambeds. Problems which have appeared include wet areas and "springs" discharging down slope. These create health hazards and degrade wildlife habitat. In 1978, the Emerald Lake Hills

TABLE 11.4

UNINCORPORATED AREAS USING SEPTIC SYSTEMS

AREA	COMMENTS
Country Club Park	Approximately half the homes are on septic tanks
Palomar Park	Almost entirely on septic tanks
Emerald Lake Hills	Area being sewered; 35 exemptions have been filed
Los Trancos Woods/Vista Verde	Entirely on septic tanks
Skyline Area	Entirely on septic tanks
Mid-Coast	Less than 10% of homes are on septic tanks
South Coast	Entirely on septic tanks

Management Study was conducted in order to analyze septic tank problems in the Emerald Lake Hills area. A survey of the area revealed 154 system failures with 63 properties having inadequate land area to properly correct the failure. An additional 53 systems were considered to be potential problems. The study recommended construction of a sewer collection system for the area (presently under construction).

b. Skyline Area

Septic tanks are used exclusively in the unincorporated Skyline area. The Skylonda area has experienced problems of septic system contamination of its storage reservoir west of Skyline Boulevard. Concern over the proliferation of septic systems in subdivided areas such as Skylonda was a major reason for the downzoning action taken by the Board of Supervisors to implement the Skyline Area General Plan Amendment in 1983.

The unincorporated areas of Los Trancos Woods, Vista Verde and the Town of Portola Valley have also experienced septic tank problems. The On-site Wastewater Study conducted in 1982 reported that up to one third of 1,200 homes on septic systems studied in these areas have suspected problems due to natural soil limitations and poor maintenance. The study proposed the upgrading and expansion of existing systems, a community management program and the use of alternative systems where upgrading of systems would not be helpful due to physical constraints. No action has followed this study, however, due to citizen opposition.

c. Coastal Zone

The unincorporated areas of the Coastside which use septic systems include the entire South Coast and portions of the Mid-Coast. Most of the South Coast region has natural soil limitations which contribute to the malfunction of septic systems. In the Pescadero area, a high water table, heavy clay soils and dilapidated septic tank systems have all contributed to the contamination of the groundwater table. It is estimated that 60% of the tested wells are contaminated with nitrate and coliform in excess of public health standards.

III. EXISTING PLANS, POLICIES, AND REGULATIONS AFFECTING WASTEWATER

A. FEDERAL

1. Agencies

a. Environmental Protection Agency (EPA)

The Environmental Protection Agency, formed in 1970, establishes programs and policies addressing environmental matters such as water quality, air quality, and solid waste. Regional offices are delegated major responsibility for implementing and enforcing standards, conducting monitoring and surveillance programs and providing technical and financial assistance to State and local governments.

b. United States Public Health Service (USPHS)

An agency of the U.S. Department of the Health, Education, and Welfare, the Public Health Service has formulated the Manual of Septic Tank Practice (1957), which is used as a design guide for septic tank systems.

2. Legislation

a. National Environmental Policy Act (1969)

The National Environmental Policy Act established the Council on Environmental Quality and requires all Federal agencies to analyze the environmental impacts of major actions, consider alternatives, identify mitigation measures, and make this information public in order to protect, maintain, and enhance environmental quality.

b. Federal Water Pollution Control Act Amendments (1972)/Clean Water Act (1977)

The Federal Water Pollution Control Act Amendments of 1972 provide Federal and State governments authority to regulate the quality of wastewater discharged into receiving waters. The Act prohibits discharges into waters of the U.S. without a permit. It also provides for Federal grants for the construction of sewage treatment plants and for wastewater management planning. The construction grants cover 75% of the eligible costs of the facility. The balance is provided by State and local governments. Federal funds cannot be used to finance capacity needed for future growth. This act was renewed in 1977 as the Clean Water Act, and again in 1981. Federal funding authority for sewerage improvements will expire in September 1985. The type and amount of Federal assistance for sewerage improvements beyond that date is uncertain.

c. Resource Conservation and Recovery Act (1976)

The Resource Conservation and Recovery Act (RCRA) brought sludge management under the definition of the Federal Solid Waste Management Law. RCRA set forth criteria to improve land application of wastewater sludge and established guidelines to be used by landfill operators and wastewater agencies concerning disposal requirements. An objective of RCRA is to eliminate the application of sludge to agricultural lands by 1986.

B. STATE

1. Agencies

a. State Water Resources Control Board (SWRCB)

The State Water Resources Control Board establishes overall policy and direction for the State's water quality and water rights programs and for the nine regional water quality control boards. SWRCB also undertakes planning efforts mandated by State and Federal law. Together with regional boards, SWRCB administers State and Federal grant programs for wastewater facility construction, issues certificates and licenses governing water quality control, regulates waste discharges, and enforces water quality standards. SWRCB also established the Office of Water Recycling which administers reclamation projects in the Clean Water Grants Program and assists local agencies and industry with the implementation of water reclamation projects.

(1) Policy for Water Quality Control

The State policy for water quality control provides that secondary wastewater treatment be the minimum acceptable level of treatment and contains twelve general principals that implement the provisions and intent of the Porter-Cologne Act.

(2) Clean Water Grant Program

The Clean Water Grant Program is administered by the State Water Resources Control Board and is one of California's largest public works programs. It provides communities with guidance and funding for constructing adequate wastewater treatment facilities in order to clean up pollution caused by municipal waste dischargers.

(3) Ocean Plan (1972)

The Ocean Plan was adopted in 1972 by the State Water Resources Control Board. The plan establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California and controls waste discharges into the ocean by setting requirements for the design, operation and discharge of

systems. The plan directs the State Board to designate areas of special biological significance, which are assured protection against waste discharges.

(4) Thermal Plan (1972)

Adopted in 1972 by the State Water Resources Control Board, the thermal plan provides for the control of temperature in coastal and interstate waters and enclosed bays and estuaries. The plan sets forth water quality objectives, effluent quality limits, and discharge prohibitions related to the temperature of interstate waters and waste discharges.

(5) State Water Reclamation Program

In 1977 the State Water Resources Control Board added guidelines to the Clean Water Grants Program to give greater emphasis to reclamation projects and suggested water rights legislation to encourage reclamation projects by ensuring that water rights holders would not lose their priority to freshwater resources.

b. Department of Health (DOH)

The Department of Health (DOH) establishes criteria for reclaimed wastewater use and is the advisory agent to county health departments regarding administration and regulation of individual wastewater systems.

c. Department of Housing and Community Development (HCD)

The Department of Housing and Community Development (HCD) writes and administers State Housing Codes which cover sanitary facilities within a dwelling. The department is also responsible for establishing and implementing a rural facilities technical assistance program.

2. Legislation

a. Porter-Cologne Water Quality Control Act (1969)

The Porter-Cologne Water Quality Control Act established the State and regional water quality control boards, directed the State Board to formulate and adopt a State policy for water quality control and directed regional boards to adopt and enforce water quality control plans.

b. Clean Water Bond Laws (1970, 1974, 1978)

Periodically, the State has passed legislation, authorizing the issuance of bonds to provide funds for the State share of the costs of planning, designing, and constructing municipal sewage treatment facilities. Such laws were passed in 1970, 1974, and 1978.

c. Senate Bill 430 (1977)

This bill, which was passed by the Legislature in 1977 and codified as Section 6950 of the California Health and Safety Code, empowers existing wastewater management agencies such as cities or special districts to form on-site wastewater disposal zones. Within these zones, the agencies may levy an assessment and acquire, construct, inspect and maintain septic systems. Establishment of a zone is subject to a public hearing and may be formed by resolution of the agency or by referendum.

d. Assembly Bill 1604 (1983)

Passed in 1983 by the State Legislature, this bill established the Rural Community Facilities Technical Assistance Program (Section 6127 of the California Health and Safety Code), which provides funding and technical assistance for small rural and low income communities for the development of public water and wastewater systems.

C. REGIONAL

1. Agencies

a. Association of Bay Area Governments (ABAG)

The Association of Bay Area Governments (ABAG) is a voluntary regional association of local governments, which conducts comprehensive regional planning. ABAG has prepared a Federally mandated Environmental Management Plan for the nine Bay Area counties, which includes a water quality management plan.

b. The San Francisco Bay Regional Water Quality Control Board

In concert with the State Board, each regional quality control board has prepared a plan for the control of the quality of waters within its boundaries. In addition to its planning functions, the Regional Board is responsible for issuing individual waste discharge requirements insuring compliance with applicable effluent standards. The Regional Water Quality Control Board also provides guidelines for on-site wastewater disposal.

2. Plans and Policies

a. Environmental Management Plan (EMP)

The Environmental Management Plan (EMP) was prepared in 1979 by ABAG with the assistance of the Regional Water Quality Control Board and local agencies. The Water Quality Management Plan of the EMP contains policies which address water quality problems in the Bay Area. Policies address the receiving water and health of the

ecosystem, municipal and industrial point sources of wastewater discharge, surface runoff pollution control activities, and miscellaneous pollution sources such as septic tanks, vessel wastes and chemicals spills.

b. Water Quality Control Plan for the San Francisco Bay Basin (RWRCB)

The Water Quality Management Plan for San Francisco Bay Basin is a comprehensive program directed at solving water quality problems in the Basin. The program provides for the upgrading of wastewater treatment facilities, consolidation of facilities to reduce the number of dischargers, and discharge of effluent away from environmentally sensitive waters.

c. Sewerage Facility Plans

Operators of treatment plants and collection systems are required to prepare plans for improvements to their facilities as a condition of receiving Federal and State grants. Many such plans have been prepared by sewerage agencies in San Mateo County.

D. COUNTY

1. General Plan Policies

a. Conservation and Open Space Element (1973)

Policies in the San Mateo County Conservation and Open Space Element require the County to take direct actions to protect and preserve natural resources. Policies related to wastewater encourage the use of reclaimed wastewater as a supplemental source of water for non-consumptive use such as groundwater recharge or irrigation. Additional policies are directed at maintaining the quality of receiving waters.

b. Area Plans

(1) San Bruno Mountain General Plan Amendment (1976)

This amendment provides that wastewater generated from the Brisbane vicinity and Northeast Ridge be transmitted to the San Francisco Southeast sewer plant for treatment and for sewage from the South Slope area to be discharged to the South San Francisco-San Bruno treatment plant.

(2) Emerald Lake Hills Community Plan (1977)

This plan contains policies to guide the development of a wastewater management system to solve health problems caused by failing septic systems. The plan calls for sewering of all new and existing homes.

(3) Montara, Moss Beach, El Granada Community Plan (1978)

This plan developed policies which ensure preservation of prime agricultural and open space land. Policies encourage the reduction of sanitary service boundaries to correspond to the limits of urban development and limit any further expansion of sanitary district capacity to conform with planned growth within the community.

(4) Local Coastal Program (1980)

Policies concerning wastewater in the Coastal Zone are addressed in three components of the Local Coastal Program, the Locating and Planning New Development Component, the Public Works Component and the Housing Component.

The Locating and Planning New Development Component contains policies which direct new development to existing urban areas and rural service centers in order to maximize the use of existing public services and facilities. Housing development is limited to 125 building permits per year in the Mid-Coast.

Policies in the Public Works Component require a coastal development permit for construction of any public works facility and set aside capacity for coastal dependent land uses, including public services, basic industries, public recreation and visitor serving land uses. The Public Works Component also establishes the capacities and service areas of public works facilities. Construction is to be phased, with the first phase limited to the capacity needed for anticipated development during the next 20 years or less.

Policies in the Housing Component allocate a certain percentage of the limited sewage treatment capacity to low/moderate income households.

(5) Skyline Area General Plan Amendment (1983)

Land use policies adopted in this general plan amendment primarily address the appropriate level of development for the subdivided areas, and reflect limitations in services, especially septic systems. These policies increase minimum parcel sizes and call for the consolidation of lots that do not meet that minimum parcel size. The larger parcel sizes are necessary to meet Office of Environmental Health requirements for adequate drainfield and expansion area for septic systems. Previous experience has indicated that the percolation capacity of soils in the Skyline area was generally inadequate.

2. Other County Policies and Programs

a. Capital Improvement Program

The Capital Improvement Program is a five year program of the County Public Works Department, which is renewed annually. The 1982-87 Program calls for in-line video taping of existing wastewater facilities in the nine sewer/sanitation districts in order to detect and replace deteriorated sections of sewer mains. Subsequent capital improvements and maintenance costs are expected to be financed in part by an increase in sewer service changes. Programs for individual districts include installation of the Crystal Springs meter to monitor sewage flows out of the district, repair of deteriorated sections of the Canyon Road sewer, as needed, and completion of the Emerald Lake Hills sewer system.

b. Procedures for Implementing the California Environmental Quality Act

In December 1983, the Board of Supervisors adopted procedures for implementing the California Environmental Quality Act. This Act requires public agencies to consider the environmental impacts of all proposed actions over which they have discretionary authority. If impacts of a project are found to be significant, the act requires the preparation of an environmental impact report, which considers alternatives and specifies mitigation measures.

3. County Ordinances

a. Subdivision Ordinance

The San Mateo County Subdivision Ordinance requires that sanitary sewers connected to sewage treatment facilities be provided to subdivisions containing five or more lots. In addition, septic tanks and leaching systems may not be used where they might be detrimental to public interest.

b. Discharge of Wastes into Sanitary Sewerage Facilities

The San Mateo County Ordinance Code (Division IV, Chapter 6) enables the County to comply with certain State requirements by establishing uniform requirements for dischargers into the wastewater collection and treatment systems used jointly with other public agencies and entities.

c. Individual Sewage Disposal Systems

The San Mateo County Ordinance Code (Division VII, Chapter 6) addresses individual sewage disposal systems and chemical toilets. The regulations establish definitions, outline permit requirements and set forth requirements for sitting, type and manner of construction and installation of individual sewage disposal systems. Design

of the septic tank is required to conform to the standards outlined in the Manual of Septic Tank Practice of the U.S. Department of Health, Education and Welfare.

d. Maintenance of Individual Disposal Systems

The San Mateo County Ordinance Code (Division IV, Part Two, Chapter 9, adopted in 1981) provides for the maintenance of individual sewage disposal systems. The ordinance prohibits ownership and/or operation of individual sewage disposal systems without a valid certificate of inspection. The regulations provide for triennial inspection by the Office of Environmental Health to assure the proper functioning of the system, periodic pumping has occurred, and any required repairs have been made. Following payment of a $50 renewal fee, a certificate of inspection is issued.

WASTEWATER ISSUES

I. ADEQUACY OF WASTEWATER FACILITIES TO ACCOMMODATE DEMAND

A. SEWERAGE SYSTEMS IN URBAN AREAS

Sewage treatment capacity for most of the urban areas of the County is limited or deficient. Although most treatment plants have undergone improvements in recent years with the aid of Federal and State grants, capacity for future growth was not eligible for funding from these grants, and treatment plant operators have generally not constructed excess capacity to accommodate future growth.

1. Bayside

In the unincorporated communities of the Bayside, potential growth (based on present zoning of vacant parcels) is limited to small developments and infill of scattered lots. The majority of these areas are zoned for residential use. Unincorporated areas with a substantial buildout potential include the Highlands (100 dwelling units), Devonshire (120 dwelling units), and Emerald Lake Hills (800 dwelling units). Although adequate treatment capacity appears to be available at the present time for the future growth of the unincorporated areas of the Bayside, arrangements for securing and financing this capacity have not been made.

2. Coastside

In the unincorporated Mid-Coast area, development potential exceeds sewage treatment capacity. The County's Local Coastal Program (LCP) calls for the phasing of public works improvements to correspond to the anticipated rate of urban development. During Phase I, which is intended to accommodate development over a 20-year period, overall treatment capacity of the Sewer Authority Mid-Coast (SAM) plant is limited to 2 million gallons per day (mgd) and is allocated among the City of Half Moon Bay (1 mgd), Granada Sanitary District (0.6 mgd), and Montara Sanitary District (0.4 mgd). This capacity can provide for as many as 2,200 additional dwelling units[3] in the unincorporated area. A portion of treatment plant capacity is also reserved for certain priority land uses, including coastal-dependent uses, visitor-serving uses, affordable housing, public recreation, public services, and basic industries. Since the County's LCP permits approximately 3,600 units to be developed in the Mid-Coast, additional treatment capacity will ultimately be required for at least 1,400 dwelling units.

B. SEPTIC SYSTEMS IN RURAL AREAS

On-site wastewater treatment and disposal systems (septic tanks and drainfields) are used in the rural areas of the South Coast, the Skyline area, La Honda/Loma Mar, and Los Trancos Woods/Vista Verde, as well as

in a few urban areas (Palomar Park, Country Club Park, and portions of the Mid-Coast). Due to the low density of development of these areas and the great expense of installing sewerage systems, it is expected that most of these areas will continue to rely on septic tanks in the future. (A major exception is Emerald Lake Hills, which is currently being sewered.)

When properly designed and maintained, septic tanks can provide adequate wastewater treatment and disposal in these low-density rural areas. (Proper design includes consideration of natural conditions of the site, area of the site, and design of the system itself.) However, malfunctions and failures will recur among many of the older septic systems, which are characterized by substandard design, improper sitting, poor materials, or site limitations.

II. OPPORTUNITIES AND CONSTRAINTS IN THE PROVISION OF WASTEWATER FACILITIES

A. URBAN AREAS

1. Coordination of Sewerage Planning with Land Use Planning

The relationship of urban development to the availability of public improvements such as sewers and water supply has long been recognized. Yet the coordination of land use planning with the provision of public improvements has been minimal (with the exception of the Coastal Zone planning embodied in the County's LCP).

Case histories have shown that land use controls and public policy cannot limit development in areas where public services have been provided and regional pressure for development is strong.[4] It is vital, therefore, to ensure that planning for sewerage collection and treatment facilities is consistent with land use planning, and that adequate but not excessive facilities are available to support the amount and timing of planned development.

2. Regionalization of Sewerage Systems

Most of the sewerage systems in the County have been regionalized in recent years, as a result of Federal and State directives, with a treatment plant typically serving several cities and unincorporated areas. Unincorporated areas usually discharge their sewage into city collection systems en route to the treatment plant. While this arrangement results in improved water quality, economics of scale in treatment costs, and availability of sewerage service over a large area, regionalization could subordinate the County's interests to those of the cities. Most treatment plants are operated by a joint powers agency made up of cities and special districts, which control the size of the plant and the allocation of capacity. With limited treatment capacity available and many cities seeking new urban development, the County could find that sufficient capacity is not available when new development is proposed in unincorporated areas. Since the cost of sewerage facilities supporting

new growth is generally not grant fundable, the cost of expanding treatment facilities must be borne by the developer or some local public entity. If absorbed by the developer, these costs could drive up housing costs significantly. If a local assessment district or other entity is formed, the homeowner must again foot the bill in the form of property taxes.

3. Availability of Treatment Capacity in the Mid-Coast

Along the Bayside, treatment capacity may be available to serve the level of new development permitted by existing zoning in the unincorporated area provided financial arrangements are made. On the Coastside, however, this is not the case. Additional capacity will be required at the Sewer Authority Mid-Coast plant to serve the buildout of the unincorporated area, and equitable financial arrangements must be made for funding and allocating this expanded capacity.

4. Storm Water Infiltration into Sewerage Systems

During periods of heavy rainfall, storm waters infiltrate into deteriorating sewerage collection systems in many urban areas of the County.[5] These storm waters may cause the flow to the treatment plants to exceed its treatment capacity, resulting in the direct discharge of untreated sewage into the Bay or Pacific Ocean. This, in turn, causes degradation of water quality, impairment of habitats, and odor problems. Federal and State funds are still available to correct infiltration/inflow problems, but continuation of this funding after September 1985 is in doubt.

5. Collection Systems in Unincorporated Areas

Collection systems in nine districts serving unincorporated areas along the Bayside are administered by the County Department of Public Works. These systems provide service to Burlingame Hills, Highlands/Baywood Park, Harbor Industrial area, Emerald Lake Hills, Devonshire, North Fair Oaks, Oak Knoll, and Kensington Square.

These districts were formed primarily to provide a funding mechanism for construction, maintenance and repair of sewerage systems. Since these districts are governed by the Board of Supervisors, they also provide the opportunity for the County to represent the interests of its residents in assuring the availability of adequate treatment capacity and in providing sewerage facilities that correspond to the needs of the land use plan.

Collection systems in unincorporated areas are up to 55 years in age and many are beginning to deteriorate, requiring replacement. However, revenues in these districts have been inadequate to support major capital expenditures.

The County Department of Public Works' plans for improvements to these districts are documented in the Department's annual five-year Capital Improvement Program (CIP). Although each project in the CIP must be

authorized by the Board of Supervisors, the CIP serves as a guide for needed improvements. Section 65401 of the California Government Code provides that an annual listing of proposed public works, such as the Capital Improvement Program, be submitted to the County Planning Commission for review as to conformity with the General Plan. Such a review would provide a determination of the extent to which proposed public improvements reinforce the policies of the General Plan concerning location and degree of development.

6. Septic Systems in Urban Areas

In some urban unincorporated areas, septic systems are used extensively. This situation precludes most types of development other than low density, single-family houses. In addition, when problems occur in these areas, such as surfacing of wastewater, they create public health concerns because of the proximity of more people than in rural areas, including children.

B. RURAL AREAS

1. Lot Size Requirements for Septic Systems

The availability of septic tank systems permits development to occur in rural or unsewered areas of the County. However, the density and type of development is limited by the operational requirements of the septic system. The need for an underground tank and a drainfield along with required separations from buildings, property lines, and wells means that only single-family homes on a lot of at least 13,000 square feet and small commercial developments can be accommodated by septic systems. Many existing lots in the unincorporated Skyline and Mid-Coast areas were subdivided in the early 1900's for vacation homes and are too small to accommodate septic tank systems. Unless these lots are merged to form larger lots, they cannot be developed.

2. Inadequacy of Older Septic Systems

Many of the older septic systems are inadequate to meet the demands placed upon them. They are undersized, designed for smaller or vacation homes or were constructed with materials which are now deteriorating. In some subdivided areas of the Coast or Skyline area, lots were formed which are on steep terrain, or on soils which are not sufficiently absorptive for septic systems.

3. Maintenance Requirements

In addition to inadequate design, poor maintenance has been another major cause of septic tank failure. Septic tanks must be pumped out every three to five years. Septic tanks with dual drainfields must be switched periodically from one drainfield to the other. Many homeowners, particularly newer residents, however, are not aware of the operation of a septic system. Neglect usually results in clogging of drainage lines and surfacing of effluent.

4. Extension of Sewers to Rural Areas

The recent development of large-scale regional sewerage collection and treatment facilities raises the possibility of extending sewers to adjoining rural areas presently served by septic tanks. However, extension of sewer lines to these areas would be very expensive and would create pressure for increased development in these areas at higher densities.

III. EVALUATION OF EXISTING PLANS, POLICIES, AND REGULATIONS AFFECTING WASTEWATER

A. URBAN AREAS

1. Planning for Wastewater Treatment Systems

Most planning of improvements to wastewater facilities in urban areas is conducted by treatment plant operators under the auspices of Federal and State agencies. Directives prescribe the content and scope of this planning process, and plans are reviewed by agency staff for compliance. The central objective of this planning is the protection of water quality. The role of local governments is that of a reviewing agency. Thus the jurisdictions which control local land use decisions do not control the development of wastewater facilities (unless they are funded entirely with local funds). Under these circumstances, it is necessary for local governments to be active partners in the planning process to ensure that their interests in land use planning are represented. The Local Coastal Program attempted to relate sewerage planning with land use planning in the Coastal Zone by developing sewerage facilities in phases, corresponding to anticipated urban growth rates. The relationship of sewerage planning to urban planning along the Bayside has been less formalized, however.

2. Maintaining Existing Collection Systems

Funds for maintaining collection systems in the County-administered districts are derived primarily from sewerage service charges. These charges range from $45 to $190 per year and are used for routine maintenance operations. They do not provide sufficient revenues for capital improvements, which will be required as these systems age. Since Federal and State grants are no longer available for collection systems, additional funds must be raised locally for the replacement of deteriorating collection systems.

B. REGULATION OF SEPTIC SYSTEMS

Individual sewerage disposal systems are regulated by the County Office of Environmental Health. Comprehensive regulations governing testing, design, location, and operation of septic systems were adopted in 1969 and augmented in 1981 to require a triennial inspection by the County of new septic systems. Since the adoption of the 1969 regulations, there have been no reported failures of septic systems constructed under these

regulations. The current regulations, therefore, appear to provide an adequate basis for designing, constructing, and maintaining new septic systems.

Most septic systems in the County, however, predate these regulations. In these areas malfunctions and failures continue, causing health problems and environmental degradation. The County's involvement in such cases is limited to responding to problems once they have occurred. There is no public monitoring or preventative maintenance of existing pre-1981 septic systems.

C. SUMMARY OF PROBLEMS

The major concerns related to sewerage systems in unincorporated urban areas are ensuring the availability of adequate capacity to serve the buildout of land use plans, maintaining, repairing, and upgrading collection systems, and phasing out septic tanks in urban areas. In rural areas, the major concerns are with failure of older septic systems, the need for ongoing maintenance, and the limitations which septic systems impose on land use planning.

IV. ALTERNATIVES

Wastewater alternatives can be generally classified as technical, institutional, and financial. These will be described below for urban and rural areas. In urban areas, technical and institutional alternatives have been largely resolved. Financing additional capacity and collection system improvements are ongoing issues, however. In rural areas, alternative technical, institutional, and financial arrangements could be applied to address problems related to existing septic systems.

A. URBAN AREAS

1. Technical

Technical alternatives in urban areas pertain to the level of treatment of wastewater and the size of the service area of a plant. As a result of extensive study and analysis of alternatives during the 1960's and 1970's, these issues have been largely resolved. In order to protect water quality, wastewaters must receive at least secondary treatment and must be consolidated to reduce the number of dischargers. In the South Bay, where the circulation of water is more sluggish, advanced wastewater treatment has been prescribed. However, provision of sewers has not been universal in the urban areas of the County. Many areas, primarily in the South Bayside hills and the Mid-Coast, still use on-site wastewater disposal systems. Alternatives for these areas are: (1) continue to rely on septic systems, (2) tie into regional sewerage systems or (3) install alternative wastewater systems.

2. Institutional

Institutional arrangements for the provision of wastewater facilities have also been consolidated as a result of recent wastewater planning. The most common technique has been the use of the joint powers agency. Under this arrangement, the traditional service providers, municipal governments and special districts, maintain collection systems while the joint powers agency, a partnership of its members, operates the treatment facility. Other possible institutional approaches include: (1) having one city or district provide treatment facilities and contract with other users; or (2) establishing a super district to provide all sewerage services within a service area and abolishing the smaller districts currently providing collection services.

3. Financial

Financing the expansion of sewerage facilities is an ongoing issue. While the recent upgrading and expansion of treatment facilities has been subsidized by Federal and State grants, additional capacity to serve new development must be funded locally. In addition, many collection systems require upgrading. Alternative approaches for raising funds for these improvements include: (1) assessment districts; (2) bonded indebtedness; (3) user charges; (4) development fees. The most appropriate and acceptable approach for each service area must be determined locally.

B. RURAL AREAS

1. Technical

In rural areas, technical alternatives to septic systems include conventional sewers and alternative wastewater systems. Extension of sewer lines to serve development in rural areas would solve the wastewater problems of these areas. However, the cost of such extensions would be prohibitive. For example, the On-site Wastewater Management Study, covering portions of Portola Valley, Los Trancos Woods, and Vista Verde estimated an average capital cost of $13,500 per unit to extend sewers to these areas. In addition, the presence of sewers in rural areas could stimulate further development that is not consistent with land use planning objectives.

Alternative wastewater systems for rural areas include variations of the septic tank system, mound systems, pressure systems, and community septic systems. The Office of Environmental Health does not presently allow alternative wastewater systems although the office monitors new developments in this area and is open to the possibility of requesting an amendment to the County ordinance to permit proven alternative systems. This restriction effectively precludes clustering of housing units or higher densities in rural areas.

2. Institutional/Financial

Institutional alternatives for wastewater management in rural areas include: (1) private management of on-site wastewater disposal systems (the existing situation); (2) public management of all on-site systems by the County Office of Environmental Health (this is currently being done for systems built in 1981 and later); and (3) public management by an on-site wastewater disposal zone, as provided by Section 6950 of the California Health and Safety Code.

Public management would improve reliability of septic systems by assuring proper maintenance and by identifying and correcting problems as they develop. However, public maintenance incurs costs, which are normally passed to the homeowner, and this usually creates public opposition to its implementation. An on-site wastewater disposal zone could be financed by a tax assessment. In addition, Federal and State grants, revenue bonds, and assessment bonds could be used to finance a construction project of the zone.

Experience in other counties has indicated a low level of voluntary compliance in public maintenance programs. In addition, San Mateo County does not have areas of concentrated septic tank failures, so this approach does not appear to be warranted.

WASTEWATER FOOTNOTES

[1] Biochemical oxygen demand is a standardized laboratory test used to measure the quantity of dissolved oxygen needed (and thereby removed from a body of water) to oxidize, or break down, organic matter, including wastes.

[2] City of San Francisco Southeast Treatment Plan and City of Palo Alto Water Quality Control Plant.

[3] The actual number of potential new units is dependent upon the amount of capacity taken by existing users and on the buildout allowed by the City of Half Moon Bay's Local Coastal Program.

[4] Council on Environmental Quality, The Growth Shapers, 1976.

[5] Tang Woo, San Francisco Bay Regional Water Quality Control Board, telephone conversation, June 13, 1984.

WASTEWATER APPENDIX

APPENDIX A - SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on February 20 and March 7, 1985, the following background data was added to the Wastewater Chapter.

A. RELATIONSHIP TO LAND USE PLANNING

The relationship of planning for infrastructure systems with the process of urbanization has been the subject of several studies in recent years. These studies have documented that sizing of wastewater facilities has been a significant determinant in directing community growth.

Interceptor Sewers and Suburban Sprawl, prepared for the Council on Environmental Quality in 1974 by Urban Systems Research and Engineering, analyzed land use impacts of federally-financed interceptor sewer projects by conducting 52 case studies of areas across the country where interceptor sewers were constructed with excess capacity and where significant vacant land was available. The study found that ". . . the availability of sewers is an incentive to development, and the routing, sizing and timing of new interceptor construction can be a valuable tool for guiding residential land use as part of a comprehensive master plan. But in order for this to be effective, land use and sewer planning must be more carefully coordinated than they are at present." One outcome of this study was a change in federal funding policy, limiting federal aid to capacity needed to serve present needs.

The Growth Shapers, prepared for the Council on Environmental Quality in 1976, also documented the relationship between sewer construction and residential housing construction by studying Fairfax County, Virginia. The County adopted a policy in the 1960's of clustering development in order to meet growth pressures while preserving open space. However, this strategy was unsuccessful in the face of pressures for rezoning and the availability of a newly constructed regional sewerage system. The study concluded that ". . . sewers have a powerful effect on the location, pattern, and timing of single-family residential development. . . Sewers are built expressly to handle an environmental problem--the disposal of community sanitary wastes. . . . Ironically, by tending to attract extensive development, sewers may create several environmental problems in solving one."

In an article in the Office of Planning and Research Journal (July 1980) entitled "Public Works or Public Policy: What Guides New Development in California?," Peter M. Detwiler commented that "time and time again, the availability of public facilities and services determine the location, timing, and intensity of private development." He made several recommendations that would strengthen the requirement that public works proposals be in conformance with local general plans.

B. UPDATE OR CORRECT BACKGROUND INFORMATION

1. Treatment Facilities

The discussion of treatment facilities on page 11.3 should be revised as follows: Primary treatment removes most settleable and floatable solids from incoming wastewater. Advanced wastewater treatment may entail a coagulation-sedimentation process to remove additional solids following primary and secondary treatment and to reduce the concentration of phosphate; an adsorption process to remove stubborn organic matter which persists in water after biological treatment; or an electrodialysis process which uses electricity and a membrane to remove salts from an effluent.

2. Wet Weather Flows

On pages 11.5 and 11.10, the discussion of wet weather flows under paragraph d. Treatment Capacity should read as follows: during heavy rains, treatment plants may receive more influent that during dry weather, affecting the efficient operation of the treatment plant.

3. Treatment Capacity of South Bayside System Authority

The discussion of the treatment capacity of the South Bayside System Authority plant (page 11.14) should indicate that the authority plans an expansion in treatment capacity of 6 million gallons per day (mgd) and has embarked on the first phase which will provide an additional 2 mgd of capacity. Agreement has been reached among the member agencies on the allocation of costs. Table 11.3 on pages 11.11 and 11.12 should be revised to show that capacity for the unincorporated areas served by this plant will be available.

4. Land Application of Sludge

On page 11.20, the last sentence of paragraph c. Resource Conservation and Recovery Act (1976) is incorrect and should be deleted.

5. Clean Water Bond Laws

Paragraph 2.b on page 11.21 should indicate that a Clean Water Bond law was also passed in 1984.

12

Transportation

Background ▪ Issues

TRANSPORTATION BACKGROUND

I. INTRODUCTION

Mobility is an integral and essential part of contemporary life. Today, people take for granted the ability to move quickly and efficiently from home to work, school, shopping, or recreation. In San Mateo County, transportation facilities are a prominent feature of the urban landscape. The County's two major freeways, numerous highways, two transbay bridges, international airport and seaport are visible manifestations of today's mobile lifestyles. These transportation systems represent a huge public investment made over many years. Although the automobile remains the preeminent mode of transportation for County residents, public transit, bicycles, and paratransit are growing in importance, reflecting a trend toward a more balanced transportation system.

The transportation system is intimately related to land use patterns and to the quality of the environment. Accessibility is an important consideration in planning the future use of an area. Transportation facilities are major sources of air pollution and noise, and a major consumer of energy. Thus, transportation planning must proceed in concert with land use planning and must address both developmental and environmental considerations.

A. SCOPE AND ROLE

The Transportation Chapter encompasses all types of travel including automobile, pedestrian, transit, bicycle and air travel. Although implementation of transportation policies rests with a broad spectrum of agencies at the Federal, State, regional and local levels, city and county governments are important participants in the planning process. A unified policy basis is important for making sound decisions on land use and transportation issues. The Transportation Chapter develops policies which promote County goals and objectives and which are necessary to support other General Plan policies, particularly those related to land use. Since transportation issues extend beyond jurisdictional boundaries, the scope of this Chapter is countywide. The policies of this Chapter do not, however, preempt city general plans.

B. STATE PLANNING LAW

The California Government Code requires the legislative body of each city and county to adopt a comprehensive, long range general plan to guide its physical development. The general plan must include a circulation element. The scope of a circulation element is described in Section 65302(b) of the Government Code as "consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element of the plan."[1]

Since this law was passed in 1955, transportation technology and needs have changed greatly in California. Today the emphasis of many general plans is on the development of balanced, multi-modal transportation systems.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

This Chapter supersedes the Circulation Element of the County General Plan, which was adopted in 1960 and amended in 1964. It also supersedes the County Bikeways Plan, adopted in 1976. Since the demand for transportation services and facilities varies according to the type and intensity of land development, the Transportation chapter is closely coordinated with the Land Use Chapters to ensure that adequate transportation facilities are planned to accommodate future demand. Transportation is also related to other General Plan chapters, including Parks and Recreation, and Natural Hazards.

In recent years, County transportation policies have been established in several area plans. Policies included in this Chapter will generally be of countywide applicability and at a broader level of specificity than those which are included in area plans. All transportation policies of the County General Plan will be consistent with each other.

D. RELATION TO OTHER COUNTY PLANS

A series of transportation studies was conducted in the 1960's and 1970's, under the sponsorship of the Board of Supervisors and the Metropolitan Transportation Commission. These studies evaluated the feasibility of rapid transit service, conventional rail, and bus service in the County. The cumulative effort represented by these studies helped to mold the present transportation system in the county. A brief summary of each study is presented in Appendix A. Background data from these studies was used in the development of this Chapter.

E. DEFINITIONS

The following are definitions of transportation terminology used in this Chapter:

ARTERIAL - a street or highway serving major activity centers, carrying the highest traffic volumes, with running speeds of 25 to 45 miles per hour along sections of uninterrupted flow.

CAPACITY (related to highways) - the maximum number of vehicles which has a reasonable expectation of passing over a given section of roadway during a given time period under prevailing roadway and traffic conditions.

EXPRESSWAY - a highway for through traffic with partial control of access, which may or may not be divided and may or may not have grade separation at intersections.

FREEWAY - a divided highway for through traffic with full control of access and grade separation at intersections.

HOME BASED TRIPS - trips which start or end at the home.

LEVEL OF SERVICE - a qualitative measure of the effect which a number of factors, including speed, travel time, traffic interruptions, freedom to maneuver, safety, and others, has on driving conditions of a given section of roadway.

MODE - the basic type of transportation, such as automobile, transit, bicycle, etc.

MULTI-MODAL - travel utilizing more than one mode.

PARATRANSIT - non-scheduled, collective transit, usually with smaller vehicles, such as jitneys, van pools, taxis, etc.

PEAK-HOURS - the periods of the day when demand for highway space and transit use is the greatest.

PERSON TRIP - one way travel by one person from an origin to a destination by any mode.

TRIP - one way travel from an origin to a destination for a particular purpose.

TRIP END - the origin or destination of a trip; each trip has two trip ends.

II. EXISTING TRANSPORTATION SYSTEM

The pattern and intensity of urban development closely affect the need for transportation. In San Mateo County, topography and public policy have limited urbanization to a narrow band along the San Francisco Bay, separated by the Santa Cruz Mountains from smaller communities along the coast. The County is bordered by two regional economic centers, San Francisco County to the north and Santa Clara County to the south. These natural conditions and land use relationships have resulted in a transportation system generally oriented in a north-south direction along the Bayside.

The transportation system in San Mateo County consists of highways, streets, and parking areas for automobile travel, a countywide bus system, a commuter rail line, bikeways, pedestrian sidewalks, an international airport, and a seaport, and provides for the shipment of goods as well as the movement of people. Each component of the transportation system will be examined below followed by a review of the demand for transportation, future transportation needs, the interrelationship of transportation modes, and the needs of special population groups.

A. INVENTORY OF TRANSPORTATION MODES

1. Automobile Travel

The private automobile is the dominant means of personal transportation for San Mateo County residents. Approximately 85% of all person trips are made by private automobile.[2] This section will review the development of automobile travel in San Mateo County, the existing road system, automobile ownership, and traffic volumes and congested areas. Throughout this Chapter, the term "automobile" is used in a broad sense, to include cars, vans, pickup trucks, and other private vehicles used for personal travel.

a. Historical Development

The development of the road system in San Mateo County paralleled the growth in population and the urbanization of the County. El Camino Real was the route of the early explorers and padres during the Spanish Era. In the 1850's, roads were built over Indian paths and Spanish wagon trails, and a turnpike was constructed along the bayshore between San Francisco and San Bruno. Other roads connected San Mateo with small settlements along the Coast. Stagecoaches operated on these early roads, and roadhouses were constructed at intervals to serve the travelers.[3]

After 1910, the proliferation of the private automobile brought improvements to the road system. The first section of the new State highway system was El Camino Real, which was widened and paved at San Bruno.[4] El Camino was soon congested and the scene of numerous accidents, and in 1913, San Mateo County voters approved a bond issue to construct the Bayshore Highway from San Francisco to South San Francisco.[5] This highway was gradually extended to Santa Clara County. Other highway improvements of the era included a road from San Mateo to Half Moon Bay; Skyline Boulevard, which was built by a four-county district; and the Coast Highway, which became part of California Route 1. In the late 1920's, the Dumbarton and San Mateo Bridges were completed, connecting San Mateo County with the East Bay. These road improvements facilitated the rapid urbanization of the County which occurred in the 1920's and 1930's.

In the late 1940's and 1950's the Bayshore Highway was converted to a limited access freeway, in response to increasing congestion. The Junipero Serra Freeway, paralleling the Bayshore Freeway, was completed in the early 1970's, and the State is currently completing the final segment of the Highway 92 Freeway, between the San Mateo Bridge and the Junipero Serra Freeway.

b. Streets and Highways

(1) Existing Road System

The public road system in San Mateo County includes nearly 2,000 miles of freeways, highways, streets, and roads, owned and maintained by State, County, and local governments. The County's road system is shown on the Existing Road System Map. This system includes freeways, expressways, arterial roads, and local streets (see Section I.E. for definitions).

State highways in San Mateo County are listed on Table 12.1. All the freeways and expressways are State highways, as well as several arterials. They total over 209 miles and carry the highest volumes of traffic, including most through traffic. The County maintains approximately 370 miles of roadways in unincorporated areas. Most of these are two-lane roads, although a few are four-lane roads. Cities maintain approximately 1,400 miles of streets and roads.[6]

(2) Condition of the Road System

The condition of San Mateo County's streets and roads is deteriorating. This deterioration is directly attributable to reduced maintenance efforts caused by escalating costs and declining revenues. These maintenance reductions result in sizable backlogs in required remedial care, high user costs in the form of wear and tear on vehicles, and increased liability exposure for local government.

According to a recent study by MTC,[7] total expenditures (as adjusted for inflation) for maintenance and construction costs on a Countywide basis have gradually declined for the past 15 years. In constant dollars, the County and cities are spending about 60% of what they spent 15 years ago. Maintenance costs have been disproportionately impacted by inflation, because they depend so heavily on oil-based products. For example, the Consumer Price Index has doubled in the last decade, while the cost of road oils have increased about 500% since 1974. About 35% of the revenue used to fund street and road improvements comes from the gas tax and about 20% comes from the cities' general funds, which are being increasingly restrained. The rest of the revenue is made up of a variety of smaller sources. Almost all Federal road funds are used for new construction and are unavailable for maintenance. Similarly, certain other local funds can only be used for new construction.

TABLE 12.1

STATE HIGHWAYS IN SAN MATEO COUNTY

ROUTE NUMBER	NAME	COMMENTS	MILES	LANES
Interstate 280	Junipero Serra Freeway	Palo Alto to San Francisco	27.4	6-8
Interstate 380		Interstate 280 to Route 101 in San Bruno	1.6	6
U.S. Route 101	Bayshore Freeway	Palo Alto to San Francisco	26.1	4-6
State Route 1	Cabrillo Highway	Ano Nuevo Point to San Francisco	48.6	2-4
State Route 35	Skyline Drive	Santa Clara County near Palo Alto to San Francisco	31.5	2-4
State Route 82	El Camino Real	Palo Alto to San Francisco	25.2	4-6
State Route 84	Woodside Road	Dumbarton Bridge to Highway 101 Highway 101 to San Gregorio	30.1	4
State Route 92	Arthur Younger Freeway	San Mateo Bridge to Half Moon Bay	18.8	2-4

12.1M

SAN MATEO COUNTY GENERAL PLAN

EXISTING ROAD SYSTEM

FREEWAYS

ARTERIAL HIGHWAYS

CONGESTED AREAS

SOURCE: CALTRANS, DEPARTMENT OF PUBLIC WORKS, SAN MATEO COUNTY

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

SAN FRANCISCO BAY

BAYSHORE FRWY 101

JUNIPERO SERRA FRWY 280

CABRILLO HWY

SAN MATEO COUNTY

MUSSEL ROCK

SERRAMONTE BLVD

HICKEY BLVD

MONTEREY RD

EASTMOOR AV

WESTMOOR AV

MARKET ST

SAN PEDRO AV

SIERRA POINT

OYSTER POINT

SAN FRANCISCO

POINT SAN BRUNO

MORI POINT

POINT SAN PEDRO

COYOTE POINT

HILLSBOROUGH

MONTARA POINT

PILLAR POINT

EEL ROCK

SEAL ROCK

SAN GREGORIO RANCHO

PESCADERO POINT

BOLSA POINT

PIGEON POINT

FRANKLIN POINT

ANO NUEVO POINT

REDWOOD CITY

REDWOOD POINT

RAVENSWOOD POINT

HARBOR BLVD

WINSLOW ST

WILLOW RD

RAVENSWOOD AV

PORTOLA VALLEY

c. Automobile Ownership

In 1981, the Department of Motor Vehicles reported over a half million registered vehicles in the County, of which 403,000 were automobiles. More than 86% of the population over 16 years of age has a driver's license.[8] The average number of automobiles per household in San Mateo County in 1980 was 1.8.[9] Over 57% of the households had access to two or more vehicles, while only 6.4% of the households had no vehicles (see Table 12.2).

d. Traffic Volumes and Congested Areas

(1) Traffic Volumes

Counts of traffic volumes in San Mateo County are made by CalTrans and the County. CalTrans maintains counts on State highways, while the County Public Works Department determines the volume for selected roads within its jurisdiction. These counts, which are updated annually, are used to determine 24-hour, non-directional, average daily traffic (ADT). The ADT is useful for determining traffic trends, computing accident rates, planning and designing highways, and other purposes. Representative traffic volume data for selected roads in San Mateo County is presented in Appendix B.

Peak hour traffic usually occurs on weekdays between the commuter hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Peak hour traffic data is useful for estimating the amount of congestion experienced and how near to capacity the highway is operating.

(2) Capacity and Level of Service

The capacity of a roadway is the maximum number of vehicles that can be handled in one hour by a given section of road under prevailing conditions. The conditions which affect capacity include physical conditions, such as width of roadway, number of lanes, alignment, grade and surface condition, and operating conditions, such as number of trucks and buses, traffic interruptions and the distribution characteristics of traffic into lanes.[10]

"Level of service" describes the general operating conditions that a driver will experience while driving on a particular street or highway. Six levels of service are used to describe the driving experience under various speeds and traffic volume conditions.[11] These levels of service range from A to F, with A being a condition of free movement, low traffic volumes, and high speeds. Level F is a situation of low operating speed, high volumes, and stoppages. Because of these conditions, traffic volumes are below capacity. Levels of Service B

TABLE 12.2

NUMBER OF VEHICLES AVAILABLE PER HOUSING UNIT
IN SAN MATEO COUNTY,
1980

VEHICLES	HOUSING UNITS	PERCENT
0	14,338	6.4
1	82,065	36.4
2	82,945	36.8
3 or more	45,865	20.4

Source: 1980 U.S. Census

through E are gradations of progressively worsening conditions. Level of Service C, which is characterized by stable flow but where speed and maneuverability is limited by higher volumes, was the desired planning standard of the County's Local Coastal Program and Skyline Area General Plan Amendment, although Level of Service D was considered acceptable during commuter peak periods, and Level of Service E was acceptable during recreation peak periods.

(3) Congested Areas

Congestion occurs along several arterials and freeway sections in the County during the morning and afternoon peak hours. Roads which experience congestion during peak hours include portions of Highways 84, 92, and 101, El Camino Real, and Ralston Avenue. El Camino Real and local streets absorb some of the overflow traffic from Highway 101 during peak hours. In the South County, peak hour congestion occurs on Highway 101, Willow Road, El Camino Real and other local streets. Congested areas are indicated on the Existing Road System Map on page 12.7. In addition, peak hour traffic volumes on many roads, including portions of Highways 84, 92, and 101, are approaching present capacity levels.[12]

2. Public Transit

Transit service within the County is provided by the Caltrain Peninsula Rail Service and by the San Mateo County Transit District (see Map of Transit Systems, Airports, and Seaport). Both extend service into adjoining San Francisco and Santa Clara Counties. Similarly, BART and the San Francisco MUNI system overlap into the North County, while the Santa Clara County Transit District extends service into Menlo Park. Paratransit services are provided by Rides for Bay Area Commuters, Inc., the Redi-Wheels program of SamTrans, and private taxi companies.

a. Caltrain Peninsula Rail Service

Approximately 9,000 people per weekday use the passenger rail service between San Jose and San Francisco. The service is essentially commuter-oriented, with 75% of the riders using the train during peak hours and 75% of the riders making trips which begin or end in San Francisco.[13]

(1) History

The Peninsula railroad line, constructed in the early 1860's, is the oldest continuously operated passenger railroad in the West.[14] The promoters had hoped that this line would become the final link of the transcontinental railroad. Almost 30% of the construction funds were raised by bond issues in San Francisco, San Mateo and Santa Clara Counties. By 1890, three trains operated daily between San Francisco and San Jose.

Steel passenger cars called "suburbans" were placed in service in the 1920's.[15] Ridership on the Peninsula train grew rapidly and peaked in the early 1950's at approximately nine million passengers per year, or 16,000 passengers in each direction on weekdays. Diesel locomotives and bi-level "gallery" cars were placed in service in the 1950's and 60's.

During the 1960's and 1970's, ridership declined steadily as regional highway improvements were completed. By 1977, annual ridership fell to 4.3 million passengers, or 7,000 in each direction on weekdays. At this point, the Southern Pacific Transportation Company, unsuccessful in gaining approval for a major rate increase, petitioned Federal and State regulatory agencies for permission to discontinue the service. However, through the intervention of public agencies, the service was maintained.

(2) Operations, Facilities and Equipment

Since July 1980, the Peninsula train has operated under the terms of agreements between Southern Pacific, Caltrans, and the three County transit agencies, which compensate Southern Pacific for operating losses.

Twenty-three trains are operated in each direction on weekdays, with twelve trains on Saturdays and nine trains on Sundays and holidays. Twenty-seven stations are situated along the 47-mile line, of which 15 are in San Mateo County. The northerly terminus is located at Fourth and Townsend Streets in San Francisco. This is not a central location, and most commuters take buses or trains from the station to their destinations.

The rolling stock for the Peninsula Train includes 24 locomotives, 17 to 30 years in age; 47 bi-level "gallery" cars, between 16 and 29 years in age; and 37 "suburban" coaches, over 50 years old. The older locomotives were rebuilt in the late 1970's, but are considered under-powered for commuter service.[16]

The track is generally in good condition. Automatic block signals along the line permit the trains to run as close as 3 minutes apart during peak operating hours. The line crosses 58 streets at grade, which are protected by gates and flashing signals. The peak hours of train operations coincide with peak hour automobile traffic, although the blockage of automobile traffic at crossings is generally of short duration, except where trains stop over a crossing.

The Transit Systems, Airports, and Seaport Map is Located in the Map Component on Page 12.2M.

(3) Ridership

After reaching a low of 7,000 passengers in each direction in 1977, weekday ridership on the Peninsula Train rebounded to over 10,000 in 1980, largely as a result of the 30% discounts on tickets offered by the transit districts. This discount was discontinued in July 1980, and by 1982, ridership had fallen to 9,000. Following a 25% fare increase in April 1982, ridership declined further to approximately 8,000 passengers per weekday. This is far below the estimated capacity of 23,300 passengers, which the Peninsula Train can carry under present operating conditions.[17]

b. San Mateo County Transit District

The San Mateo County Transit District (SamTrans) provides local and express bus service throughout San Mateo County. The District operates approximately 300 buses over 57 routes, carrying approximately 18 million passengers per year, or 75,000 on an average weekday. The District also operates Redi-Wheels, an on-call curb-to-curb service for mobility-impaired persons.

(1) History

The San Mateo County Transit District was established by the State Legislature in August 1974 and was approved by the voters of San Mateo County in November 1974. With a governing board of nine members, the new district began operations on July 1, 1976, consolidating 11 city systems with 70 buses into a countywide network. In July 1977, SamTrans contracted with Greyhound lines to operate north-south bus service along the major traffic corridors of the Peninsula. This service, dubbed the "Mainline Service," extended from Palo Alto to downtown San Francisco and quickly gained popularity. The District organized its local routes, which generally run in an east-west direction, as feeders to the mainline routes, the Southern Pacific rail line, and the BART terminal in Daly City. Service was also extended to Half Moon Bay and across the San Mateo Bridge to the BART station in Hayward.

(2) Operations, Facilities, and Equipment

(a) Routes

Fifty-seven routes comprise SamTrans' fixed route system. The local routes connect activity centers on the Peninsula, such as business districts, shopping centers, hospitals, schools, and rail transit stations. Generally, the local routes are operated on weekdays with 30 or 60 minute headways. Service on Saturdays and Sundays is limited. Since 1977, SamTrans has reduced or consolidated local routes from a total of 68 to 54.

The three mainline routes, which are operated under contract with Greyhound lines, run between Palo Alto and downtown San Francisco along El Camino Real and the Bayshore Freeway and carry about one third of SamTrans' total ridership. Service is provided daily with 10 to 30 minute headways.

(b) Coordination with Other Operators and Modes

SamTrans coordinates its service with transit operators in adjacent areas. In the South County, free transfers are honored between Santa Clara Transit buses and SamTrans; discussions have been held with MUNI to institute a similar transfer system along interface routes in the North County and San Francisco.[18]

A park and ride lot for 200 autos was developed jointly by CalTrans and SamTrans in 1980 at Linda Mar Boulevard and Highway 1 in Pacifica. The site includes a paved, striped parking lot, bus shelters, bus turnouts, and bike lockers. Seven routes with 95 daily stops provide express service from the lot to the BART station or downtown San Francisco. This lot is at capacity and has been successful in diverting commuters from their cars to buses.

The District is cooperating with CalTrans to identify other bus turnout and shelter locations. Several park and ride sites have been identified, and SamTrans plans to develop one park and ride lot annually for the next 5 years.[19]

SamTrans also participates on the San Mateo County Paratransit Coordinating Council, which coordinates the efforts of all paratransit providers in the County, including senior centers, governmental agencies, and social service agencies.

(c) Buses

The SamTrans fleet in 1982 included 311 standard size buses and 32 smaller vehicles. The District acquired 10 60-foot articulated buses in 1981 and is planning to purchase 46 more. The articulated buses, which seat 67 passengers, enhance productivity by increasing capacity on the high volume routes. The standard buses seat 40 to 50 passengers.

Approximately 200 buses were less than seven years old in 1982, while 107 were between 12 and 21 years of age. The District's objective is to have no bus in service over 12 years of age. A 5-year acquisition program has been developed which will substantially modernize the fleet.

(d) Bases

SamTrans operates its buses from a north and a south base. The north base can accommodate 200 vehicles and is located near the San Francisco International Airport. The south base accommodates 250 vehicles and is adjacent to the San Carlos Airport.

(3) Ridership

Total system ridership has grown steadily from 16,000 passengers per day on the old city systems in 1976 to 75,000 passengers per day in 1983. Student ridership more than doubled following the passage of Proposition 13 in 1978, which caused many school districts to curtail busing programs. While total ridership continues to grow, the rate of increase is tapering off as the SamTrans system reaches maturity.

c. Bay Area Rapid Transit District

The Bay Area Rapid Transit District (BART) operates rapid transit service over four routes in San Francisco, Alameda, and Contra Costa Counties. The terminus of the three lines serving San Francisco is located in Daly City, where it also serves North County residents.

When BART began service in 1972, it was the first new rail transit system in the Country in over 50 years. Today, BART carries 190,000 passengers on weekdays over its 71.5 mile system, connecting 34 stations. Approximately 10,000 riders use the Daly City station each day. Free parking for 1,500 cars is provided at the station, although there is a need for additional spaces. Fifteen SamTrans bus routes from throughout the County provide feeder service to the BART station.

d. Paratransit

In San Mateo County, paratransit services are provided by Rides for Bay Area Commuters, Inc., Redi-Wheels, a demand-responsive service of SamTrans, and private taxi companies.

(1) RIDES

RIDES for Bay Area Commuters, Inc., is a nonprofit corporation funded by CalTrans and MTC, which promotes ridersharing throughout the Bay Area. RIDES provides three types of services:

- Ridematching - use of a computer to match commuters who travel to and from the same areas;

- o Vanpooling - lease of a luxury van to a driver, who travels free while the riders share the expenses; RIDES organizes the group, plans the route, and makes the rules;

- o Employer Services - promoting ridersharing programs within companies.

In its 5 years of operations, RIDES has placed about 8,000 persons into carpools or vanpools, representing an aggregate savings of 4.7 million gallons of fuel.

(2) Redi-Wheels

SamTrans provides on-call, curb-to-curb service for handicapped and elderly residents of the County. The service operates during weekdays, and the cost of a ride was increased during 1982 to sixty cents. The service is provided within three zones along the urbanized bayside of the County and Pacifica, and a 24-hour reservation is required. Total ridership on the Redi-Wheels vehicles has increased steadily from about 45,000 persons during fiscal year 1980 to over 70,000 in fiscal year 1981.

(3) Taxis

Private taxi companies are another form of paratransit in San Mateo County. All of the cities in the County, except for Half Moon Bay, are served by taxi companies. There is no service in the unincorporated Skyline or South Coast areas. Rates are regulated by the city in which each company operates. Companies can deliver passengers to locations outside their base city but cannot pick up passengers outside their city. According to MTC, only 0.2% of all person trips in Bay area counties are made by taxis.[20]

3. Bicycle and Pedestrian Travel

Bicycle and pedestrian travel are important but often overlooked means of transportation in San Mateo County. Inexpensive, non-polluting, and healthful, bicycling and walking are particularly suitable in this County because of its mild climate and the location of many residential, commercial, and industrial areas (on the Bayside) on relatively level terrain in proximity to each other. Programs initiated in recent years at the Federal, State, and local levels of government and a renewed interest in physical fitness have contributed to the revival of the bicycle and pedestrian modes of travel.

a. Bikeways Development

Although the bicycle has been present in the United States for over 100 years, it has not been recognized as a viable means of transportation until recently. Nationally, the popularity of bicycling

soared during the early 1970's. Sales of bicycles more than doubled from 1968 to 1973 to over 15 million. Of these, Californians purchased over 1.5 million.[21] San Mateo County formed a Bikeways Committee in 1971 to coordinate the development of a countywide bikeways system. In 1976, the Board of Supervisors adopted a Bikeways Plan prepared by the Committee. This plan has served as the basis for reviewing local proposals for State bikeways development funds.

b. Classification of Bikeways and Storage Facilities

The facilities which are necessary to provide for bicycling as a safe means of transportation are a designated circulation system and secure storage facilities. The California Streets and Highway Code[22] has established three categories of bikeways:

(1) Bike Path or Bike Trail (Class I Bikeway)

A completely separate right-of-way for the exclusive use of bicycles and pedestrians with minimal crossflows by automobiles. The State standard for minimum paved width of a two-way bike path is 8 feet.

(2) Bike Lane (Class II Bikeway)

A restricted right-of-way for the exclusive use of bicycles, with vehicle parking and crossflows by pedestrians and motorists permitted. Bike lanes are normally striped within the paved areas of highways and are one-directional with a minimum standard width of 5 feet.

(3) Bike Route (Class III Bikeway)

A right-of-way for bicycles designated by signs or other markings and shared with pedestrians and motorists. Bike routes are normally designated to provide linkages to the bikeway system where Class I or II bikeways cannot be provided.

The second requirement for bicycle travel is the provision of parking and storage facilities. The bicycle is highly susceptible to theft and damage from the weather, so enclosed storage facilities such as lockers or check-in storage are desirable. Bicycle racks are not as secure as lockers but are often used for short-term parking. In the absence of lockers or racks, bicyclists are forced to use any available stationary object such as a pole or tree to chain and lock their bicycle. This is the least secure form of bicycle storage.

c. Existing Bicycle Facilities

In San Mateo County, the responsibility for providing bicycling facilities rests with the local governments and CalTrans. Many

cities have, to varying degrees, been developing bicycle circulation systems in recent years, spurred by the availability of State grants. The City of San Mateo has been exemplary in developing a bikeways system. The County has included bikeways in many of its road widenings in unincorporated areas.

CalTrans has provided bike storage lockers at several Peninsula Train stations and the Park and Ride lot in Pacifica. Lockers are leased for six-month periods for payment of a refundable key deposit. The cities of San Mateo and Redwood City have also installed lockers at the train stations within their boundaries. This program has been very successful, and waiting lists are kept for available lockers.

d. Pedestrian Travel

Pedestrian travel is an important component of the overall circulation system. In addition to being a portion of every trip made by automobile, bicycle, bus, or train, pedestrian travel can be the means of making entire trips. The proximity of residential areas with commercial and service activities in many of the older urban communities lends itself to pedestrian travel. In San Mateo County, 8.2% of all trips are made by walking.[23] The elderly and young tend to walk to their destinations more frequently than others.

Pedestrian travel has been hindered in various areas by the construction of barriers, such as freeways and railroad rights-of-way, and by the expansion of automobile facilities, including streets, driveways, and parking lots, at the expense of pedestrian areas. In many unincorporated communities, sidewalks are lacking completely, or if existing, are poorly designed and maintained.

4. Air and Sea Transportation

In addition to the ground transportation modes discussed above, San Mateo County is also the location of a major international airport, two general aviation airports, and a seaport. The location of these facilities is shown on the Map of Transit Systems, Airports, and Seaport on page 12.12.

a. Airports

(1) San Francisco International Airport

The San Francisco International Airport, located on unincorporated land east of Highway 101 adjacent to San Bruno and Millbrae, is a major regional passenger and cargo air terminal, serving the northern California area. With over 22 million passengers using the airport and over 370,000 aircraft operations (takeoffs and landings) during 1980, San Francisco International ranks as one of the most active commercial airfields in the world. The airport is a major factor in San Mateo's

economy, employing some 25,000 persons, and generating substantial secondary employment through hotels and airport service industries. The airport also serves a growing air cargo industry.

(a) History

In 1926, the City of San Francisco selected the mudflat area east of San Bruno as the site of its municipal airport. Construction began after San Francisco's voters approved a bond issue, and the new field became operational in 1927. Overcoming problems of fog, wind, mud, and voter opposition to additional funding, Mills Field survived the Depression, and following the decision by United Airlines to base its Bay area operations there,[24] embarked on an expansion program which has continued intermittently to the present day. Many of the early improvements were financed by governmental agencies, including the Works Progress Administration during the 1930's and the military during the 1940's.[25] In 1954, the Central Terminal was completed, followed by the South Terminal in 1963, and the parking garage and North Terminal in 1980.

(b) Existing Facilities

San Francisco International Airport is located on a 5,200-acre site, of which about half is under water. The airport facilities are used by 29 commercial airlines, general aviation (private aircraft for business and personal use), and the military. The airport has four paved 200-foot wide runways ranging from 7,000 to 11,780 feet in length. Two of the runways are oriented in a north-south direction and two in an east-west direction. The two pairs of runways are perpendicular to each other and much of the land they occupy is bay fill.

Air traffic control in the airport vicinity is the responsibility of the Federal Aviation Administration (FAA) air traffic control tower. An extensive system of navigational and landing aids is maintained at the airport, including an instrument landing system and an airport terminal information service, which provides pilots with data on weather conditions, runway use, and other relevant matters.

The terminal complex consists of approximately 2.5 million square feet in three sections arranged around a circular access road and a newly completed parking garage providing space for 7,300 cars. The Central Terminal has been enlarged to accommodate international flights by larger aircraft. Improvements are also planned to the South

Terminal to accommodate larger groups of passengers from wide-body aircraft. Overall, the terminal facilities are designed to handle 31 million passengers per year.

Other facilities at the airport include maintenance buildings for the airlines, air cargo facilities, support and fuel storage facilities, and general aviation facilities. At present, United Airlines is the only airline performing major maintenance at the airport. Other airlines perform only routine maintenance.

(c) Operations

The number of passengers using San Francisco International has grown from 8.7 million in 1965 to 21.5 million in 1978, a 7% average annual growth rate. The most recent data indicates volume has reached 22.8 million passengers a year, after declining during the recession of the early 1980's to about 20.5 million.[26] Passenger volume is forecast to reach 31 million by 1990.[27]

Air cargo handled at the airport increased from 228,000 tons in 1965 to 517,000 tons in 1977, an average increase of about 7%. As with passenger volume, air cargo volume declined in recent years and currently is handled at a rate of about 420,000 tons per year.[28]

Total aircraft operations in 1979, including air carrier, general aviation, and military were 363,000, which was similar to annual volumes throughout the 1970's. Operations by commercial air carriers, however, have been declining due to the introduction of more wide-body jets into the airline fleets. General aviation operations have been increasing in recent years after dropping in the early 1970's, and flights by small commuter aircraft have also been increasing. Total operations are projected to reach 410,000 by 2000.[29]

(d) Ground Access

The principal access route to the airport from the north and the south is Highway 101. Interstate 380, which connects Highway 101 with Interstate 280, is also an important access route. As alternate routes, motorists can utilize Airport Boulevard from South San Francisco and the Old Bayshore Highway in Burlingame. A separate interchange on Highway 101 provides exclusive access to an airport loop road serving the terminals, the parking garage, and other facilities.

Highway 101 experiences congestion during the peak hour. As much as 25% of the average daily traffic on Highway 101

is airport related.[30] Limited capacity on the airport off-ramp causes airport-bound traffic to back up onto the freeway during peak periods. The airport peak hour for ground transportation is 3 p.m. to 4 p.m. Congestion also occurs at the beginning of holiday periods.

Transit service to the airport is provided by SamTrans and by the Airporter bus service from downtown San Francisco. In addition, charter buses, hotel courtesy vehicles, and limousines serve the airport.

Approximately 50,000 vehicle trips were made to the airport on an average day in August, 1977, of which 42% were related to air passengers and 30% were by employees. Daily vehicle trips to the airport are forecast to increase to 74,000 by the year 2000.[31]

Over 60% of air passenger trips originate in San Francisco and San Mateo Counties, with the remainder scattered throughout the Bay Area. Approximately half the air passengers using San Francisco International on an average day in August 1977 arrived by private automobile, while 32% used commercial vehicles, such as taxis and rental cars, and 18% used public transit. Nearly three-quarters of airport employees used their personal cars to go to work, while 27% utilized carpools or buses.[32] The airport management has adopted a goal of increasing transit use to accommodate 25% of the daily person trips generated by the airport.[33]

Parking for approximately 22,500 cars for passengers and employees is currently provided at the airport and nearby areas. The demand for parking is forecast to increase to 26,800 spaces by the year 2000. (This assumes the airport's goal of increasing transit use is achieved.)

(2) General Aviation Airports

San Mateo County operates two general aviation airports: Half Moon Bay and San Carlos. The San Carlos Airport was originally developed during the early days of aviation in the 1910's when seven small fields were in operation along the Peninsula.[34] It was purchased by the County in 1964 for $990,000, of which $440,000 was provided by the Federal Aviation Administration (FAA). The Half Moon Bay Airport was developed as a military field during World War II and was acquired by the County in 1947.

(a) Half Moon Bay Airport

Located approximately 4 miles north of the City of Half Moon Bay on Highway 1, the Half Moon Bay Airport is

presently the base of 84 aircraft. The facilities include one paved, lighted runway, 5,000 feet long (effectively 4,200 feet long due to a displaced threshold) and 150 feet wide, two large hangers and 33 T-hangers, and an administration building. Tiedown spaces are available for 80 aircraft.

Since there is no FAA control tower at the airport, precise operational data are not available. However, the FAA estimates that operations during the peak month total 10,000 takeoffs and landings, and annual operations approximate 70,000 takeoffs and landings.

(b) San Carlos Airport

Located just east of Highway 101 near the Holly Street interchange, the San Carlos Airport has a 2,600 by 75 foot runway and two parallel taxiways constructed of asphaltic concrete and designed to support aircraft up to 12,500 pounds. Medium intensity lighting is provided on the runway and on one of the taxiways. Other facilities include an FAA control tower, administration building, 14 hangers accommodating 129 aircraft, and tiedown spaces for 337 aircraft. A lengthy waiting list for tiedown spaces is maintained.

With an average of over 250,000 aircraft operations per year, San Carlos Airport ranks as the busiest single runway, general aviation airport in the country.

b. Port of Redwood City

(1) History

The Port of Redwood City is one of six ports in the San Francisco Bay. Its origins can be traced to the 1850's, when a shipping business was established at Redwood Creek to supply lumber for San Francisco's development during the Gold Rush Era. The U.S. Army Corps of Engineers first became involved with the Port's development in 1886, with the dredging of a 50-foot wide, 7-foot deep channel. Over the years, this channel has been widened and deepened, and today the minimum depth is 30 feet. Periodic dredging is required at the San Bruno shoals and in the entrance channel and turning basins.

(2) Existing Facilities

The Port presently has five berths and is used by the scrap metal, cement, petroleum products, and salt industries, continuing its traditional role as a port for shipment of dry bulk commodities. Other Bay Area ports[35] specialize in containerized, break bulk, liquid bulk, or automobile shipments.

Tonnage handled at the Port of Redwood City during the 1981-82 fiscal year totaled 296,000 tons, a substantial decline from the 1.2 million tons handled on the average between 1966 and 1975.[36]

B. DEMAND FOR TRANSPORTATION

1. Existing Transportation Demand

a. The Shipment of Goods

The demand for the shipment of goods in San Mateo County is generated mostly by industrial and commercial activities. Some components of the transportation system, such as the Port of Redwood City and air cargo facilities, exclusively serve the shipment of goods and commodities, while others, including highways and the Southern Pacific rail line, are used jointly by people and freight carriers. Although precise data on volumes of freight shipped within the County are not available, continued economic development in the County will result in increased demand for the movement of goods and commodities and will impact most components of the transportation system.

b. Personal Travel

County residents generate more than 1,900,000 trips per day. Table 12.3 provides a breakdown of these trips according to purpose of the trip. Each household generates approximately 8.8 person trips a day.[37] Over 85% of all trips utilize private vehicles, while 4% are made by public transit, and the remainder use other modes.[38]

(1) Work-Related Trips

Most work-related trips are concentrated in two relatively short time periods on weekdays, 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. Consequently, they tax the capacity of transportation facilities more than other types of trips. The number of employed San Mateo County residents increased by 33% from 1970 to 1980, a much higher rate of growth than the 6% increase in population during the same period. This employment growth reflects an increase in the working age population and greater participation by women in the labor force and results in increased demand for peak-hour transportation.

Table 12.4 provides a comparison of the County of employment of San Mateo County residents in 1970 and 1980. Santa Clara County was the fastest growing employment area for County residents between 1970 to 1980, gaining 13,306 jobs for a 66.3% growth rate while San Mateo County gained 43,711 (31.8%) and San Francisco County provided an additional 9,309 jobs (13.5%). Almost 60% of County residents worked within the County in

TABLE 12.3

WEEKDAY TRIPS PRODUCED IN SAN MATEO COUNTY BY PURPOSE
1980

TRIP PURPOSE	NUMBER OF TRIPS	PERCENT OF TRIPS
Home - Work	467,000	24.5
Home - Shopping	517,000	27.1
Home - Social/Recreation	245,000	12.9
Home - School	221,000	11.6
Nonhome-based	455,000	23.9
Total Trips	1,905,000	100.0

TABLE 12.4

COUNTY OF EMPLOYMENT OF SAN MATEO COUNTY RESIDENTS,
1970 AND 1980

	1970	1980	1970-80	
PLACE OF EMPLOYMENT	NUMBER OF WORKERS[1]	NUMBER OF WORKERS[1]	INCREASE	%
San Mateo County	137,598	181,309	43,711	31.8
San Francisco County	69,039	78,348	9,309	13.5
Santa Clara County	20,071	33,377	13,306	66.3
Other Areas	6,852	10,624	3,772	55.0
Totals	233,560	303,658[2]	70,098	30.0

Source: U.S. Census.

Notes: 1. Census figures adjusted to allocate workers not reporting place of employment.

2. Total differs from total county employed residents (313,558) due to absences during week of census.

1980, while 25.8% commuted to San Francisco, and 11% worked in Santa Clara County. Approximately 70,000 workers commuted to jobs in San Mateo County in 1980, the majority from San Francisco, Santa Clara, and Alameda Counties.

The private automobile remained the principal means of travel to work for County residents in 1980, with 76.2% driving, and 9.2% riding as passengers (see Table 12.5). These figures are similar to the 1970 data. The 1980 Census listed carpool participants separately for the first time; these amounted to 16.5% of employed residents. Public transit users increased somewhat to 7.9%; from 1970 to 1980, transit grew somewhat faster than the auto as a means of travel to work. This may be largely attributed to the initiation of countywide bus service in 1976.

(2) Non-Work Related Trips

In addition to work-related trips, County residents travel to shopping, recreational, educational and other destinations on a daily basis (see Table 12.3). These trips do not ordinarily exhibit the peaking characteristics of work-related travel. Capacity problems do occur, however, on certain segments of roadways or on transit systems during non-peak periods. These may result from activities such as sporting events, weekend recreational travel to the Coast, seasonal traffic congestion at shopping centers, and airport-related traffic, especially on holidays or weekends.

2. Future Transportation Demand

The demand for transportation services and facilities in San Mateo County in the future will be a function of the demographic and land use changes that occur in the County and surrounding areas.

a. Demographic Trends

From 1970 to 1980, the County's population grew by less than 6%, while the number of housing units increased by 23%. Since the vacancy rate remained very low, these figures indicate that smaller households are being formed. At the same time, the number of employed residents grew faster than the overall population. Studies have shown that smaller households generate more trips per person than larger households (except for the elderly).[39] This growing labor force generates more travel during the peak hour.

The Association of Bay Area Government's Projections 83 forecasts a moderate increase in County population from 587,000 in 1980 to 607,300 in 1990 (a 3.4% increase) and to 624,800 by the year 2000 (a 2.9% increase). However, the number of households in the County is expected to continue increasing more rapidly than the overall population.

TABLE 12.5

MEANS OF TRANSPORTATION TO WORK, SAN MATEO COUNTY EMPLOYED RESIDENTS, 1970 AND 1980

	1970		1980		1970-1980	
	NUMBER OF WORKERS	% OF WORKERS	NUMBER OF WORKERS	% OF WORKERS	AMOUNT OF INCREASE	% OF INCREASE
Private Automobile						
Driver[1]	176,184	74.8	233,088	76.2	56,904	32.3
Passenger[2]	22,678	9.6	28,047	9.2	5,369	23.7
Carpool[3]			(50,577)	(16.6)		
Public Transportation	17,696	7.5	24,137	7.9	6,441	36.4
Other	19,148	8.1	20,641	6.7	1,493	7.8
Totals	235,706	100.0	305,913	100.0	70,207	29.8

Source: U.S. Census

Notes:
1. 1970 Census listed "Drivers" and "Passengers" separately; 1980 Census listed as "Drive Alone" and "Carpool"; 1980 figures adjusted to be comparable to 1970 figures.
2. "Passenger" category used only in 1970 Census; 1980 figures adjusted to be comparable to 1970 figures.
3. "Carpool" category provided in 1980 Census for the first time; carpoolers are also included in "driver" and "passenger" categories for 1980.

b. Land Development

Areas of the County which are expected to experience significant urban development during the next 20 years include San Bruno Mountain, the Bayshore corridor, and the Coastside. Development in these areas will include new housing, office/commercial, and industrial development, as more employers move into the suburban setting of San Mateo County. In addition, infill development and redevelopment is expected to occur in the older urban areas. Cities which are expected to experience significant growth in employment through 2000 are Daly City, South San Francisco, San Mateo, Redwood City and Menlo Park. Many of the new employees will live outside the County, since a sufficient supply of affordable housing is not expected to become available.

In the San Bruno Mountain area, over 4,700 housing units, 6.9 million square feet of office space, 3.5 million square feet of industrial space and 3,200 hotel rooms are projected to be constructed by 1995, generating over 26,000 trips during the afternoon peak hour.[40] In the Bayshore Freeway corridor, 44 additional projects between Millbrae and Menlo Park are in varying stages of planning or development.[41] These projects will total over 2,500 housing units, 18.9 million square feet of office and industrial space, and 4,600 hotel rooms, and will generate 48,700 additional vehicle trips during the afternoon peak hour.[42]

Along the Coastside, the buildout of the land use plans for the County and Half Moon Bay Local Coastal Plans can accommodate an additional 40,000 people. However, the timing for buildout cannot be predicted.

Outside San Mateo County, the continued development of office buildings in San Francisco and the expansion of high technology industries in Santa Clara County will also generate commuter traffic from San Mateo County to employment in the two adjoining counties.

Although not all of the projected development may take place, the cumulative impact of the developments which are completed and demographic trends would be to congest many roadways, interchanges, and intersections beyond their capacity, and to increase greatly the demand for transit and alternative transportation.[43]

3. Interrelationship of Transportation Modes

An efficient transportation system is one that is balanced - the demand for transportation is distributed among several equally attractive modes,[44] and integrated - it allows for easy transferability among modes. Examples of methods for integrating transportation modes are: (1) park and ride lots and bicycle storage lockers at major transit stops, (2) feeder buses to transit stations, and (3) designated bicycle routes separate from automobile travel areas.

In San Mateo County, the major components of the ground transportation system are the freeways and major arterial highways, the Peninsula Train, and SamTrans buses. In recent years, some efforts have been made to improve the integration of these modes, and to increase the usage of transit and bicycles. These efforts have resulted from Federal and State directives promoting a balanced transportation system, as well as from increasing congestion on highways. Park and ride lots are available at most Peninsula Train stations and near some freeway interchanges. Bicycle storage lockers have been installed at many locations. SamTrans bus routes serve Peninsula Train and BART stations. Bikes were permitted on the Peninsula Train during nonpeak periods as a demonstration project during 1981-82.

An example of a location where five transportation modes converge is the intersection of El Camino Real and Hillsdale Boulevard in San Mateo. Here are found a Peninsula Train Station with a park and ride lot and bicycle storage lockers, a SamTrans bus stop serving several local and trunk routes, and pedestrian crosswalks connecting the station to the Hillsdale Shopping Center and adjoining residential areas. The integration of transportation modes which occurs here allows a traveler to select the most convenient method of travel to a destination and to transfer easily from one mode to another. This convergence of modes also occurs in other locations throughout the County, particularly at train stations.

4. Population Groups with Special Transportation Needs

Several segments of San Mateo County's population have special transportation needs. These include the elderly, the young, mobility-impaired persons, low income families, and persons who do not own a car. The 1980 Census reported that there were 61,000 persons over 65 years of age or 10.5% of the County's population. Within this age group, nearly 8,000 people have a health condition which makes it difficult or impossible to use public transportation. In the 16 to 64 year old age group, 5,310 people have disabilities which make use of public transportation difficult or impossible. Approximately 20% of the population (119,000) is under 16 years of age. Finally, the census reported that over 14,000 housing units in the County do not have an automobile available. While the data on automobile availability may overlap with other categories identified above, these statistics indicate that a significant portion of the County's population must rely on public transit or paratransit services to meet their transportation needs.

III. EXISTING TRANSPORTATION PLANS, POLICIES AND REGULATIONS

The transportation system in San Mateo County operates in a complex, interjurisdictional framework, encompassing governmental agencies at the Federal, State, regional, and local levels and private operators. This section provides a summary of the programs, plans and policies of the agencies involved in the provision of transportation services in San Mateo County.

A. FEDERAL

1. Department of Transportation (DOT)

The U.S. Department of Transportation was formed in 1966, consolidating the transportation programs of eight departments and agencies. A major objective of this reorganization was to coordinate all Federal programs relating to transportation and to develop consistent and cost-effective national transportation policies. Policy making and coordination are performed at the departmental level, while the operating programs are carried out by subordinate administrations organized by mode. These are discussed below.

Federal funds for local transportation improvements have been available since the 1930's. Funds were initially granted to State governments, but over the years, local participation in transportation planning has been strengthened. The Department issued regulations in 1975 to coordinate planning of highway and transit programs in urban areas, requiring preparation of comprehensive transportation plans by metropolitan planning organizations (MPO's) as a condition of receiving Federal transportation funds. Local governments, transit agencies and State transportation agencies were directed to plan cooperatively under the MPO umbrella. These regulations, in conjunction with corresponding State laws and regulations, established the present transportation planning structure in the Bay Area, which channels Federal and State funds for transportation improvements through the Metropolitan Transportation Commission (MTC).

In 1982, Congress passed the Surface Transportation Act, which continued funding of urban transportation programs, added five cents per gallon to the gas tax of which one cent is dedicated to transit, and restructured the UMTA grant program into block grants in place of specific operating and capital assistance programs, providing greater flexibility in the use of Federal funds.

a. Federal Aviation Administration (FAA)

The FAA is responsible for promoting civil aviation and the development of a national system of airports, developing and operating a common system of air traffic control and air navigation, providing an aircraft registration system, promoting research and development, and providing grants for airport planning and development.

The FAA operates the air traffic control towers at San Francisco International Airport and San Carlos Airport and provides grants for the development of the two County airports.

b. Federal Highway Administration (FHWA)

The FHWA administers programs providing financial assistance to states for highway construction. Gas tax receipts are deposited in the Highway Trust Fund and are used to finance construction of the interstate highway system (90% Federal funding) and improvements to State and local roads through the Federal Aid Primary (FAP), Secondary (FAS) and Urban (FAU) programs, which provide 70% Federal funding. Procedures for allocating available funds are developed by the states in accordance with Federal guidelines. The FHWA seeks to coordinate highways with other modes of transportation and also sponsors highway safety, research and other programs.

c. Urban Mass Transportation Administration (UMTA)

UMTA's missions are to assist in the development of improved mass transportation facilities, equipment, and techniques; to encourage the planning and establishment of areawide urban mass transportation systems; and to provide financial aid to State and local governments for these purposes. UMTA's grant program can be used for both capital and operating costs and is a major revenue source for SamTrans.

B. STATE

1. California Transportation Commission (CTC)

The CTC consists of 11 members, nine of whom are appointed by the Governor and two by the Legislature, and a supporting staff. The CTC plays an integral role in the annual transportation planning and programming cycle, adopting a State Transportation Improvement Program (STIP), which lists projects to be funded for the succeeding five years, based on available funding. The STIP is developed from the Transportation Improvement Programs submitted by CalTrans and the Metropolitan Planning Organizations, including MTC.

2. California Department of Transportation (CalTrans)

CalTrans was formed in 1972 by legislation which brought together all major State programs relating to transportation into one department. In this law, the Legislature expressed the need for a "comprehensive multimodal transportation planning process which involves all levels of government and the private sector in a cooperative process to develop coordinated transportation plans."[45] The State's role includes the development of urban mass transportation and interregional high speed transportation, as well as the maintenance of the State highway system, the State's traditional transportation function.

CalTrans' operations in San Mateo County include construction and maintenance of State highways, operation of the Peninsula Train, and promotion of bicycling, ridersharing, and other transportation alternatives. CalTrans participates in regional transportation planning by MTC and annually submits proposals for Federal Aid Interstate (FAI) and Federal Aid Primary (FAP) funding.

In 1981, the Legislature passed SB 215, which imposed a two cent per gallon increase in the State gasoline tax, of which one cent is allocated to the State Highway Account and one cent to cities and counties.

a. State Highways

State highways in San Mateo County are listed in Table 12.1. CalTrans maintains these roads and undertakes improvements to them. State plans for highway improvements in the County include completion of the Interstate 380-Route 101 Interchange; construction of a bypass for Route 1 around Devil's Slide, and operational and safety improvements to Route 92 between Interstate 280 and Route 1. CalTrans also develops park and ride facilities to facilitate transit use and ridesharing.

b. Peninsula Train Service (Caltrain)

CalTrans has been administering commuter rail service on the Peninsula since July 1980, under contract with Southern Pacific and the three County transit districts. The agreements are for purchase of service, under which Southern Pacific operates the service, but CalTrans and the districts subsidize and administer the operations. CalTrans prepares a five-year plan each year as part of its application for UMTA capital and operating assistance. CalTrans plans to acquire new locomotives and passenger cars, upgrade track and facilities, purchase and rehabilitate the stations, increase weekday service, improve marketing and public information, and relocate the San Francisco terminal to a more central location.

c. Bicycles

In recent years, the State has been actively promoting bicycling as an alternative form of transportation. In 1975, the Legislature passed the California Bikeways Act. The intent of this law was the establishment of a bicycle transit system " . . . to achieve the functional commuting needs of the employee, student, businessman, and shopper, . . . to have the physical safety of the bicyclist and the bicyclist's property as a major planning component, and to have the capacity to accommodate bicyclists of all ages and skills."[46] The Act directed CalTrans to publish uniform standards for bicycle facilities and made State funds available to local governments for bikeways development.

C. REGIONAL

1. Metropolitan Transportation Commission

Since 1970, the major forum for transportation planning in the Bay Area has been the Metropolitan Transportation Commission. This agency was established by the State Legislature to prepare a regional transportation plan and to allocate Federal and State funds for highway and transit projects. In 1977, the legislation was broadened to include planning for all forms of transportation in the regional transportation plan.

MTC also sponsors more specific sub-regional planning programs, such as the Peninsula Transit Alternatives study and the study on impacts of proposed development on Highway 101. The MTC Board is composed of 14 locally elected officials and two representatives of regional agencies. DOT and CalTrans are represented by nonvoting members.

a. Regional Transportation Plan (RTP)

The Regional Transportation Plan for the Bay Area was adopted by MTC in June 1973 and has been reviewed and revised each year since then. It consists of a policy element, an action element, and a financial element, and it covers highways, mass transit, airports, and seaports. The plan addresses the interfacing of various modes of transportation, and it includes transportation systems management techniques, which are designed to improve the capability of the existing roadway system to carry people. Geographically, the plan divides the Bay Area into 12 corridors, areas with common problems and interests. Two corridors are located in San Mateo County, the West Bay and San Mateo Coast.[47] Appendix C is an excerpt of the 1983 edition of the Regional Transportation Plan, listing transportation improvements planned for the two corridors in the County.

The policies of the RTP are implemented through the Transportation Improvement Program, and other specific plans, such as the Regional Airport Plan, The Seaport Plan, and the Bicycle Plan.

(1) Transportation Improvement Program (TIP)

MTC's investment priorities are listed each year in the Transportation Improvement Program, a five-year program listing highway, transit, and airport projects throughout the nine County region by funding source. Projects are nominated by the implementing agencies (cities, counties, CalTrans and transit districts) and countywide priorities are set prior to submission to MTC. MTC staff then reviews the projects for consistency with the RTP and prepares a consolidated TIP, which must be approved by the Commission and submitted to the CTC for incorporation into the State Transportation Improvement Program.

(2) Airport Plans

MTC and ABAG have developed a Regional Airport Plan which addresses the long range needs for aviation facilities in the Bay area. The plan allocates future volumes of air passengers to the three regional airports (San Francisco, Oakland, San Jose). In the 1985-89 time frame, 24 to 27 million annual passengers are assigned to San Francisco, and 27-31 million passengers in the 1994-2000 period. This represents a moderate growth rate for San Francisco, with the bulk of the additional passenger volumes going to Oakland and San Jose.

The Metropolitan Transportation Commission's General Aviation Airport System Plan for the Bay Area contains recommendations for improvements to general aviation airports so that future demand for general aviation facilities will be met. The plan forecasts an increase in aircraft owners in San Mateo County from 642 in 1976 to 1,000 in 1997. The plan supports extension of the runway at the San Carlos Airport and an increase of storage capacity to 650 aircraft. For Half Moon Bay, the plan recommends taxiway improvements and the diversion of more training flights from San Carlos Airport to Half Moon Bay.[48]

(3) Seaport Plan

The Seaport Planning Project, sponsored jointly by MTC and the Bay Conservation and Development Commission (BCDC) between 1974 and 1982, examined the demand for future port facilities in the Bay area and the associated issues of maintaining deepwater channels and providing ground transportation access. The study forecast substantial growth in waterborne cargo for the Bay Area, with the greatest growth in containerized cargo. A need was recognized for expansion of all six Bay Area ports, including two new berthing facilities at the Port of Redwood City. Both of these projects would be located in the existing port area on the east side of Redwood Creek. The plan also identified the need to improve Seaport Boulevard, which serves the port area. The Seaport Plan will be used by MTC and BCDC in evaluating future port development proposals.

(4) Bicycle Plan

In 1982, MTC prepared a Regional Bicycle Plan. The plan encourages development of local bicycle plans, integration of bicycle planning into other transportation planning activities, development of biking facilities by employers, and improved maintenance of streets and roads used by bicyclists. MTC administers the allocation of State Transportation Development Act Article 3 funds, which are derived from the State sales tax and are dedicated to the construction of facilities for the exclusive use of pedestrians and bicycles. The plan contains guidelines for the use of these funds.

b. Peninsula Transit Alternatives Project (PENTAP)

The PENTAP Study was conducted between 1975 and 1978 to evaluate alternative transit proposals for the County and to develop a recommended program. The project concluded that a phased upgrading of the Peninsula Train service, in conjunction with other improvements, would result in the most significant transit improvements at the least cost and in the shortest period of time (see Appendix A).

A PENTAP Committee, composed of elected officials and agency representatives, serves to monitor progress toward implementation of the study and makes recommendations to MTC.

c. Peninsula Route 101 Study

In 1982, MTC began a study of traffic conditions along Route 101 and anticipated impacts of proposed new development along the corridor. CalTrans and local agencies are participating in the study, which recommends: (1) traffic mitigation measures, such as flexible work hours and increased use of carpools and vanpools; (2) highway improvements, such as separate lanes for high occupancy vehicles and additional freeway lanes; and (3) transit improvements, including provision of additional capacity, such as express commute service along Highway 101.

2. Bay Area Rapid Transit District (BART)

Although BART does not extend service into the County, it is planning to construct a turnback track and storage yard to the south of the Daly City station in the unincorporated portion of Colma. This facility will improve the operational efficiency and capacity of the system, enabling BART to operate trains with two-minute headways and eliminating the necessity of returning empty trains to the East Bay at night.

The possible extension of BART service into San Mateo County has been the subject of several studies. In December 1980, the BART Board of Directors adopted a policy identifying four priority routes for extension of service. Three routes are located in the East Bay and the fourth connects Daly City with the San Francisco International Airport. An extension of service outside the present BART district would require an agreement with the County and establishment of suitable institutional and financial arrangements. In 1983, the BART Board amended its policy on extension of service by calling for concurrent implementation of all extensions within the three-county district and establishment of a satisfactory cost-sharing arrangement for an extension into San Mateo County.

3. San Francisco International Airport

Management of the San Francisco International Airport is vested in the Airports Commission, a body appointed by the Mayor of San Francisco. The Commission is autonomous in managing the airport and planning its future development except for the budgetary process, which provides for review by the Mayor and the Board of Supervisors. The Commission has directed its staff to prepare a master plan for future land use at the airport.[49] The airport owns about 260 acres of undeveloped land, including 180 acres on the west side of Highway 101.

In order to address the concerns of neighboring communities over the issues of aircraft noise, air quality, and ground access, a Joint Action Plan was prepared between 1977 and 1980 by a Board representing the County, ALUC, the City of San Francisco, and the Airports Commission. This plan developed recommendations for mitigating adverse noise, air quality and traffic impacts and established an Airport-Community Roundtable as an ongoing forum for dialogue and for monitoring progress toward implementation of the Plan.

4. Bay Area Air Quality Management District (BAAQMD)

In accordance with the requirements of the Federal Clean Air Act, BAAQMD, along with ABAG and MTC, prepared a Bay Area Air Quality Plan in 1979 and updated it in 1982. Since vehicular emissions are the primary cause of air pollution in the Bay Area, the Plan includes 12 transportation control measures directed at reducing emissions so that Federal and State air quality standards can be met by 1987. These measures include both regional goals, such as increasing transit ridership throughout the Bay Area, and area-specific projects, such as Santa Clara County's Commute Transportation Program. Various agencies are responsible for implementing the controls. ABAG, BAAQMD, and MTC must prepare an annual report on the status of implementation and effectiveness of the control measures. If air quality improvements do not ensue, additional controls must be imposed.

D. COUNTY

1. San Mateo County Transit District (SamTrans)

SamTrans was established in 1974 to provide Countywide transit service. Each year, SamTrans prepares a five-year plan as part of its application for UMTA funds. The overall direction of SamTrans' Five-Year Transportation Development Plan, 1982-1987 is to consolidate and maintain existing service levels. The District forecasts a 25% increase in daily ridership, from 80,000 to 100,000, by 1987. The bus fleet is projected to stabilize at 328 vehicles. The District plans to continue supporting the Peninsula Train and BART systems by serving their stations and by providing an operating subsidy to the Peninsula Train. Mainline service is expected to grow, and additional service to the San Francisco International Airport is planned. SamTrans also anticipates testing express service along Interstate 280 and developing additional park-and-ride lots.

2. Regional Planning Committee (RPC)

The Regional Planning Committee of San Mateo County is a coordinative body composed of one elected official from each city in the County, a member of the Board of Supervisors, and six public members. RPC participates in regional transportation planning for roads, transit, airports and bikeways.

a. City-County Transportation Improvement Program

The City/County Transportation Improvement Program provides a process to select and rank projects eligible for Federal and State funding. The Transportation Improvement Program Technical Advisory Committee (TIPTAC), composed of one representative from each city, the County, SamTrans, and CalTrans, establishes criteria and procedures for evaluating and ranking projects. The criteria are reviewed by city councils and the Regional Planning Committee, and approved by the Board of Supervisors. Each year, projects are nominated for funding by the sponsoring agency, and they are evaluated and ranked by the technical committee according to the approved criteria. The Countywide significance criterion is ranked by an RPC subcommittee. The resulting project list is then reviewed by the Regional Planning Committee and submitted to the Board of Supervisors for approval. Following Board approval, the list is submitted to MTC for incorporation into the Regional Transportation Improvement Program. A complete description of this process appears in Appendix D.

b. Bikeways Advisory Committee

San Mateo County established a Bikeways Advisory Committee in 1971, which was subsequently made a subcommittee of the Regional Planning Committee. The Bikeways Advisory Committee reviews and ranks applications for bikeways projects in San Mateo County to be funded by State Transportation Development Act (TDA) monies; prepares and updates a County bikeways plan; promotes bicycling as an alternative means of transportation; and works with transit providers to establish programs allowing bikes to be carried on transit vehicles.

3. County Government

a. General Plan Policies

(1) Circulation Element (1960)

The San Mateo County Circulation Element, which is now obsolete, was adopted in 1960 along with a land use element. These plans anticipated substantial growth in the County, and the Circulation Element was designed to promote "maximum freedom of movement with minimum interference to adjacent areas and activities." New freeways were proposed along the bayfront, the coast, the extension of 380 to Pacifica, Highway 92 to the

coast, and Willow Road to Interstate 280. Rapid transit was proposed through the County to Santa Clara County and across the San Mateo and Dumbarton Bridges to the East Bay. The element did not address pedestrian or bicycle travel or para-transit.

(2) Area Plans

(a) San Bruno Mountain General Plan Amendment (1976)

This document established a general plan for the San Bruno Mountain area. The plan provided for a circulation system consisting of local and arterial streets to serve the proposed developments, as well as bikeways and pedestrian paths. Specific plans were required to be prepared for each subarea with more detail on transportation improvements.

(b) Emerald Lake Hills Community Plan (1977)

This plan contains policies to guide the development of a circulation system in Emerald Lake Hills. These policies reflect the hilly terrain in this area by providing for reduced roadway widths, parking off the travel ways, use of common driveways, and installation of pedestrian paths on one side of the street.

(c) Montara-Moss Beach-El Granada Community Plan (1978)

The circulation element of this community plan for the Mid-Coast area had as a goal, development of a "circulation system and road standards for residential streets, which complement the small town character of the community." The plan establishes policies to achieve this goal, including modified design standards, use of parking bays, and provision of bike paths and lanes. The plan proposed a Route 1 bypass of Devil's Slide along the Martini Creek alignment.

(d) North Fair Oaks Community Plan (1979)

This plan includes circulation policies for the North Fair Oaks area which alleviate traffic conflicts and promote the use of transit, permit modified road design standards, and suggest the use of parking districts for areas with inadequate off-street parking.

(e) Local Coastal Program (1980)

The Local Coastal Program (LCP) contains policies that limit roadway improvements to the capacity required to accommodate buildout of the LCP Land Use Plan. These

policies provide that improvements to Routes 1, 84, and 92 be phased, with Phase I improvements limited to operational and safety needs, such as passing lanes and elimination of sharp curves. The LCP calls for a two-lane bypass of Devil's Slide along the Martini Creek alignment. The plan promotes the use of bicycles and transit with the provision of facilities for those modes such as park-and-ride lots and expanded transit service.

(f) Skyline Area General Plan Amendment (1983)

The Skyline study recommends that improvements to major roads in the study area be limited to operational and safety improvements. The study reinforces LCP policies by recommending that Caltrans limit the capacity of Route 92 to that needed to serve the buildout of the Coastal Zone. For minor roads (roads serving residential areas), the study specifies the timing, standards and financing for on-site improvements to both public and private roads. The policies call for a study of several public minor roads to determine whether specific off-site improvements oriented to each individual road would be appropriate, the timing of those improvements, and the method of financing them. The study resulted in consolidation of all County road improvement standards, policies, and requirements for the Skyline area into one ordinance.

b. Ordinances and Resolutions

(1) Subdivision Ordinance

The County's Subdivision Ordinance (Ordinance No. 595, as amended) requires street improvements within major subdivisions which conform to the standards of the County Engineer.

(2) Road Standards

County road standards, including road widths, type of surfacing, and required curbs, gutters, and sidewalks, are contained in Resolution 36129, adopted by the Board of Supervisors in 1976. This Resolution classifies streets as urban or rural and public or private. The standards vary according to the type of street (e.g. residential cul-de-sac, major commercial or industrial arterial, etc.) in each classification. Appendix E contains the County's road standards.

(3) Street Improvements

Ordinance No. 2071, passed in 1970, requires street improvements prior to the issuance of a building permit. Improvements meeting County standards are required for the half street fronting the building site.

(4) Zoning Ordinance

Chapter 3 of the San Mateo County Zoning Regulations contains the County's parking requirements for new development. Section 6118 of this chapter defines the size of parking spaces, the type and location of parking areas, the conditions for joint use of parking areas, and other general requirements. Section 6119 provides formulas for determining the number of required parking spaces for each type of land use. Other provisions of the chapter call for screening of parking areas facing or adjoining residential districts, paving, and landscaping.

(5) Official Plan Lines

Ordinance 425, passed by the Board of Supervisors in 1935 and periodically amended since then, establishes official plan lines which indicate the County's planned future widths of specified streets. These ordinances provide the basis for establishing setbacks lines, and if a subdivision is involved, requiring dedications of land from property owners for future widening of the street.

(6) Road Improvements in the Skyline Area

Ordinance No. 2838, passed in 1983, has consolidated all the County's road improvement requirements for the Skyline area. It covers onsite and offsite improvements for both public and private roads. The ordinance also includes provisions for the timing and financing of road improvements.

c. Creative Road Design Guide

The Creative Road Design Guide was adopted by the Board of Supervisors in 1978 to establish guidelines for modifying County road standards in order to reduce adverse environmental impacts. Modifications to standards are allowed to protect the natural environment, conserve natural resources, and preserve neighborhood quality so long as the safe and functional use of the road is not impaired. Examples of design modifications include reduced roadway widths, separation of travel lanes, elimination of shoulders and parking lanes, and placement of pedestrian paths on one side of the road.

d. Capital Improvement Program (CIP)

Each year the Public Works Department prepares a five-year capital improvement program, which sets forth the department's priorities for improvements to County roads, airports, and other public works facilities. Individual projects in the CIP must be approved by the Board of Supervisors.

(1) County Roads

The CIP for 1982-83 through 1986-87 forecasts an annual budget of approximately $9 million for roads, derived primarily from gasoline taxes. Approximately 70% of these funds will be expended for roadway maintenance and administration, with the remainder allocated toward major road improvements such as widenings and extensions.

(2) County Airports

Plans for San Carlos Airport include acquisition of land to the south of the airport for a 400-foot runway extension, provision of lighting along the east side taxiway, and provision of 13 additional parking spaces for aircraft. Virtually no land is available for future parking expansion at San Carlos Airport.

At Half Moon Bay Airport, plans call for increased aircraft parking, additional T-hangers, and installation of water and sewage systems.

E. CITIES

1. General Plans

Each city is required by State law to adopt a general plan, outlining its future development goals. A Circulation Element is required as part of each general plan. A survey by the State Office of Planning and Research[50] indicates that every city in the County has adopted a Circulation Element. A summary of the Circulation/Transportation policies in the cities' general plans appears in Appendix F.

2. Development Review

The responsibility for reviewing development proposals, including their environmental impacts, rests with the city in which the project is located. For those projects located in unincorporated areas, the County normally reviews proposals jointly with the city in whose sphere of influence the project is located. The reviewing jurisdiction can require mitigation measures such as road widenings, traffic signals, and intersection modifications, to address the local traffic generated by the project.

3. Local Streets

Each city is responsible for maintaining its local streets. The cities are represented on the Transportation Improvement Program Technical Advisory Committee (TIPTAC), and are eligible to apply for Federal Aid Urban (FAU) funding for improvements to streets on the FAU system.

4. Bikeways

Responsibility for bikeways planning varies in each city. A survey indicated that planning, public works, or police departments may serve this function. Approximately 12 of the County's 20 cities have a section on bicycling in their general plans. Some cities have designated representatives to the RPC Bikeways Advisory Committee. Cities are eligible to apply for Transportation Development Act Article 3 Funds, which are available for bicycle and pedestrian projects.

5. Taxis

Cities regulate taxi companies operating within their boundaries.

6. Port of Redwood City

Management of the Port of Redwood has been assigned in the Redwood City Charter to a Board of Port Commissioners. Although appointed by the City Council, the Commissioners have considerable discretion in operating the port. In recent years, the Board has actively pursued a variety of development proposals for the port, including warehousing, office development, coal shipment, and a cement terminal.

TRANSPORTATION ISSUES

I. ADEQUACY OF THE TRANSPORTATION SYSTEM TO ACCOMMODATE CURRENT AND FUTURE DEMAND

The major transportation planning issue confronting San Mateo County is how to accommodate future demand for transportation. For the most part, the transportation system in San Mateo County can adequately accommodate existing transportation demand. Developed areas are served by an extensive, paved network of local streets, arterial highways, and freeways. A countywide bus system and a commuter railroad provide transit service. Congestion occurs along some freeway segments during peak periods, including the mid and south County segments of Route 101, but it is usually of short duration. Some components of the system are underutilized, such as the Peninsula Train and local bus routes, and the bikeways system has not been developed to its full potential.

The demand for transportation in the County is growing as a result of two factors: (1) new land development, both within and outside the County; and (2) demographic changes, including a trend toward smaller households and increasing participation by the population in the labor force, especially women. These trends have increased the demand for transportation at a faster rate than the growth in population, and they are expected to continue. Most of this new demand is being met by the automobile. At present, the private automobile accounts for about 85% of all trips in the County. The remainder are transit, bicycle or walking trips. Although the County has been relatively free of major traffic congestion, many roads, particularly Highway 101, are approaching their capacities.

A. GROWTH IN PERSONAL TRAVEL

The major component of the increasing demand for personal travel is work-related. An increasing portion of County residents are working, and more employers are locating in San Mateo County. Recent studies have documented proposals for construction of over 29 million square feet of industrial and commercial developments and over 7,000 housing units along the urbanized Bayside. These developments are expected to generate over 75,000 trips during weekday afternoon peak hours. Most of these trips would be by private automobile and would utilize Highway 101 for a portion of the trip. However, the addition of this volume of additional traffic during peak hours would congest the Bayshore Freeway and many interchanges and arterial streets beyond their present capacities.

B. POPULATION GROUPS WITH SPECIAL NEEDS

The transportation needs of population groups with special needs (elderly, mobility-impaired, persons not owning a car) are being addressed by SamTrans and other paratransit providers, such as senior

centers and social service agencies. SamTrans has acquired special equipment for its regular routes, such as wheelchair lifts on buses, and offers discounts to students and seniors on these routes. SamTrans also operates the Redi-Wheels service for persons whose physical condition makes it impossible to use regular transit. SamTrans is able to provide approximately 7,000 trips per month with this service. Since Redi-Wheels cannot meet the demand for all types of trips, priorities must be established. Medical appointments rank highest followed by social service trips. Redi-Wheels is limited to weekdays and trips must start and end within one of three zones. Service from the Bayside to the Coast is limited to Fridays.

The Paratransit Coordinating Council has worked to identify needs not being served and to fill those needs by coordinating services among all paratransit providers. Some of the gaps in Redi-Wheels service have been met by other organizations. Thus, while the most urgent needs of special needs groups, such as medical appointments, are being met by transit and paratransit, not all the transportation needs of these groups are presently provided for.

C. THE SHIPMENT OF GOODS

The continued economic development of San Mateo County and growth in the commercial and industrial sectors will also increase the demand for the shipment of goods. While the existing transportation system adequately accommodates this demand, the growth of personal transportation may cause future problems for the shipment of goods. Trucks use the same streets and highways as automobiles, and freight trains share the Southern Pacific tracks with commuter trains. Increased traffic congestion on freeways and arterials could impede the movement of trucks during peak periods. Trucks also carry freight to and from San Francisco International Airport and the Port of Redwood City using surrounding highways to reach their destinations.

II. OPPORTUNITIES AND CONSTRAINTS IN MEETING TRANSPORTATION DEMAND

A. PLANNING CONSIDERATIONS

Transportation systems can cause significant environmental impacts, are major users of energy, and require large amounts of capital. Therefore, decisions on transportation improvements to accommodate future demand have to take into account environmental, energy and financial considerations. Most major transportation improvements are planned at the regional level.

1. Air Quality

Transportation is the major cause of air pollution in San Mateo County. In the San Francisco Bay Area, automobiles alone account for 95% of all carbon monoxide emissions, and automobiles and trucks combined contribute 45% of the nitrogen oxides and 39% of the organic gases (mostly hydrocarbons) which interact to form photochemical smog, the most

significant air quality problem in the area. Automobiles and other transportation modes operating on fossil fuels also emit harmful particulates (including lead), sulfur dioxides, and nitric acid (which produces acid rainfall).

The most noticeable effect of air pollution from transportation sources in San Mateo County is a reduction in visibility, resulting in diminished vistas and a brown tint in the sky. The more serious effects, however, are less obvious and occur over a period of time. Significant human health problems caused by air pollution include bronchitis, lung cancer, and other respiratory diseases. In addition, air pollution damages plants and animals, and causes physical deterioration of many man-made materials.

Many transportation improvement proposals, such as ridesharing, park and ride lots, transit improvements, bicycling facilities, and traffic flow improvements, which are intended primarily to reduce congestion, also have the effect of reducing vehicular emissions, thus improving air quality.

2. Noise

Transportation is a major source of noise in San Mateo County, particularly motor vehicle and aircraft noise. Due to the abundance of streets and highways in the urban areas of the County, motor vehicle noise affects more people than any other single noise source. The major factors which determine the level of motor vehicle noise are: the noise emissions of individual vehicles, the number of vehicles on the road at any given time, the average vehicle speed, the steepness of the roadway, and the condition of the road surface. While State and Federal regulations will help to reduce the noise emissions of new vehicles, motor vehicle noise will continue to be significant due to the volume of vehicular traffic in San Mateo County. Measures which reduce the volume of vehicular traffic, therefore, will also serve to reduce noise levels.

Aircraft noise is concentrated around the three airports in San Mateo County and the Palo Alto Municipal Airport, just south of the County. Of these airports, San Francisco International Airport is by far the largest and the greatest source of noise. Although aircraft noise affects fewer people than motor vehicle noise, the impacts are more severe. Thus, there are more complaints regarding aircraft noise than any other noise source in the County. Aircraft noise emissions are expected to decline in the future as technological improvements produce quieter airplanes. Aircraft noise will continue to be a problem, however, for the many County residents living near airports, especially those living under aircraft flight patterns.

Other noise impacts from transportation modes in San Mateo County include noise from railroad operations, which produce localized noise at the rail yards and more regional noise along railroad tracks. The greatest noise impacts are from freight trains which are long and heavy, require frequent switching of cars into sidings, and are usually run at night.

3. Natural and Visual Resources

Transportation systems often have significant impacts on the natural and visual resources in San Mateo County. The construction of roads, parking lots, airports, harbors, and other transportation facilities results in removal of vegetation, grading and disturbance of land, modification and destruction of fish and wildlife habitats, erosion, water pollution from sedimentation and surface runoff, and a loss of visual resources. These impacts are most significant in the rural areas of the County where the vegetation is dense, slopes are steep, and streams, fish and wildlife habitats, and visual resources are abundant. Care must be exercised in the development review process to ensure that these impacts are properly mitigated.

4. Energy Consumption

Transportation is the largest consumer of energy in San Mateo County. In 1980, the transportation sector accounted for 57% of all energy used in the County - more than the energy consumed in the residential, commercial, industrial, and agricultural sectors combined. In 1981, non-aviation, surface transportation alone consumed 332 million gallons of gasoline and 37 million gallons of diesel fuel, at a total cost of $469 million. Private automobiles are the dominant mode of transportation in San Mateo County. During 1981-1982, automobiles consumed 79% of all energy used in both private and commercial surface transportation (see Table 12.6).

In 1981, the average household in San Mateo County consumed 1,299 gallons of gasoline in private automobiles, at a cost of $1,673. Household gasoline consumption and expenditures have fluctuated since 1973, in response to energy shortages and price increases. As more efficient automobiles are developed, household gasoline consumption may actually decline. Similarly to the case of air quality and noise, many measures which are designed primarily to reduce traffic impacts, such as ride-sharing and increased transit use, also serve to reduce energy consumption.

5. Financial Considerations

Transportation improvements are being constrained by a combination of increasing costs and limited funds. California gasoline sales, which are taxed to provide the primary source of highway construction funds, have declined in recent years, due to rising prices and development of more fuel efficient autos. In the meantime, highway construction costs have risen sharply. Similarly, public transit has been faced with rising capital and operating costs and shrinking revenues. A growing proportion of operating expenses has to be met by public subsidies.

During 1982, both Federal and State gasoline taxes were increased for the first time in many years. These new taxes will generate additional revenues to be applied to the backlog of road maintenance. In addition,

TABLE 12.6

ENERGY CONSUMPTION OF SURFACE TRANSPORTATION MODES
SAN MATEO COUNTY, 1981-1982

TRANSPORTATION MODE	ANNUAL ENERGY CONSUMPTION (BBtu)[1]	PERCENTAGE
Private Auto and Non-Commercial Trucks	37,036	79.2%
Commercial Trucks	8,569	18.3%
Buses	1,010	2.2%
Southern Pacific Rail Service	151	0.3%
TOTAL	46,766	100.0%

Notes: [1]BBtu = Billion British thermal units. A British thermal unit is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit).

Sources: State Board of Equalization, Statistical Research and Consulting Division.

California Energy Commission, Local Energy Planning Handbook, November 1981.

San Mateo County Transit District, Purchasing Department.

CalTrans, Office of Rail Operations.

one cent of the new Federal gas tax is earmarked for transit, the first dedicated Federal funding source for public transit. Even though the financial picture for transportation has improved, the funds available are not sufficient to meet all the needs. Therefore, major transportation improvements must be carefully evaluated to ensure they are cost effective and consistent with other planning objectives.

6. Regional Planning

As a result of Federal and State laws of the early 1970's, a regional planning structure has been created for planning and programming most transportation improvements. The Metropolitan Transportation Commission prepares and updates the Regional Transportation Plan (RTP), which sets broad transportation goals and policies and the Regional Transportation Improvement Program (RTIP), which allocates available funding to specific projects. This structure provides a consensus-building process and an opportunity for San Mateo County to seek funding for its preferred transportation projects.

B. AUTOMOBILE TRAVEL

The extensiveness of the road system in San Mateo County and the widespread ownership of automobiles makes automobile travel the prime candidate in meeting future travel demand. However, this mode, while still the most popular, is being strained by growing traffic volumes and congestion, natural forces, such as landslides and erosion, inadequate east-west arterial roads, and inadequate local streets and roads.

1. Major Highways

a. Congestion

Increasing volumes of automobile traffic on County roads and highways is leading to congestion during peak periods. Congestion, in turn, causes delays in travel time, increased gasoline consumption, and worsening air pollution. This situation is most pronounced along Highway 101, but also occurs on other roads. With new development planned both in and adjacent to the County, congestion on County roads will worsen. In addition to automobile traffic, truck traffic and highway construction during peak periods, aggravate congestion and can create safety hazards.

b. Devil's Slide

Highway 1 between the Mid-Coast and Pacifica has been closed repeatedly in recent years due to slides resulting from winter storms. The most severe closure occurred in the spring of 1983, when the roadway was closed for over two months. When Highway 1 closes, coastal traffic to and from Pacifica and northern points has to divert to Highway 92, a lengthy and time-consuming detour.

2. Local Roads

a. Inadequate East-West Arterial Roads

The major freeways in San Mateo County, Highway 101 and Interstate 280, are generally oriented in a north-south direction. With the exception of Interstate 380, Highway 92, and Highway 84, east-west traffic between the two freeways uses local and arterial streets. East-west traffic volumes have grown in recent years as a result of increased residential development in the foothills, and many of the east-west streets carry more traffic than they were designed to handle. As more traffic diverts to Interstate 280 due to congestion on Highway 101, congestion on these east-west streets will increase and will adversely impact residential neighborhoods.

b. Inadequate Local Roads

Many local roads in the unincorporated areas of the County are inadequate. In the urban areas along the Bayside, streets in communities such as Emerald Lake Hills, Devonshire, Palomar Park, and Country Club Park typically lack curbs and sidewalks, and the pavement is in a poor state. In some areas, drainage is inadequate, parking and turnaround areas are not available, and the pavement is too narrow to allow two cars to pass each other. These conditions also create dust and impair visual quality.

In the Skyline area, many roads serving residential areas are narrow, winding, and lack shoulders. They lack parking and turnaround areas, are sometimes very steep, and in a poor state of repair. With poor sight distances and inadequate pavement widths, these roads create concerns for safety and access of emergency vehicles.

Many of these conditions (poor pavement or unpaved roads, lack of drainage and sidewalks, dust, poor visual quality) also prevail in the unincorporated communities of the Coastal Zone. These local road conditions in unincorporated communities impede access and result in a generally poor circulation system.

The County has an opportunity to address local circulation needs when it reviews development proposals. Through the subdivision ordinance and other legal devices, the County can require improvements to serve the traffic requirements of the development. However, funding limitations restrict improvement of existing inadequate local roads. These costs must be borne either by developers or by property owners through an assessment district.

3. Parking

Extensive reliance on the automobile as a means of transportation creates a need for provision of parking areas at or near points of origin and destination. If adequate provision for parking is not made

at an office building or shopping center, for instance, parking will overflow onto adjacent streets, precluding others from using these spaces. On the other hand, providing more parking spaces than a facility requires is an inefficient use of valuable land and a disincentive to the use of alternative modes of transportation.

The number of parking spaces needed for a particular land use varies according to the location of the use, the intensity of the use, the availability of other modes, and changes over time. A facility in a central location amply served by transit may not need as much parking as a similar facility in a more remote location. Parking needs are also affected by changing socioeconomic conditions, transportation technology, and public attitudes. The prevalence of smaller cars which has emerged in recent years means that a proportion of smaller parking spaces within each lot is now appropriate.

C. PUBLIC TRANSIT

Public transit offers a significant opportunity to meet growing transportation demand in the County and reduce congestion on roadways. However, to date, transit has been hampered by low ridership, service deficiencies, and uncertainty about the extension of BART service into the County.

1. Low Ridership

Although San Mateo County has Countywide bus service and a commuter rail line, transit use in the County is at a relatively low level. About 8% of County residents use transit to go to work, and only 4% of total trips by residents are by transit. By comparison, Alameda County residents use transit for 11.1% of work trips and 7% of all trips, and Marin County residents use transit for 13.5% of work trips and 5.1% of all trips.

Ridership on the Peninsula Train is at a very low level despite the efforts of CalTrans and the three county transit districts to upgrade the service. Noticeable drops in patronage occurred following the elimination of the fare discount program by transit districts in July 1980 and the fare increase in April 1982. After a period of steady growth during its first six years, ridership on SamTrans has leveled off. During 1982, the number of riders declined 1.2% from the 1981 level. SamTrans also raised fares in 1982. These figures suggest that given a choice, County residents prefer to use their own vehicles. Furthermore, ridership levels seem to be very sensitive to fares.

2. Level of Service

The availability of service on the County's two transit systems is not uniform. The Peninsula Train service is essentially designed for use by San Francisco-bound commuters, although limited service is available on off-peak periods and weekends. Commuter ridership has declined, however, in recent years, and the service is operating substantially below

its capacity. The stations are located near Highway 101, which are not always convenient locations for the residents of the western hills or Bayside communities like Foster City. Although most stations provide parking lots, not all stations accommodate the demand for parking. The location of the San Francisco station forces riders to transfer to other forms of transit to reach their destinations. CalTrans has been working to overcome these problems by purchasing new equipment, upgrading stations, and promoting relocation of both the San Francisco and San Jose stations.

In recent years, SamTrans has bolstered its main line service, which mostly serves commuters along the El Camino-101 corridor, while reducing local service. Some local routes have been cut back or eliminated and weekend local service has been curtailed. Virtually no local service is available on Sundays. Patronage on many local routes is low, which may lead to further cutbacks. Service to the coast is limited and does not extend south of Half Moon Bay.

Transit cannot match the automobile in terms of convenience, comfort, and privacy. However, in the face of increasing congestion, rising energy costs, and environmental degradation, transit can become an increasingly attractive alternative. Convenient and frequent schedules, adequate shelters, readily available information on routes and schedules, comfortable vehicles, and convenient transit stop locations are the types of measures that can promote more transit use. In addition, sufficient levels of service are needed to accommodate transit dependent persons. The challenge to transit operators is to balance the needs of the patron with the economic constraints they face.

3. BART Extension

The possible extension of the BART system into San Mateo County has been discussed since the system was conceived. The Surface Transportation Act of 1982 established a dedicated source of funding for transit and renewed interest in new rail projects, including a possible BART extension into San Mateo County.

Several factors should be considered in the deliberations concerning a BART extension to the airport. These include the cost to San Mateo County, the benefits to San Mateo County, and the effects on existing transit service. Although many of these issues were studied in the early 1970's, much of this work is out-of-date and needs revision.

Estimates of the capital costs for a BART extension to the airport range from $340 to $814 million, depending on the location of the airport station and on whether or not any intermediate stations are provided. Although the major portion of these costs would come from the Federal government, a local matching share would also be required. Since San Mateo County is not included in the BART District, a resolution of the terms of the County's participation is needed prior to the construction of any stations in the County.

If a decision were ultimately reached to extend the BART system to the airport, it would provide north County residents with convenient rapid transit access to downtown San Francisco and the East Bay, and San Francisco and East Bay residents with easy transit access to the airport and north County. It would also create an opportunity to establish an intermodal ground transportation center at or near the airport. A common station interconnecting the BART extension with the CalTrain, and providing frequent shuttle buses to the terminal area would improve regional transit service as well as providing improved access to the airport.

D. BICYCLE AND PEDESTRIAN TRAVEL

Bicycling and walking are low-cost, nonpolluting, energy-conserving modes of transportation which do not cause congestion or require costly parking facilities. As such, these modes represent attractive and viable transportation options for many County residents, but they do not receive attention or support by the public sector, comparable to that given to other modes of transportation. Bike routes, lanes, and paths have been established in many areas, but a complete countywide circulation system for bikes is not yet in place. Storage facilities likewise could be expanded to more areas. In the absence of a safe bicycle circulation system and secure storage facilities, many potential bicycle users must rely on automobiles or transit.

Pedestrian travel is also a viable alternative for many trips in the urban areas, but is impeded by barriers or inadequate and unsafe walkways. Many unincorporated areas lack sidewalks. In many areas, the automobile has intruded into pedestrian areas through street widenings, intersection improvements, and installation of driveways. Barriers, such as freeways, waterways, and railroad rights-of-way prevent pedestrian access to areas which are otherwise within walking distance.

E. AIR AND SEA TRANSPORTATION

1. Growth of San Francisco International Airport

San Francisco International has experienced continuous growth during the past 50 years and today ranks as one of the world's busiest airports. The airport is the largest employer in the County and the largest generator of ground transportation. It serves about 23 million passengers a year, with an average of 1,000 aircraft taking off or landing every day. Projections call for continued growth in passenger volumes, aircraft operations, and air freight. This growth will impact surrounding communities both positively and negatively. The location of the airport in San Mateo County provides County residents with convenient air travel to domestic and international destinations. It is a major employer and a source of revenue to local government. However, airport operations also create traffic, noise, land use, and safety impacts. This chapter will address the transportation issues associated with the airport: growth of airport operations and ground access. Issues concerning airport-related noise and safety are addressed in the Man-

Made Hazards Chapter of the General Plan, and land use compatibility issues are addressed in the Urban Land Use Chapter.

2. Impact of Airport Growth on Ground Transportation

Airport traffic contributes to congestion on Route 101 and local arterial roads near the airport. Airport-related traffic accounts for 20 to 25% of the traffic on Route 101, and 20 to 40% of traffic on Old Bayshore Highway, Millbrae Avenue, and San Bruno Avenue in the vicinity of the airport. In addition, the growth in air freight operations has resulted in more truck traffic to and from San Francisco International Airport. According to MTC, truck traffic from San Francisco International comprises about 15% of the truck traffic on Route 101 in the vicinity of the Airport.

With an overall increase of 24,000 vehicles per day forecast by the year 2000, airport traffic will severely congest the Bayshore Freeway and surrounding arterials, unless a greater proportion of these trips are met by transit and ridesharing.

3. General Aviation Airports

Of the County's two general aviation airports, San Carlos Airport is heavily used and maintains a lengthy waiting list for tiedown spaces, while Half Moon Bay Airport is underutilized and has tiedown space available. San Carlos has over three times more operations per year than Half Moon Bay and is approaching its capacity. Up to half of these operations are for training purposes. This disparity in level of use of the two airports is largely due to locational factors. San Carlos Airport is strategically located in the urbanized Bayside while Half Moon Bay is more remote from population and economic centers. In addition, meteorological conditions often limit operations at Half Moon Bay Airport.

MTC projects the number of aircraft owners in San Mateo County to grow from 642 in 1976 to 1,000 in 1997. With no available land at San Carlos Airport, these new aircraft will have to be based at Half Moon Bay or other airports outside the County. As air operations increase at San Carlos, many of the training flights must also be diverted to Half Moon Bay Airport.

4. Port of Redwood City

The Port of Redwood City currently handles relatively small volumes of bulk commodities. In recent years, the Port Commission has pursued further development of the Port without success. The long-term viability of the Port as a deep-water facility seems to depend upon two factors: (1) whether the Port can attract and maintain tenants who generate sufficient revenues to sustain operations, and (2) whether Congress will continue to authorize channel dredging. Additional development of the Port will have impacts on ground transportation.

Seaport Boulevard, which connects the Port with Woodside Road and Highway 101 is a narrow, two-lane road with limited capacity. MTC has identified the need to improve this road in conjunction with port development in its San Francisco Bay Area Seaport Plan.

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING TRANSPORTATION

A. PLANNING AND PROGRAMMING TRANSPORTATION IMPROVEMENTS

Major transportation improvements can cause significant environmental impacts, are major consumers of energy, and require large amounts of money. Planning and decision making for most such improvements are conducted at the regional level.

1. County Participation in Regional Transportation Planning

The regional planning structure embodied by MTC has been reasonably efficient in developing consensus on transportation improvements and allocating Federal and State funding throughout the region. However, County participation in this process has been diffuse and has lacked a coordinated policy basis. The Board of Supervisors considers proposals at various times for County roads, bikeways, and other projects that have been developed and reviewed by a variety of groups. These projects are not developed in a unified manner. Public participation is limited to a few informed citizens who attend meetings and make their views known. With representation on the San Mateo County Transit District Board, and the Metropolitan Transportation Commission, the County has the opportunity to present its position on transportation issues at the regional level and to ensure that the Regional Transportation Plan is consistent with County plans and policies. An objective of the Transportation Chapter of the County General Plan is to develop a unified transportation policy framework for the County. Also needed, however, is an ongoing staff support function to compile and evaluate information on transportation issues for the benefit of the County's policy-makers.

2. Coordination Among Transportation Providers

Coordination among the providers of transportation services in the County (CalTrans, SamTrans, BART, and city and county governments) is limited. Local governments coordinate their plans through the City-County Engineers Association. Peninsula CalTrain operations receive policy oversight from a project management committee, composed of representatives of CalTrans and the three transit districts. SamTrans also coordinates with transit districts in adjoining counties. However, major transportation projects are undertaken individually by the sponsoring agency. Joint planning on how to best meet growing transportation demand, serve newly developed areas, implement transportation system management techniques, and improve existing systems is generally on an ad-hoc basis.

B. AUTOMOBILE TRAVEL

1. Highway Improvements

Plans for accommodating the growing volumes of automobile traffic include roadway, interchange, and intersection improvements, proposed by CalTrans and local governments. One major new road alignment under consideration concerns Highway 1 at Devil's Slide. CalTrans is evaluating several alternatives for reconstructing the highway. Other major improvements being planned in the County include capacity, operational, and safety improvements along Highways 101 and 92, interchange improvements, the completion of the Interstate 380-Highway 101 interchange, and the widening of East Third Avenue in San Mateo. Several cities are discussing the possibility of providing linkages between existing roads east of Highway 101 resulting in a north-south arterial street. Such a road could absorb overflow traffic from Highway 101 as well as provide better access to developing areas east of Highway 101.

Generally, these proposed improvements address existing problem areas. They will not provide sufficient capacity to accommodate future traffic conditions resulting from currently planned development in the County.

2. Local Roads

Issues relating to east-west arterials, road maintenance, and inadequate local roads are largely within the purview of city or County governments. The major problem at the local level has been the limitation of available funds to address existing needs and the need to establish priorities for roadway improvements. The City County Engineers Association has coordinated road improvements and allocated gas tax funds for this purpose. The County Public Works Department establishes priorities for County improvements in its Capital Improvement Program. The County provides for future circulation needs in the unincorporated area through a variety of techniques, including the subdivision ordinance, official plan lines, recorded agreements, and general plan conformity reviews.

a. Local Road Standards

A continuing issue concerns the appropriate level of improvement for local roads, particularly in rural areas. The condition and need of roads in local areas varies widely. The Board of Supervisors recognized this variation in 1978 when it adopted the Creative Road Design Guide, allowing selective modification of road standards in order to protect the natural environment, conserve natural resources, and preserve neighborhood quality. Several area plans, including those for Emerald Lake Hills, the Skyline Area and the Mid-Coast, have documented the variation in local conditions and have established specific policies governing road improvements in those areas.

b. Inadequate Road Maintenance

The local road system in San Mateo County has deteriorated because revenues have not kept up with the costs of maintenance. Since the revenues for maintenance are grossly inadequate, local agencies are deferring maintenance, particularly in the area of cyclical, or preventive-type maintenance. Problems resulting from deferred maintenance do not become apparent right away. The condition of pavement deteriorates slowly over 20-40 years, but once cracks begin to appear, the deterioration process accelerates rapidly without preventive maintenance. As pavement condition worsens, preventive maintenance costs rise significantly. If the pavement is severely deteriorated, only expensive restoration or complete reconstruction are possible. Maintenance requirements will increase dramatically in the 1980's as the roads age and as more maintenance is deferred. Many of the County's streets and roads are reaching the point when more expensive preventive maintenance treatments are needed. Truck and bus traffic using local streets can also cause maintenance problems. The increase in funding available as a result of recent increases in the Federal and State gas taxes will alleviate this problem, although a backlog of maintenance needs to be completed.

c. Conformity of Proposed Street Vacations with General Plan

Periodically, the County General Services Department proposes to vacate a public street, easement, or right-of-way. In accordance with State law (California Government Code, Section 65402) and local procedures, General Services submits the proposal to the Planning Department for review and comment by the Planning Commission. In reporting on such proposals, staff has been hindered by the absence of adopted policies against which vacation proposals could be evaluated. Policy guidance is needed on criteria to be considered in reviewing such proposals.

d. Official Plan Lines

Official plan lines have been used as a planning tool in San Mateo County since 1935. Ordinance 425, and numerous amendments through the years, have identified future rights-of-way for streets and road throughout the County. These official plan lines have been used as a basis for determining setbacks and (if a subdivision is involved) for requiring dedications of land for future road widenings.

Many of the adopted official plan lines have become obsolete, either because the streets have been improved, or because the area has been incorporated into a city. However, in other areas, official plan lines can continue to serve a useful planning function. The present need is to review and update the existing ordinance.

3. Parking Standards

The County's parking standards, contained in Chapter 3 of the Zoning Ordinance, are over 25 years old. The schedule of required spaces includes some antiquated uses (e.g., lodging houses, dance halls, auto courts) and omits some contemporary uses (e.g., fast food restaurants, drive-in banks, auto service stations). The ordinance does not generally allow use of smaller spaces to accommodate compact cars. In addition, the standards for some of the listed uses are very liberal and may be inadequate. This will result in an overflow of parking from some developments into adjacent areas. The ordinance has been amended several times, most recently to establish standards for second housing units and for affordable housing developments. However, a thorough review and updating of the ordinance is needed. Revising the County's parking standards could provide the County an opportunity to incorporate innovate parking management techniques in the ordinance, including shared parking in mixed use developments, off-site parking, and reduced employee parking in conjunction with ridesharing programs.

C. PUBLIC TRANSIT

Transit providers in San Mateo County (SamTrans, CalTrans, and BART) each prepare five-year plans annually, which are submitted to the Urban Mass Transportation Administration. These plans contain programs for service improvements, acquisition of equipment, marketing, and other matters and are the basis for obtaining Federal grants. This type of planning has been quite comprehensive and efficient. As noted earlier, however, the transit operators have been less effective in working with local governments, private industry and other transit providers. It is in this area that more coordination is needed to anticipate future needs and to increase ridership.

D. BICYCLE AND PEDESTRIAN TRAVEL

1. Updating the County Bikeways Plan

In 1976, the Board of Supervisors adopted the County Bikeways Plan, a report setting forth a program for implementing a countywide system of bikeways. This report, which included a map of bike routes in the County, has served as a basis for the annual evaluation by the Bikeways Committee of projects competing for State funds. During 1982-1983, the Bikeways Committee reviewed and updated the Bikeway Plan map. The revised Bikeway Plan as proposed by the Committee appears on page 12.59. Routes on the County plan are regional in nature and can be supplemented by local routes within cities or unincorporated areas. Adoption of this plan, as a portion of the County General Plan would provide an up-to-date guide for future bikeways developments in the County.

2. Planning, Constructing, and Maintaining Bikeways

The responsibility for planning, constructing, and maintaining bike routes, lanes, paths, and storage facilities rests with city and County governments. Since the proposed Bikeways Plan crosses many city boundary lines, a concerted effort is required by each city, as well as the County, in order to implement this plan. This entails planning and designing facilities, applying for grants, constructing facilities, and maintaining them, once complete. However, the level of effort devoted to bikeways varies considerably from city to city. Not all cities include a section on bicycles in their General Plans, and many cities never apply for State bikeways grants, even though 100% of the project cost is eligible for funding. Bikeways frequently become littered with gravel and broken glass, and potholes develop, but in many cases these problems are neglected. Within County government, no department has been designated as responsible for developing and maintaining a bikeways system in the unincorporated areas. To achieve its full potential as an alternate transportation mode, bicycling in San Mateo County needs more attention and support by local government.

E. AIR AND SEA TRANSPORTATION

1. Growth of Airport Operations

MTC has adopted a policy setting a ceiling on growth of San Francisco International at 31 million annual passengers. Currently, airport facilities are designed to handle this volume. To meet this objective, MTC's Regional Airport Plan assigns a growing share of regional air traffic to Oakland and San Jose Airports. Both these airports have substantial unused capacity. Under the MTC Plan, San Francisco's share of regional air passengers would decline from 80% to 60% by the year 2000, while Oakland's share would grow from 9% to 23%, and San Jose would increase from 11% to 17% of the regional air passengers over the same period. Since passage of the Airline Deregulation Act in 1978, however, government's ability to direct airlines to specific airports has been greatly reduced. Airline decisions to use San Jose and Oakland Airports will be guided more by passenger demand rather than by the capacity of airport facilities or vague public policies. Thirty-one million annual passengers seem to be a desirable goal and merits support by the County. However, to reach this goal, other actions by local governments are also necessary, including improvement of ground access to San Jose and Oakland airports and land use policies that will improve the market for these two airports. In addition, improvement of access to San Francisco International may work against this goal.

2. Ground Access to San Francisco International Airport

The Joint Action Plan recommends that ground access impacts of airport growth be mitigated through a combination of local street improvements and improved transit service. In addition, CalTrans is planning improvements to the I-380/U.S. 101 interchange and the airport interchange which will improve traffic flows in the area. Finally, the

The Bikeway Plan Map is Located in the Map Component on page 12.3M.

airport has adopted a goal of accommodating 25% of all airport trips by transit and has actively pursued this goal. It is not clear, however, whether these measures will improve existing traffic conditions near the airport or only keep pace with increasing traffic volumes. A comprehensive information system on available ground transportation to the airport has been considered but not yet implemented. Such information provided to a telephone caller should substantially improve use of transit and paratransit services to the airport.

F. SUMMARY OF PROBLEMS

Although San Mateo County has the elements of a multi-modal transportation system, the automobile dominates as the preferred mode of transportation, accounting for 85% of all trips. Public transit, ridesharing, and bicycle travel are underutilized and not developed to their full potential. The County is at a watershed point in its development. While serious traffic congestion has been avoided in the past, the combined impacts of new development both within and adjacent to the County and changing demographic trends are straining existing highway capacity and are beginning to cause backup and delays, particularly along the Bayshore Freeway. A continuation of these trends will lead to major peak period congestion in many areas throughout the County. As a major traffic generator, the San Francisco International Airport is responsible for some of the congestion on highways near the airport. Operations at San Francisco International are continuing to grow, increasing ground transportation demand. The overall condition of streets and roads is deteriorating due to declining maintenance. Local roads in many unincorporated areas are inadequate. Improved coordination is needed among local governments and transportation providers.

IV. ALTERNATIVES

The growing demand for transportation in San Mateo County could be accommodated under several alternative approaches: (1) making better use of existing transportation facilities; (2) relying heavily on highway and freeway construction; (3) relying on public transit improvements; or (4) providing improved integration of transportation modes. These four alternative approaches are discussed below. The transportation policies which follow draw from all four alternatives, with major emphasis on the first and fourth alternatives.

A. IMPROVING THE EFFICIENCY OF THE EXISTING TRANSPORTATION SYSTEM

Under this approach, future transportation demand is met through better usage of existing facilities. This approach is generally known as "transportation systems management" and includes such measures as car pooling, van pooling, variable work hours, high occupancy vehicle lanes, park and ride facilities, parking management, and facilities for bicycle commuters. Illustrative TSM techniques are described in Table 12.7. Increased demand is accommodated without large scale investments to increase capacity. The majority of recommendations in MTC's Peninsula

TABLE 12.7

EXAMPLES OF TRANSPORTATION SYSTEM MANAGEMENT TECHNIQUES

TECHNIQUE	DESCRIPTION	EFFECTS
Ridesharing	Includes Carpooling (two or more riders per car) and Vanpooling (sharing expenses of a leased van by up to 15 persons).	Reduces congestion, air pollution, noise, cost-savings in auto operations; reduced stress.
Variable Work Hours	Alters work schedules so that period of employment begins and ends during nonpeak periods.	Spreads commuting over longer periods of time, relieving peak hour congestion.
High Occupancy Vehicle Lanes	Provides exclusive lanes or roadways or preferential treatment for buses as possibly carpools/vanpools.	Reduces travel time for commuters using high occupancy vehicles.
Ramp Metering	Control of vehicular access onto freeways by use of traffic signal.	Maintains smooth traffic flow on freeways by keeping traffic volume within freeway capacity. Increased congestion on access roads.
Traffic Signal Management	Adjusts timing on traffic signals along a corridor, possibly utilizing a computer, to smooth traffic flows.	Reduces congestion, use of fuel, air pollution; may increase average speeds.
Park and Ride	Provides parking in outlying areas along transit corridors enabling commuters to ride transit for a major portion of their trip.	Reduces congestion, auto costs, pollution.

TABLE 12.7 (continued)

EXAMPLES OF TRANSPORTATION SYSTEM MANAGEMENT TECHNIQUES

TECHNIQUE	DESCRIPTION	EFFECTS
Parking Management	Alters the supply, operation, or demand of a parking system in order to reduce congestion, increase availability of parking for certain users (e.g., shoppers), or make more efficient use of available parking facilities.	Reduces congestion; allocates available parking; encourages transit use.
Bicycle Commuter Facilities	Bike lanes, paths, lockers, racks, showers at work places.	Reduces congestion, air pollution; promotes energy-savings.

Route 101 Study are in this category. They include traffic mitigation programs, which are intended to increase ridesharing and transit use, as well as transit and highway improvements.

With shortages of funds for large-scale capital investments, transportation systems management offers a cost-effective practical approach to meeting future transportation demand in the County. However, there is a limit to the amount of new demand that could be accommodated under this approach. Effective implementation of a TSM approach should be coupled with integrated transportation planning, coordination between all providers of transportation services, and a regional growth management program.

B. RELYING ON HIGHWAYS AND FREEWAYS

The approach to meeting transportation demand in the 1950's and 1960's was to rely on the private automobile and to build more roads and highways. This was an era of cheap, abundant energy, flush highway trust funds, and no environmental legislation. The 1960 Master Plan for San Mateo County provided for several new or expanded freeways in the County, including the Bayfront Freeway and freeways along Routes 1, 35, 84 and 92.

Today, however, energy costs have increased dramatically, funds for road construction are very limited, and environmental protection laws greatly complicate the planning process for new highways. Funding for construction of major new freeways and highways or expansion of existing freeways in San Mateo County is very limited. In addition, this approach results in deterioration of air quality, increased noise levels, higher energy consumption, the need for more parking facilities, and the disruption of urban communities and natural areas.

C. RELYING ON PUBLIC TRANSPORTATION

To many, public transit offers a panacea to the related problems of automobile congestion, air pollution, and high energy costs. If more commuters, shoppers, and other travelers would rely on bus and rail transit rather than automobiles, the transportation system would function smoothly and without congestion. Future demand could be met by expanding rail and bus systems. Buses would travel on existing highways and streets, while new rights-of-way would be required for rail transit.

This approach faces several obstacles. At present, transit accounts for only 4% of all trips by County residents. Increasing this percentage substantially would require massive capital expenditures and a major change in public attitudes. Current funding levels would not support such a large-scale expansion of transit. In addition, existing land use patterns are not conducive to large scale transit use. Transit is most efficient along high density corridors, such as El Camino Real between Palo Alto and San Francisco. Recent land use trends in the County, however, have continued decentralized employment centers and low density residential development.

D. IMPROVING THE INTEGRATION OF THE TRANSPORTATION SYSTEM

An additional approach for meeting transportation demand in the County is to improve the integration of the various modes of ground transportation - automobile, bus, rail, bicycle, and pedestrian. Integration of transportation modes would help distribute the demand for transportation among various modes while minimizing conflicts between modes. Table 12.8 is a matrix listing techniques that can be applied at the interface of two transportation modes to improve their integration. These techniques include park and ride lots at train stations and express bus stops, bicycle storage lockers at the same locations, pedestrian crossings, bicycle lanes and bicycle racks on buses. They allow easy transfers between modes and encourage multi-modal travel. For example, commuters could walk, ride a bike, or drive to a bus stop or train station, take public transit for the major portion of the trip, and complete the trip on foot, bike, or paratransit. However, as with Alternative A, this approach can only accommodate a limited amount of new demand, since new capacity is not being added to the system.

TABLE 12.8

TECHNIQUES FOR IMPROVING THE INTEGRATION OF TRANSPORTATION MODES

INTERFACING MODES	AUTOMOBILE	BUS	RAIL	BICYCLE
PEDESTRIAN	Pedestrian Overpasses Safe Crosswalks	Safe Shelters Convenient Routes and Stops Posted Schedules	Safe Crossings Safe Shelters	Separate Bicycle and Pedestrian Paths
BICYCLE	Designated Bicycle Routes, Lanes, Paths Safe Intersection Design	Storage Lockers Near Bus Stops Bike Racks on Buses	Storage Lockers at Stations Safe Crossings Bikes on Trains	
RAIL	Park and Ride Lots Grade Separation at Crossings Safe Crossings Station Stops Away from Intersecting Streets	Coordinated Schedules Bus Service to Stations		
BUS	Park and Ride Lots Bus Stops off Roadways Express Bus Lanes			

TRANSPORTATION FOOTNOTES

[1] California Government Code, Section 65302(b).

[2] Metropolitan Transportation Commission, 1980 Regional Travel Characteristics, Working Paper 8, 1981 MTC Travel Survey, page 59.

[3] Alan Hynding, From Frontier to Suburb, The Story of the San Mateo Peninsula (1982), pages 51-55.

[4] Ibid., page 205.

[5] Ibid., page 257.

[6] Metropolitan Transportation Commission, Determining Bay Area Street and Road Maintenance Needs, Current and Future Costs (1981), page 7.

[7] Ibid.

[8] California Department of Transportation, 1978-1980 Statewide Travel Survey, Table 16, page 54. Data is for MTC region, but is considered valid for San Mateo County.

[9] Based on 403,267 registered vehicles (DMV) and 225,201 households (U.S. Census) in 1980.

[10] Highway Research Board, Highway Capacity Manual, Chapters Four and Five.

[11] Ibid.

[12] San Mateo County Department of Environmental Management, Skyline-Santa Cruz Mountains Area Study (1982), page 4.7.

[13] California Department of Transportation, CalTrans/Southern Pacific Peninsula Train Service Five-Year Plan, 1982-1987, page 29.

[14] San Francisco Business Journal, June 30, 1980, page 8.

[15] San Francisco Examiner, July 18, 1979.

[16] California Department of Transportation, Peninsula Train Five-Year Plan, page 17.

[17] Eric Schatmeier, CalTrans, telephone conversation, June 30, 1983.

[18] San Mateo County Transit District, Five-Year Transportation Development Plan, 1982, page III-91.

[19] Ibid., page III-87.

[20] California Department of Transportation, 1978-80 Statewide Travel Survey, Table 35C, page 200.

[21] California Department of Parks and Recreation, Bicycling in California, A Recreation Perspective (1978), pages 11-13.

[22] California Streets and Highway Code, Section 2373.

[23] Metropolitan Transportation Commission, 1980 Regional Travel Characteristics, page 59.

[24] Hynding, From Frontier to Suburb, page 261-2.

[25] Ibid., page 263.

[26] R. V. Wilson, Director of Community Affairs, Airports Commission, telephone conversation, March 31, 1983.

[27] WPM Planning Team et al., Joint Land Use Study, San Francisco International Airport, San Mateo County Environs Area, Final Technical Report (1980), Section IIC.

[28] Ibid. and R. V. Wilson.

[29] Ibid.

[30] WPM Planning Team, Joint Land Use Study, page IIE-4.

[31] Ibid., pages IIE-14, IIE-21.

[32] Ibid., page IIE-13.

[33] D. Jackson Faustman, Inc., San Francisco International Airport Master Plan Transportation Study (1979), pages 3, 11.

[34] Hynding, From Frontier to Suburb, page 262.

[35] Alameda, Benicia, Oakland, Richmond, and San Francisco.

[36] U.S. Army Corps of Engineers, Water Resources Development in California (1977), page 46.

[37] Metropolitan Transportation Commission, 1980 Regional Travel Characteristics, page 48.

[38] Ibid., page 59.

[39] Frank Speilberg, and Stephen Andrle, "The Implications of Demographic Changes on Transportation Policy," Journal of the American Planning Association, Summer 1982, page 305.

[40] Wilbur Smith, and Associates, San Bruno Mountain Area Subregional Transportation Study, November 1982, pages 12, 22.

[41] Metropolitan Transportation Commission, Travel Impacts of Proposed Development on the Peninsula along Route 101, December, 1982.

[42] Ibid., pages 4-8 (projects also included in Wilbur Smith study have been subtracted from the totals).

[43] Smith, San Bruno Mountain Study, pages 27-29 and Metropolitan Transportation Commission, Travel Impacts, pages 9-12.

[44] Definition of balanced transportation from San Mateo County Transit Development Project Summary (1976), prepared by PBTB-Wilbur Smith-Kirker, Chapman, page 5.

[45] California Government Code, Section 14000(d).

[46] California Streets and Highways Code, Section 2371.

[47] The San Mateo Coast Corridor was the subject of a joint MTC-ABAG study in 1975, intended to establish policies for financing public improvements in this area.

[48] Metropolitan Transportation Commission, General Aviation Airport System Plan (1980), pages 51-52.

[49] WPM Planning Team, Joint Land Use Study, page VA-12.

[50] California Office of Planning and Research, Local Government Planning Survey.

TRANSPORTATION APPENDICES

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APPENDIX A

SUMMARY OF MAJOR TRANSPORTATION PLANS IN SAN MATEO COUNTY, 1964-1975

1. West Bay Rapid Transit Authority (1964-69)

The West Bay Rapid Transit Authority was created by the State legislature to plan for the development of an interurban rapid transit system in San Mateo County. (This followed rejection by The Board of Supervisors of County participation in BART in 1962.) Studies conducted by the Authority's consultants from 1965 to 1968 recommended:

a. establishment of a publicly-owned, countywide bus system;

b. extension of rapid transit from Daly City to the San Francisco International Airport; and

c. adoption of a master plan for rapid transit through the county to San Jose.

The legislation creating WBRTA required voter approval of this plan. In June, 1969, the electorate rejected the plan by a 4 to 1 margin, and the Authority was dissolved.

2. San Francisco Airport Access Project (1969-72)

Following voter rejection of the WBRTA plan, the City and County of San Francisco invited the Bay Area Rapid Transit District (BART) and the County of San Mateo to jointly study the feasibility of extending BART service from the Daly City terminus to the San Francisco International Airport, a distance of 8 miles. With the aid of a Federal grant, the project evaluated the engineering and financial feasibility of an airport extension, including route alignment, station locations, financial and administrative aspects, and related issues. The study concluded that improved airport access can best be achieved by a BART extension that also serves North County cities en route to the airport with stations in Colma, Chestnut Avenue in South San Francisco, and Tanforan Shopping Center in San Bruno. Further, the design of the system should allow for future expansion to the South County. The study recommended that negotiations begin regarding the form of San Mateo County's association with BART and that a study be done on an extension from the airport to Menlo Park.

3. San Mateo County Transit Development Project (1971-1976)

Sponsored by MTC with Federal funding, this study was a direct outgrowth of the San Francisco Airport Access Project and was undertaken to evaluate the feasibility of rapid transit service from the San Francisco International Airport to Menlo Park. The study identified the Southern Pacific

Boulevard (San Mateo), Ralston Avenue (Belmont), San Carlos Avenue, Jefferson Avenue, (Redwood City), and Oak Grove Avenue (Menlo Park). The possibility of further extensions to San Jose and Fremont, completing the loop around the South Bay, should be left open. The study also identified the need for a storage yard near the airport. As did the San Francisco Airport Access Project, this study concluded by calling upon San Mateo County's decision-makers to enter into inter-agency negotiations in order to reach agreement on the institutional and financial measures necessary to implement expansion of rapid transit through the County.

4. San Mateo County Local Bus Transit Study (1973-76)

This study was undertaken in conjunction with the two preceding studies, in order to determine how County transit demand could best be met in the short-term. The study concluded that over 100,000 persons in the County were transit-dependent and that a countywide transit district should be established to organize and operate bus service throughout the County. The study developed recommended routes, schedules, fare structure, and a phased introduction of a countywide bus system. During the study, San Mateo County voters approved the formation of the San Mateo County Transit District, which became operational on July 1, 1975.

5. The Feasibility of Upgrading Peninsula Passenger Rail Service (1974-75)

Concurrent with the studies on rapid transit and bus service, this study was carried out by MTC at the request of the Board of Supervisors in order to evaluate the feasibility of upgrading service on Southern Pacific's passenger rail line between San Francisco and San Jose. This service had experienced a long-term decline in ridership from about 9 million passengers a year in the 1950's to about 5.4 million in 1973. Its primary function was to serve peak hour, weekday commuters.

Three levels of upgraded service were evaluated in the study: minor (improved access to stations on the Peninsula and in San Francisco); major (changing the location of the San Francisco Terminal, either to a more central, downtown location or to the Daly City BART Station); and a conversion to transit service (more frequent service throughout the day, separation of freight and passenger operations, and grade separation of vehicular rail crossings).

The study concluded that all three levels of upgrading were feasible, that the upgrading should occur in a phased manner, and that some combination of public and private resources should be used.

6. Peninsula Transit Alternatives Project (1975-77)

The PENTAP project was designed to evaluate alternative combinations of transit service for the Peninsula, including heavy rail, BART, light rail, and bus. The project was initiated by the State legislature in late 1975 and carried out by MTC. It utilized the previous transit studies of the early 1970's and was intended to lead to long-range decisions. At the time the study was begun, regional transit service on the Peninsula was

provided by Greyhound Bus Lines and the Southern Pacific Transportation Company. Both systems were experiencing dwindling patronage and escalating costs.

Beginning with 26 alternative plans, ranging from total reliance on bus service to completion of the BART system around the Bay, the study focused on five alternatives for detailed evaluation. The Project Committee subsequently adopted Alternative B, which called for a phased upgrading of Southern Pacific service and introduction of express bus service on Interstate 280 and Highway 101. This study served as the basis for the present structure of transit service in the County.

APPENDIX B

TRAFFIC VOLUMES ON SELECTED ROADS IN SAN MATEO COUNTY

Approximate 24-Hour Volumes Measured in 1982

STATE HIGHWAYS	VOLUME
U.S. 101	127,000 - 202,000
Interstate 280	54,000 - 173,000
Interstate 380	52,000 - 66,000
Cabrillo Highway (Route 1)	4,600 - 47,500
El Camino Real (Route 82)	12,500 - 48,000
Half Moon Bay Road (Route 92)	12,100 - 76,000
La Honda Road (Route 84)	1,400 - 33,500
Skyline Boulevard (Route 35)	1,900 - 25,500
Woodside Road (Route 114)	23,000 - 48,500

COUNTY ROAD	LOCATION	VOLUME
Alameda de las Pulgas	West of Santa Cruz Avenue	10,300
Alameda de las Pulgas	Between James Avenue and Harding Avenue	6,200
Alameda de las Pulgas	East of Woodside Road	11,500
Alpine Road	Between Westridge Drive and La Mesa Drive	9,600
Alpine Road	Under 280 Freeway	17,800
Crystal Springs Road	East of Polhemus Road	3,500
Edgewood Road	Southwest of Alameda de las Pulgas	9,900
Guadalupe Canyon Parkway	Northeast of Price Street	4,900
Harbor Boulevard	East of Industrial Way	6,900
Industrial Way	South of Harbor Boulevard	7,700
Marsh Road	South of Bay Road	19,600
Pescadero Road	2 Miles East of Cabrillo Highway	1,600
Pescadero Road	South of La Honda Road	900
Polhemus Road	Between Ascension Drive and Bunker Hill Drive	3,200
Portola Road	Between Family Farm Road and Sand Hill Road	6,200

APPENDIX B (continued)

TRAFFIC VOLUMES ON SELECTED ROADS IN SAN MATEO COUNTY

Approximate 24-Hour Volumes Measured in 1982

COUNTY ROAD	LOCATION	VOLUME
Portola Road	West of Westridge Drive	4,100
Ralston Avenue	West of Christian Drive	20,200
Sand Hill Road	East of Whiskey Hill Road	5,800
Santa Cruz Avenue	Between Orange Avenue and Lemon Street	13,900
South Airport Boulevard	North of San Bruno Avenue East	18,800
Trousdale Drive	Under Route 280 Overcrossing	6,000
University Avenue	South of Bay Road	13,400

Source: CalTrans, San Mateo County Department of Public Works.

APPENDIX C
TRANSPORTATION IMPROVEMENTS PLANNED FOR SAN MATEO COUNTY IN MTC 1983 REGIONAL TRANSPORTATION PLAN

CORRIDOR - SAN MATEO COAST

CHARACTER OF DEVELOPMENT AND TRAVEL

This largely undeveloped coastal corridor contains a mixture of small, scattered communities and valuable open space, recreational and agricultural resources. The terrain is very hilly and highways are narrow and winding. The distance of population centers from major activity areas on the Bay side of San Mateo County, makes the provision of transit service costly. In the face of growing recreational and residential development pressures, MTC and ABAG conducted a study of the corridor in 1974-76 to determine how best to plan its development and transportation. Policies adopted jointly by MTC and ABAG (see San Mateo Coast Corridor Transportation Policies, MTC, 3/24/76) call for:

- controlled development.
- preservation of sensitive environments.
- transit improvements, to provide basic levels of service and improved coordination between trunk and local services.
- highway investments limited to safety and operational improvements rather than major additions to highway capacity.

TRUNK LINE HIGHWAYS

North-South: Routes 1, 35
East-West: Routes 92, 84

TRANSIT SERVICES

Operator	Mode	Service Area
San Mateo County Transit District (SamTrans)	trunk line bus	from Half Moon Bay to Daly City BART and Downtown San Francisco
	local bus	from Half Moon Bay to San Mateo via Moss Beach, El Granada, Miramar and Route 92

PROPOSAL NO.	IMPROVEMENT PROPOSAL
SM-1	Transit Service Improved service, consistent with financing and demand, should be encouraged. SamTrans is currently providing express and local bus services from Pacifica and Half Moon Bay to destinations in the eastern part of the county, and northward to BART. Heavy volumes of weekend traffic on coastal highways suggest the possibility of greater utilization of transit in serving recreational travel demand; this would assist in the protection of recreational and open space resources.
SM-2	Rte. 1 from Pacifica to Half Moon Bay (a) Construct a two-lane Devil's Slide bypass; (b) add operational improvements, as warranted, to include curve straightening, grade reduction, intersection improvements, bus and truck climbing lanes and turnouts; (c) add safety improvements, as warranted, to include lane widening, shoulder improvement and signals; (d) make provision for preferential treatment of buses at congested locations; (e) make improvements providing adjacent or separate facilities for bicycles and pedestrian paths where appropriate. Route 1, in the vicinity of Devil's Slide, has undergone numerous closures and has been restricted in use because of slides. The highway was severely damaged and closed for approximately three months by the winter storms of 1982-1983. MTC has identified the rebuilding of the highway as the region's top 1983 Primary System priority. The ABAG/MTC San Mateo Coast Corridor Study (1976), recommended a two-lane bypass to replace the existing facility. MTC endorses consideration of a number of alternatives in the environmental work now being undertaken by Caltrans, in order to ensure that the replacement facility represents the option most operationally efficient and consistent with growth and development policies embodied in the aforementioned study, and to ensure the role of the facility as an access route to coastside park lands and recreation areas. The alternatives to be considered include, but are not limited to, the seven-mile adopted alignment, the four-mile Martini Creek alignment, the LH alternative, and the marine disposal alternative.

CORRIDOR - SAN MATEO COAST

PROPOSAL NO.	IMPROVEMENT PROPOSAL
SM-3	Highway Improvements: Pacifica-San Bruno Corridor Add Sharp Park Road/Westborough Boulevard, between Rte. 1 and I-280, to the State Highway System as a less-than-freeway facility. Provide additional westbound lane from Gypsy Hill Road to Rte. 1, making facility four lanes throughout. Make operational and safety improvements--including those facilitating transit service and bicycle and pedestrian use--as warranted. These improvements would increase the efficiency of the existing highway system serving Pacifica, reduce the need for new major highway construction and promote the use of alternative modes of transportation. County efforts to secure funding for the Sharp Park Road/Westborough Boulevard upgrading continue. Estimated cost for a four-lane divided facility is $9 million (1980 dollars).
SM-4	Rte. 92 from I-280 to Rte. 1 in Half Moon Bay (a) Add operational improvements, as warranted, to include curve straightening, grade reduction, intersection improvements, bus and truck climbing lanes and turnouts; (b) add safety improvements, as warranted, to include lane widening, shoulder improvement and signals; (c) make provision for preferential treatment of buses at congested locations; (d) make improvements providing adjacent or separate facilities for bicycles and pedestrian paths where appropriate. The California Transportation Commission has rescinded the agreement for a four-lane freeway on any new alignment for this facility. Current operational and safety problems could be intensified if the use of Ox Mountain Sanitary Landfill Site is expanded. Caltrans has completed a feasibility study of the route between the Ox Mountain Site and Rte. 1, and will soon undertake an operational improvement study in two segments: Rte. 1 to Rte. 35, and from Rte. 35 to I-280. A project to add truck-climbing lanes at various locations on Route 92, between Routes 1 and 35, is included in the 1983 STIP.
SM-5	Transit Support Facilities Provide commuter parking lots, bus shelters, and bicycle storage facilities at major transit stops. While these kinds of improvements are to be encouraged throughout the region, they are especially important to this corridor--where transit service was introduced relatively recently, and the need to promote transit use is great.

CORRIDOR - WEST BAY

CHARACTER OF DEVELOPMENT AND TRAVEL

This is a densely urbanized corridor, situated on the Bay plain, extending from San Francisco to Palo Alto. It includes a diversified range of employment activities. San Francisco is the region's largest city and downtown San Francisco is the region's predominant employment center--attracting commuters from throughout the region. The corridor is served by the region's most extensive transportation system consisting of freeways, trunk and local bus, light rail, rapid transit and commuter rail services. It is also the site of the ports of San Francisco and Redwood City, and San Francisco International Airport (SFO). Some of the region's most significant transportation issues are found in this corridor, i.e.:

- o transportation capacity throughout the corridor, both in highway and transit, is severely strained--especially during commute hours--with much of the commuting focusing on downtown San Francisco, SFO, and "Silicon Valley" in northern Santa Clara County.
- o development trends are reinforcing current commuter patterns, indicating that the corridor's transportation system will be even more severely strained in the near future. These trends are associated with continued growth in employment opportunities in downtown San Francisco coupled with a relatively static supply of housing in that city, and large-scale development along the entire extent of the Peninsula east of Route 101.
- o major improvements to highway and transit services will be affected by funding limitations. Significant increases in highway capacities are not likely, due to restricted rights-of-way and environmental problems--especially where the Bay shoreline is involved.
- o air quality is a sensitive issue, as is the Bay shore environment east of Rte. 101.

MTC is currently conducting the Peninsula Route 101 Improvement Study. The Study will identify and evaluate the impacts of development along the Route 101 Corridor from San Francisco to San Jose, and recommend strategies for allevating negative impacts.

MTC policies concerning the future of West Bay transit development, adopted by MTC in 1977, were developed in the MTC Peninsula Transit Alternatives Project (PENTAP). These policies encourage improved fixed rail service, better service for the transit dependent, and the preservation of facilities and options for the long-range expansion and modernization of the transit system.

TRUNK LINE HIGHWAYS

North-South: Routes 101, I-280
East-West: Routes 84, 92, I-380
Connections to East Bay via three bridges: San Francisco-Oakland Bay Bridge, San Mateo, and Dumbarton

TRANSIT SERVICES

Operator	Mode	Service Area
S.F. Muni	buses, trolley coaches, cable cars, and light rail vehicles	San Francisco and portions of northern Daly City
San Mateo County Transit District (SamTrans)	trunk line bus	from various cities to downtown San Francisco, BART stations in Daly City and Hayward
	local bus	through most of the corridor
	Redi-Wheels	curb-to-curb service for elderly and handicapped within the county
Greyhound Lines	trunk line bus	San Francisco to San Jose
Peninsula Commute Service (Caltrain)	commuter rail	between San Francisco and San Jose, stops in intermediate cities
Bay Area Rapid Transit District (BART)	rapid rail transit	from Daly City to San Francisco and East Bay communities
AC Transit	trunk line bus	East Bay to downtown San Francisco

CORRIDOR - WEST BAY

PROPOSAL NO.	IMPROVEMENT PROPOSAL
WB-1	Local Transit (a) Muni The proposals include: more equipment, new and extended routes, transit preferential streets, improvements in management, operations and marketing procedures, subsidized fares and coordination with other transit systems, improvements to downtown circulation of pedestrians, transit and commercial vehicles, and renovation of the cable car system. San Francisco is the region's predominant employment center, and current dependence upon the automobile for work trips has resulted in serious congestion on city streets. Continuing employment growth within the city necessitates transport policies to shift both intercity and intracity travel from automobiles to transit. Sustaining transit service is an objective of MTC's Transit Finance Policy Committee (described in Appendix I). (b) SamTrans The proposals include: acquisition of new buses to bring the fleet up to 336 buses by 1989-90; modification and addition of new routes as warranted; coordination of local and trunk transit systems in the West Bay and Santa Clara Valley corridors; improved accessibility for the elderly and disabled; and construction of two maintenance facilities. Proposals are being implemented as part of SamTrans' Five-Year Plan. The SamTrans Board, in 1981, authorized the collection of a 1/2¢ sales tax for transit support in San Mateo County. Collection of sales tax became effective on July 1, 1982.
WB-2	Trunk Transit (a)Peninsula Commute Service (Caltrain) and Trunk Bus Services The proposals include: (a) upgrading of commuter rail service including improved service in the reverse direction at peak hours, improved off-peak service, improvements to stations and parking facilities and acquisition of new equipment; (b) provision of improved transit service to the Peninsula Commute Service (Caltrain) terminal in San Francisco at 4th and Townsend Streets; (c) supplemental bus service on I-280 and Route 101; (d) improved facilities for bus movement on existing freeways in the corridor; (f) coordination of trunk transit service with local transit systems in Santa Clara and San Mateo counties; (g) provision for public acquisition of the abandoned segment of the SP right-of-way south of Daly City. Possible long-range alternative transportation improvements within an abandoned SP right-of-way include: (a) a BART extension to a location in the vicinity of San Francisco Airport; (b) a rail extension from San Bruno to the BART terminus in Daly City; (c) other fixed guideway transit facilities. These proposals were developed by the PENTAP study, which indicated that the most effective improvements in transit service over the next 20 years would be coordination and integration of existing rail and bus service--with improved responsiveness to the needs of the transit dependent. This approach, along with retention of the SP right-of-way, provides flexibility for adding new facilities in the longer range, as required. A portion of the abandoned right-of-way is under consideration for acquisition for the proposed Daly City Tail Track Project (see WB-2(b)). In July 1980, Caltrans and SP concluded contract agreements to continue existing commuter services between San Jose and San Francisco. MTC has identified and recommended basic improvements to the service to be given high priority for UMTA and state transit funding support. The issue of a permanent downtown station location is being examined as part of the I-280 Transfer Concept Program (see WB-7). A temporary surface extension to the vicinity of the Ferry Building has been considered from time to time, but the approval of Caltrans, city and state PUC has not been obtained. Other issues concern timing, funding, and design of specific improvements.

CORRIDOR - WEST BAY (continued)

PROPOSAL NO.	IMPROVEMENT PROPOSAL
WB-2 (continued)	(b) BART Proposals for BART improvements include: o provisions for a turn-back facility and storage yard at Daly City (Daly City Tail Track Project). o BART extension to location in the vicinity of SF Airport should be a long-range consideration. (See WB-2a.) o system upgrade as described in improvement proposal EB-2. BART has completed environmental work on the Tail Track Project. The tail track will expedite train turn-around at Daly City, leading to reduced East Bay-to-West Bay headways; the storage yard will contribute to more efficient operations. Six tail track alternatives were evaluated. Impacts involve noise and possible displacement of businesses and residences. Construction of the tail track is anticipated in mid-1984; the storage facility is to come later. Other BART projects (see EB-2(a)) will improve service to the West Bay. Extension of BART to a location in the vicinity of the SF Airport is a long-range (Phase IV) possibility in BART's Policy Statement on BART Extensions (April 24, 1980). (c) Trunk Transit in Third Street Corridor, San Francisco Provide trunk transit service to connect with the Geary Corridor, Southern Pacific Station, Transbay Terminal, and Marin ferries; a possible secondary transit route to SFO. No specific proposals are currently defined. Proposed extensive development of the Mission Bay area could have significant impacts on existing transportation facilities and services and could necessitate major new transportation facilities. Existing employment activities and lower income neighborhoods in the corridor would benefit from improved transit service.
WB-3	San Francisco International Airport (SFO) Short-range improvements include improved express bus service from regional transit services and major cities to SFO. Long-range improvements for consideration include: (a) a fixed guideway shuttle connection from upgraded Peninsula Commute Service (Caltrain) to SFO; (b) BART fixed-rail service to SFO. (See WB-2(b)). A multi-agency task force review of potential transportation improvements included recommendations for preferential transit facilities and improved transit information at the airport, and increased ridesharing efforts for airport employees. Preferential transit facilities should be planned in conjunction with reconstruction of the main airport interchange.
WB-4	Regional Transbay Transit Terminal The Transbay Terminal is a major transit transfer facility providing off-street loading and direct access to the Bay Bridge. Transit capital priorities established by MTC for 1983-87 include the Transbay Terminal as one of the projects competing for I-280 transfer funds on the condition that a $20-25 million alternative, which may be an initial phase of a larger phased project, will be developed for consideration. The amount of upgrading at any phase should be consistent with regional priorities for improved transit service to San Francisco, and a reliable assessment of capacity needs of carriers that are prepared to use the facility. The Environmental Impact Statement for this project was approved by UMTA in July 1982.

CORRIDOR - WEST BAY (continued)

PROPOSAL NO.	IMPROVEMENT PROPOSAL
WB-5	Downtown San Francisco Circulation System Improvement

Improve operation of local street system for more efficient downtown circulation of transit, pedestrians and trucks. Proposal includes:

- o improved loading areas for transit patrons and commercial vehicles.
- o transit-preferential treatment on key city arterials.
- o removal of potential conflicts among auto, pedestrian, truck, and transit traffic.
- o development of standards for new construction for improved transit, pedestrian, and truck circulation.

San Francisco has completed a Downtown Circulation Program and a Downtown Transportation Improvement Program. These programs recommend TSM improvements to pedestrian, transit, and commercial vehicle systems. Incorporation of recommended policies, ordinance, and improvements in local plans and programs is essential to improve the efficiency of downtown circulation systems.

WB-6 I-380 Completion

Four-Phase Proposal:

- o reconstruct I-380/Route 101 interchange and provide connector road connecting I-380 southbound with SFO.
- o construct viaduct connecting SFO northbound with I-380.
- o extend I-380 to SFO shop area.
- o construct airport vehicular overcrossing over Route 101 north of Millbrae Avenue.

These four projects are all included in the 1983 STIP. Their completion will provide a direct access to the airport passenger terminal from I-380, as well as provide improved access to the high employment shop area north of the airport. Caltrans has an agreement with the City of Millbrae to delay construction of the overcrossing north of Millbrae Avenue until the city has approved development plans for the lands on the westside of the freeway, and these plans have received environmental clearance.

WB-7 I-280 Transfer Concept Plan

Study and select a mix of transportation projects to improve transportation in the I-280/Embarcadero corridor. Projects to be analyzed include:

- o removal of the Embarcadero Freeway.
- o reconstruction of the Embarcadero through a surface roadway.
- o new on-off ramps for the I-280 Freeway.
- o Muni Metro extension to the SP Depot.
- o Muni E-line streetcar route from Fort Mason to the SP Depot.
- o I-280/Embarcadero Freeway area street and ramp modifications.
- o intercept parking.
- o transportation system management improvements along the northeastern waterfront.

Two related projects were analyzed in separate alternatives analyses:

- o extension of the Peninsula Commute Service (Caltrain) to the vicinity of the Ferry Building.
- o transbay Terminal (see WB-4).

This study is the result of approximately $90 million in Interstate Highway Funds being made available for substitute projects, as a result of the I-280/Embarcadero Freeway connection being withdrawn from the Federal Interstate System. San Francisco, Caltrans, and MTC are jointly sponsoring and participating (through the Interstate 280 Policy Committee) in an EIS of the study area to determine the feasibility and priority of the improvements listed above.

APPENDIX D

SAN MATEO COUNTY
CITY/COUNTY TRANSPORTATION IMPROVEMENT PROGRAM
Revised August 1983
Adopted October 1979

PURPOSE

The overall intent of this program is to develop Countywide consensus on road and transit projects to be funded by State and Federal sources. Consensus is achieved by setting up a yearly process to develop and evaluate proposed projects based on previously agreed-upon criteria. Specifically, the process:

1. Establishes criteria and an evaluation process for ranking City, County, CalTrans and SamTrans proposals to be funded by State and Federal sources under the Federal Aid Urban (FAU), Federal Aid Primary (FAP), and Federal Aid Interstate (FAI) grant programs;

2. Establishes a coordinated set of Countywide projects recommended to the Metropolitan Transportation Commission (MTC) for yearly inclusion into the Regional Transportation Improvement Program (RTIP) and the State Transportation Improvement Program (STIP); and

3. Provides an open, public forum for reaching Countywide consensus on road and transit projects.

PROCEDURES FOR ESTABLISHING PROJECT PRIORITIES

A. ESTABLISHMENT OF FAU PROJECT EVALUATION CRITERIA

   1. The Transportation Improvement Program Technical Advisory Committee (TIPTAC), comprised of one appointed staff representative from each City, the County, SamTrans, and CalTrans, develops sets of criteria and procedures for evaluating and ranking projects by funding program.

   2. Criteria developed by TIPTAC are submitted to city councils for review.

   3. Criteria are forwarded to San Mateo County Regional Planning Committee (RCP) for review and recommendation.

   4. Criteria, along with RPC's recommendations, are forwarded to County Board of Supervisors for approval.

Criteria may be reviewed at the request of a city council, RPC, or the Board of Supervisors. Revision of the criteria must follow the procedures outlined above. The annual ranking process will use the criteria currently in effect, even if revised criteria are under review (but not approved) at the time ranking occurs. The criteria selection process is illustrated in Figure 1.

B. FAU PROJECT RANKING PROCEDURES

1. Each TIPTAC representative develops a list of proposed projects for his city or agency consistent with General Plans.

2. Each TIPTAC representative submits projects for his city or agency to city councils (or the equivalent policy body) for review and endorsement at public meetings.

3. After city/agency approval, project lists are submitted to the County Department of Public Works for compilation and submittal to the TIPTAC, which evaluates projects according to the approved criteria, except for "countywide significance."

4. The preliminary ranking is submitted to the RPC Circulation/Transportation Subcommittee for ranking of the "countywide significance" criterion. The public is invited to submit comments at this meeting.

5. The Subcommittee's ranking of "countywide significance" is submitted to the TIPTAC for incorporation into the overall project ranking and preparation of the project lists.

6. Prioritized project lists are submitted to the RPC for review and recommendation at an open public meeting.

7. With RPC recommendations, project lists are forwarded to the County Board of Supervisors for final approval.

8. The Board of Supervisors recommends project lists to MTC for inclusion into the Regional Transportation Improvement Program (RTIP) and submittal to the California Transportation Commission (CTC) for final selection of projects to be funded.

9. The RPC may appear at public hearings of MTC and CTC to speak in support of the County's project lists.

The project ranking process is illustrated in Figure 2.

C. FAP/FAI PROJECT RANKING PROCEDURES

1. Projects are nominated by TIPTAC representatives, after review and endorsement by their city councils (or equivalent policy body).

2. TIPTAC reviews projects against MTC evaluation criteria and selects projects to be listed in project lists.

FIGURE 1

CITY/COUNTY TRANSPORTATION IMPROVEMENT PROGRAM
PROCESS FOR ESTABLISHMENT/REVISION OF EVALUATION CRITERIA

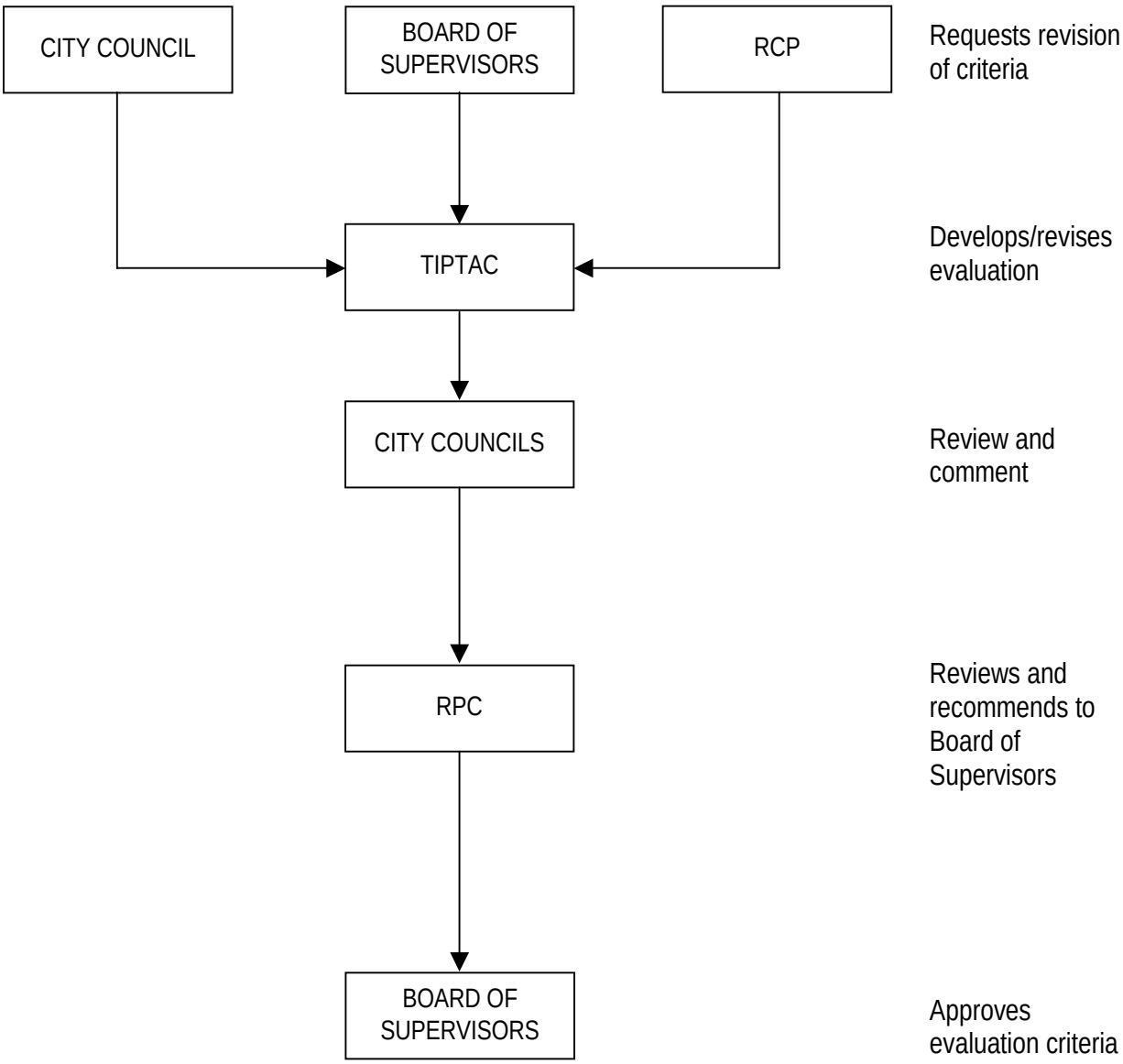
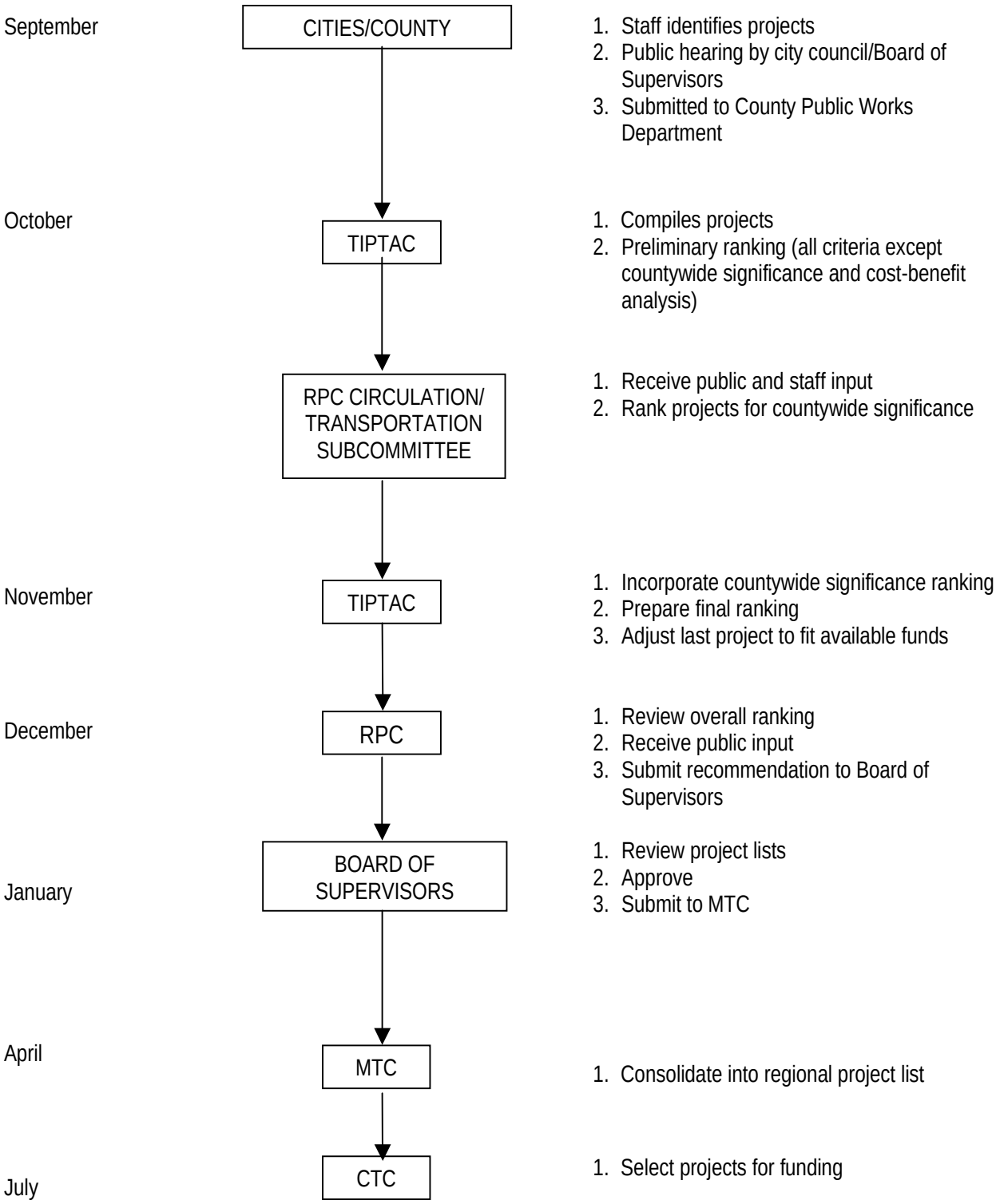


FIGURE 2

CITY/COUNTY TRANSPORTATION IMPROVEMENT PROGRAM
ANNUAL FAU PROJECT RANKING PROCESS



3. Project lists are submitted to the RPC for review and recommendation at an open public meeting.

4. With RPC recommendations, project lists are forwarded to the County Board of Supervisors for final approval.

5. The Board of Supervisors recommends project lists to MTC for inclusion into the Regional Transportation Improvement Program (RTIP) and submittal to the California Transportation Commission (CTC) for final selection of projects to be funded.

6. The RPC may appear at public hearings of MTC and CTC to speak in support of the County's project lists.

Approved by the Board of Supervisors August 2, 1983.

APPENDIX E
SAN MATEO COUNTY ROAD STANDARDS

The following street and road standards were adopted by the Board of Supervisors on June 10, 1976.

1. Urban Public Streets:

TYPE OF STREET	SURFACING AND CURB TO CURB WIDTH	CURBS, GUTTERS AND SIDEWALKS	R/W
Residential one way loop street	A.C. 18'	Curbs and gutters--both sides. Sidewalk one side.	40'
Residential cul-de-sac	A.C. 32'	Curbs, gutters and sidewalks--both sides.	50'
Residential minor street	A.C. 36'	Curbs, gutters and sidewalks--both sides.	50'
Residential collector or minor commercial street	A.C. 40'	Curbs, gutters and sidewalks--both sides.	60'
Major commercial, industrial or arterial street	A.C. 64'	Curbs, gutters and sidewalks--both sides.	80'

Note: Public street standards to be used on all major subdivisions or combination of minor subdivisions when five or more lots or parcels are served by the same street.

2. Urban Private Streets:

SURFACING AND WIDTH	BERMS	EASEMENT WIDTH
A.C. 16'	A.C. berms where needed to control storm runoff.	20'

Note: Private street to be used on either major or minor subdivisions to serve ultimately four or less lots or parcels.

APPENDIX E (continued)
SAN MATEO COUNTY ROAD STANDARDS

3. Rural Public Roads:

TYPE OF ROAD AND POTENTIAL NUMBER AND SIZE OF PARCELS OR LOTS	SURFACING AND WIDTH	BERMS, PATHS OR SHOULDERS	R/W
One-way loop road	A.C. 15'	Berms and one path	40'
Cul-de-sac or minor road--5 to 10 parcels each 20,000 sq. ft. to 5 acres	A.C. 20'	Berms and one path	40'
Cul-de-sac or minor road--5 to 10 parcels each 5 to 40 acres	A.C. 20'	2' rocked shoulders	40'
Cul-de-sac or minor road--more than 10 parcels each 20,000 sq. ft. to 40 acres	A.C. 22'	Berms and one path	50'
Collector road	A.C. 28'	Berms and one path	50'
Major collector road (F.A.S. Standard)	A.C. 34'	Surface width including two 5' pave shoulders	60'

Note: Public road standards to be used on all major subdivisions.

APPENDIX E (continued)
SAN MATEO COUNTY ROAD STANDARDS

4. Rural Private Roads: (to be used on minor subdivisions only as interim access).

TYPE OF ROAD	WIDTHS	BERMS, PATHS OR SHOULDERS	EASEMENT WIDTH
Private road within minor land division (serves 2 through 4 parcels)	16'	1' graded shoulders each side	20'
Private road within minor land division (serves 4 through 10 parcels)	16'	2' rocked shoulders each side with turnouts	50'
Private road within minor land division (with parcels 40 acres or larger)	16'	2' rocked shoulders each side with turnouts	50'
Private access road serving minor division within 500' of public road	16'	1 graded shoulders on each side	50'
Private access road serving minor division more than 500' from a public road	16'	2' rocked shoulders on each side with turnouts	50'

Note: Private roads to be used on minor subdivisions only and shall be surface with 6" Class II aggregate base rock or equivalent, compacted to 95%, with a penetration coat of liquid asphalt.

APPENDIX F

SUMMARY OF TRANSPORTATION POLICIES IN CITY GENERAL PLANS

General Plan for the Development of the Town of Atherton (1976)

The circulation element is concerned with control of traffic speed and truck volume on town streets. Speed limits will be set up as need is shown, and necessary measures will be taken to prevent the use of town streets as thoroughfares.

General Plan, City of Belmont (1972)

Maintaining and improving existing facilities is the main concern of the circulation element. This includes landscaped median strips and left-turn stacking along El Camino Real, redesign of the Ralston Avenue/U.S. 101 interchange, and increased off-street parking and limited access along Old County Road. Development of public transit, paratransit, bicycle facilities, and park and ride stations along the El Camino Real, arterial roads, and collector roads are also encouraged.

Brisbane General Plan Report (1980)

The Brisbane Bayfront Plan recommends that a passenger rail depot be located at Sierra Point. Also, a new freeway interchange has been proposed for this same area; and because of it, a more direct route between Bayshore Boulevard and Sierra Point is needed to facilitate freeway access for Brisbane residents.

Burlingame General Plan (1976)

The main proposals of this plan affecting the Bayshore Freeway are improvements to the interchanges at Millbrae Avenue, Broadway, and Peninsula Avenue. Another proposal is a highway overpass across Bayshore Freeway connecting Hillsdale and East Hillsdale industrial areas. A parkway along the Bayfront connecting Burlingame's Bayside Park with San Mateo County's Coyote Point Park is also recommended. The plan recommends development of a regional rapid transit system, integrated with local transit.

Town of Colma General Plan (1976)

This element recognizes most traffic routes as being adequate. A planned route for rapid transit along El Camino Real has been approved, but no station is needed within the Colma town limits.

Daly City General Plan (1978)

This plan states that more SamTrans routes are needed, the County and City bicycle plans need to be integrated, and use of the Southern Pacific Railroad line is infrequent. But, the major problems for Daly City are the congestion

and parking problems resulting from the BART system. The plan asks for increased parking around the BART station, the introduction of a residential permit system that will reduce congestion and improve safety, and expanded mass-transit systems from adjacent communities.

East Palo Alto Community Plan (1982)

East Palo Alto proposes reducing congestion and improving safety at the University Avenue/Highway 101 interchange area by modifying the interchange. The construction of a southern connector from Dumbarton Bridge to Highway 101 has also been proposed. Transit policies call for bus service to Ravenswood Industrial Park when new development there warrants it.

Foster City Land Use and Circulation Element (1974)

This element calls for coordinating and integrating the Foster City circulation system with the regional one by creating additional access points, such as the Edgewater Boulevard/State Route 92 interchange and the southerly extension of Edgewater Boulevard to connect with U.S. 101. Additional study is requested for proposed access points, and the widening of existing Edgewater Boulevard will probably be necessary to accommodate the traffic volume increases caused by these new access routes.

Half Moon Bay Local Coastal Plan (1983)

Half Moon Bay recognizes that limited road capacity is a constraint to additional development. Therefore, they have recommended improvements to Highways 1 and 92. These improvements include phased increases in capacity accomplished through widening of these highways, safety improvements on Highway 92, and construction of the Devil's Slide bypass. The City also encourages SamTrans to provide weekend arterial bus service to Half Moon Bay State Beach and to consider a downtown-beach shuttle service during times of peak visitor attraction.

Hillsborough General Plan (1972)

Although the Hillsborough General Plan predicts population density increases, it does not call for any notable alterations of the existing street system plan. Special emphasis is placed on discouraging through traffic in Hillsborough whenever possible.

Menlo Park Comprehensive Plan (1974)

The Menlo Park circulation element calls for extensive changes in the present roadway system. Of major importance is the construction of the new Dumbarton Bridge with three western approaches--Marsh Road, Willow Road, and University Avenue--all of which will need to be improved to handle bridge approach traffic. Menlo Park would also like to relieve traffic congestion on El Camino Real by channelizing traffic by left turn phasing and storage at all presently signalized intersections except Santa Cruz Avenue. Improvement in the Ravenswood Avenue/El Camino Real intersection is also recognized as necessary.

Menlo Park stresses that an aerial BART line is not desirable, and if extension of BART is made into Menlo Park, it should be underground and should not be a terminus station.

Millbrae General Plan (1974)

Besides encouraging regional mass transit, this plan pertains only to local circulation objectives, policies, and recommendations.

Pacifica General Plan (1980)

This plan includes the following proposals: provide a safe alternative to the Devil's Slide Route; provide operational and safety improvements in the Sharp Park area which include intersection studies along Highway 1, and pedestrian/bicycle access along Highway 1 and Sharp Park Road; and improve the San Pedro/Highway 1 access or to realign the Linda Mar intersection to include access to Pedro Point.

Portola Valley General Plan (Amended Through 1980)

Portola Valley is very concerned about maintaining the natural beauty of that area, and preventing heavy through traffic is one way to do this. The plan specifies that Alpine Road and Skyline Boulevard should remain two-lane facilities within the town limits. It also recommends that Alpine Road south of Ciervos Road be closed to all but emergency traffic. The only new collector proposed is a loop road which connects to Alpine Road on either side of Junipero Serra Freeway and serves the Webb Ranch area.

Redwood City Comprehensive General Plan (1975)

This circulation element states that no more through automobile traffic corridors should be built in Redwood City. Existing arterials should be improved by modifying channelization and signal timing along El Camino Real and Woodside Road, and by upgrading the Woodside Road/Bayshore and the Whipple Avenue/Bayshore interchanges. It is also proposed that Harbor Boulevard be widened to provide access for trucks going from Bayshore Freeway to the Port of Redwood City. Redwood City also proposes a rail rapid-transit terminal as part of a system along the existing Southern Pacific Railroad right-of-way.

Circulation Element of the San Bruno General Plan (1983)

The Circulation Element of the San Bruno General Plan contains policies which identify specific improvements to major streets and intersections which are anticipated to meet growing traffic demand in the city. The plan encourages use of alternative transportation modes, upgrading of the Peninsula Train service, and establishment of a city policy on a BART extension.

General Plan for the City of San Carlos (1978)

This element calls for grade separation of the two railroad crossings at Holly and Howard Avenue; upgrade of the approaches on Crestview Drive at Edgewood Road; the provision of a connection from Crestview Drive to the I-280 Vista Point; and modifying signaling, parking, and number of lanes on major and secondary streets.

San Mateo General Plan (1981)

The San Mateo plan contains a listing of major street improvements needed, including improving intersection capacity along El Camino Real by removing parking at key locations; widening sections of Hillsdale Boulevard, including the bridge across Marina Lagoon; encouraging the completion of the U.S. 101/Highway 92 interchange; and improving the Fourth Avenue on-ramp and freeway overpass.

In other divisions of the circulation element, San Mateo proposes a City transit terminal to be located on the north block of First Avenue, using land owned by Southern Pacific Transportation Company. The plan also recommends upgrading El Camino through sign control, tree planting, median strips, and landscaped setbacks.

Circulation and Transportation Elements of the South San Francisco General Plan (1982)

Many changes in the South San Francisco road system are proposed in this plan. Major improvements to all three interchanges with Highway 101, the extensions of both North Canal Street and Hillside Boulevard to meet Airport Boulevard, improvements to El Camino Real and all thoroughfares feeding into it, and the extension of Hickey Boulevard to Hillside Boulevard are the main changes to be made in the near future. Under the heading of transit, this plan supports the construction of a fixed rail rapid transit facility as well as the improvement and expansion of SamTrans bus service throughout the community.

Woodside General Plan (1976)

The Woodside plan calls for no substantial road widening and no significant new road construction until new development warrants it. It does call for improved circulation in the town center.

APPENDIX G

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on February 20 and March 7, 1985, the following background data was added to the Transportation Chapter.

A. HIGHWAY IMPROVEMENTS

Appendix C of the Transportation Chapter is an excerpt from the Metropolitan Transportation Commission's 1983 Regional Transportation Plan (RTP), which contains priorities for highway and transit improvements in the Bay Area by transportation corridor. The corridors which cover San Mateo County are San Mateo Coast (SM) and West Bay (WB). The Regional Transportation Plan is MTC's basic statement of transportation policy. Highway 92 is included in the RTP as proposal SM-4, which calls for operational and safety improvements between Interstate 280 and Highway 1, including curve straightening, grade reduction, intersection improvements, bus and truck climbing lanes and turnouts, lane widening, shoulder improvements, and signals.

Specific proposals are programmed for funding in the Transportation Improvement Program (TIP), which covers a five-year period and is updated annually. MTC's 1985-1989 Transportation Improvement Program, adopted in September 1984, includes improvements to the segment of Highway 92 between Route 1 and Skyline Boulevard, including slow vehicle lanes, to be constructed during 1986-87 and to the segment between Interstate 280 and Skyline Boulevard, to be constructed during 1988-89.

B. UPDATING BACKGROUND INFORMATION

1. Peninsula Mass Transit Study

Also known as the SCR 74 Study, the Peninsula Mass Transit Study was mandated by the State Legislature in 1984. MTC was directed to develop a mass transit plan for the San Francisco-San Jose corridor, in cooperation with transit operators and local governments, and to submit it to the Legislature by March 1, 1985. The study would identify the route, type of vehicle, operational characteristics, and institutional and financial arrangements for implementing a rail transit service along the Peninsula corridor.

Under the overall direction of the PENTAP Committee, MTC staff and consultants have identified eight alternative plans (with a number of subalternatives) for analysis. These include the status quo; transportation systems management actions; minimum rail extensions (BART to Colma, Caltrain to Transbay Terminal and a new station in San Jose); extension of BART to San Jose; a light rail system between San Francisco and San Jose; electrification of the Caltrain service; exclusive bus lanes along the Southern Pacific right-of-way; BART to the airport and light rail to San Jose; and BART to the airport and Caltrain to

San Jose. The consultants have produced estimates of patronage and capital costs for each alternative. MTC staff has recommended that a Joint Powers Agency be formed on the Peninsula, comprised of existing transit operators, in order to acquire the Southern Pacific right-of-way and to conduct additional long-range transit planning.

2. Caltrain Service

The background information in the chapter on the Caltrain service should be updated as follows: the Butler Road station in South San Francisco has been closed, leaving 14 stations in San Mateo County; 63 new gallery cars and 18 new locomotives are on order, delivery will begin in 1985, and the older equipment will be retired; the Project Management Committee, which coordinates the service also includes a representative of the Southern Pacific Company.

3. Bus Service to South Coast

The chapter indicates that bus service is not available to the South Coast (page 12.51). Since the time of writing, SamTrans has initiated limited service to Pescadero on Route 90C.

4. Nolte Study

The background information does not mention the City-County Highway Plan for San Mateo County, prepared by George S. Nolte Engineers in 1962. This plan set forth a phased program of highway improvements in the County, based on city and County master plans of that time.

13

Solid Waste

Background ▪ Issues

SOLID WASTE BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

Californians produce over 51 million tons of solid waste a year. Of this, 46 million tons are non-hazardous (from municipal, agricultural, silvicultural and other sources), and five million tons are hazardous (from chemical and industrial firms).[1] If left uncontrolled, these wastes could threaten public health and safety and impair environmental quality. Additionally, the economic value of the recoverable portion of these wastes is substantial. To deal with the potential health and safety threats and to minimize the loss of resources inherent in the disposal of wastes, it is necessary to manage solid waste disposal.

This Chapter of the General Plan: (1) inventories the solid waste facilities in the unincorporated areas of San Mateo County, (2) reviews the adequacy of these facilities to meet projected demands for solid waste disposal, (3) reviews opportunities and constraints in meeting solid waste disposal needs, and (4) provides techniques to mitigate the environmental impacts of utilizing solid waste facilities, and provides for the efficient disposal of solid waste in unincorporated areas.

B. STATE PLANNING LAW

1. Designation of Waste Disposal Facilities

State planning law requires that waste disposal facilities be designated in the General Plan. Specifically, Section 65302(a) of the Planning and Zoning Law requires the Land Use Element designate "the proposed general distribution and general location and extent of the uses of the land for . . . solid and liquid waste disposal facilities. . . ."

2. Consistency Requirements

Prior to the issuance of a Solid Waste Facilities Permit by the State Solid Waste Management Board, the county or city in which the facility is or will be located must make a finding that the facility is consistent with its General Plan (Government Code Sections 66784.1(a) and 66784.1(b)). The finding can only be made if the city or county has adopted an adequate general plan and has determined that: (1) the site is designated in the applicable general plan as a site for a solid waste facility or as a potential site for a solid waste facility; and (2) the land uses authorized adjacent to and near the site are compatible with the establishment or expansion of the site. As a result of these requirements, general plans play a critical role in determining where solid waste facilities may be located and in ensuring that surrounding land uses remain compatible.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing General Plan Documents

a. Land Use Element

In 1977, the Board of Supervisors adopted the San Mateo County Solid Waste Management Plan (CoSWMP) as a part of the Land Use Element of the San Mateo County General Plan.[2] The 1977 CoSWMP will be superseded by a 1984 edition. It is intended that the 1977 CoSWMP be removed from the County's Land Use Element, because the scope of the CoSWMP is broad, encompassing topics over which the General Plan has no authority. Relevant policies of the CoSWMP have been incorporated into this Chapter.

b. Local Coastal Program

The 1980 Local Coastal Program (LCP) includes policy and background text for various public works facilities, including solid waste. The two solid waste facilities located within unincorporated areas, Ox Mountain and Pescadero landfill, are located within the Coastal Zone and are subject to LCP policies. This Chapter of the General Plan draws on information contained in the LCP.

2. Other Sections of the General Plan

Planning issues related to hazardous wastes are contained in the Man-Made Hazards Chapter.

D. RELATION TO OTHER COUNTY PLANS

1. The County's Revised Solid Waste Management Plan 1984 (CoSWMP)

Government Code Section 66780 requires each county to prepare a solid waste management plan for all waste disposal within its boundaries (countywide). The State Solid Waste Management Board is prohibited from approving a solid waste management plan, revision or plan amendment unless the city or county in which a solid waste facility or potential site has been designated makes a finding that the plan is consistent with its general plan. This Chapter of the General Plan is consistent with and draws directly on information contained in the 1984 edition of the CoSWMP.

E. DEFINITIONS

The following are definitions of some of the solid waste terminology used in this report:

BUFFER LANDS - Land uses which protect public safety and provide sufficient distance and screening between solid waste disposal activities and incompatible land uses.

RESOURCE RECOVERY - The reclamation or salvage of wastes for reuse, conversion to energy or recycling.

SANITARY LANDFILL - A site where solid waste is disposed of employing an engineered method by spreading solid waste, compacting to the smallest practical volume and applying cover material over all exposed wastes at the end of each operating day.

TRANSFER STATION - An intermediate waste handling facility where solid wastes are transferred from hauling vehicles to a transfer vehicle and where the waste or portion thereof may undergo incidental processing, recycling or further handling before transport to a disposal site, waste processing facility, or other facilities.

WASTE-TO-ENERGY FACILITY - A facility where energy is recovered from solid waste for reuse including but not limited to facilities where the processes of bioconversion, thermochemical conversion and photochemical conversion are employed.

II. EXISTING SOLID WASTE MANAGEMENT SYSTEM

A. GENERATION AND COLLECTION OF SOLID WASTE

It is estimated that the typical household in San Mateo County (2.55 persons/residence) produces over one ton of residential wastes per year.[3] By weight, the following is an estimate of the composition of solid waste in San Mateo County: yard and garden, 14%; glass, 8%; newsprint, 8%; corrugated, 5%; ferrous metals, 5%; plastics, 4%; aluminum, 1%; and organics which include other paper, food, wood and lumber, textiles, rubber and leather, and miscellaneous other materials, 55%.[4]

Solid waste produced in San Mateo County is for the most part disposed of within the County area. The bulk of municipal wastes, both residential and commercial, is collected by six scavenger companies which have collection franchises within nineteen cities, three sanitary districts and the County (for East Palo Alto and for the South Coastside area). Generally, existing franchises are long-term and renewable. All give exclusive rights for residential pickup; most include exclusive rights for commercial pickup.

Garbage collection service is available throughout the County except in the most sparsely populated portion of the South Coastside. Subscription to this service is mandatory in virtually all the cities in the County except Colma. It is also mandatory in the unincorporated areas where service is available. The frequency of service under all franchises is once a week. Unincorporated areas are served under franchises issued either by sanitary districts or the County, or are served and charged on the basis of comparability to adjacent cities.

B. INVENTORY OF EXISTING SOLID WASTE LANDFILL OPERATIONS

There are two solid waste disposal facilities located within unincorporated areas. The principal one is the Ox Mountain landfill. The other is a small landfill located near Pescadero. Both of these solid waste disposal sites are located within the Coastal Zone and are shown on the Solid Waste Facilities map (page 13.5).

1. Ox Mountain Landfill

The main solid waste disposal site for San Mateo County is located north of Highway 92 three miles east of Half Moon Bay within the 2,183 acre Ox Mountain Ranch property.[5] This property is owned by Browning-Ferris Industries (BFI). In 1976, the San Mateo County Board of Supervisors signed an agreement with BFI to allow the Company to operate this landfill on Company property at Ox Mountain.[6] A number of other landfill disposal facilities throughout the County have been phased out, and almost all solid waste generated within San Mateo County will be disposed of at the large Ox Mountain landfill operation.[7] The Ox Mountain landfill serves the Coastside as far south as Lobitos Creek and most Bayside Cities.[8] The first phase, which is underway, is the filling of the Corinda los Trancos Canyon. A future phase is the filling of the Apanolio Canyon.

a. Corinda los Trancos Canyon

About 140 acres of the Ox Mountain Ranch is used for the Corinda los Trancos sanitary landfill operation (includes a disposal access road, excavation areas, silt settlement pond and creek diversion). Of this operational acreage, the actual landfill site covers 60 acres. The total capacity of this landfill is 3.2 million tons.[9] Presently approximately 1.5 million tons of landfill are in place, leaving a remaining capacity of approximately 1.7 million tons.[10]

b. Apanolio Canyon

About 320 acres of the Ox Mountain Ranch will be used for the Apanolio Canyon sanitary landfill operation (includes a disposal access road, excavation areas, silt settlement pond and creek diversion). Of this operational acreage, the actual landfill site covers 285 acres. Almost all solid waste generated within San Mateo County is proposed to be disposed of at Apanolio Canyon, beginning in approximately 1990, when the Corinda los Trancos facility is expected to reach full capacity. The total capacity of this landfill is 42.5 million tons.[11]

c. Highway Access to Ox Mountain Landfills

(1) Traffic Patterns and Roadway Capacity

Highway 92, a primary route for commuter and recreational traffic, provides access to the Ox Mountain sanitary landfill.

13.1M

SAN MATEO COUNTY GENERAL PLAN

SOLID WASTE FACILITIES

(IN UNINCORPORATED AREAS)

EXISTING AND APPROVED SOLID WASTE OPERATION

AREA FOR SOLID WASTE FACILITY (Approximate Location)

0 4000 8000 16000 32,000 FEET

99 320 ac

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

APANOLIO CANYON LANDFILL

CORINDA LOS TRANCOS LANDFILL

PESCADERO LANDFILL

SAN FRANCISCO BAY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

BRISBANE
SIERRA POINT
OYSTER POINT
SAN FRANCISCO INTERNATIONAL
POINT SAN BRUNO
MUSSEL ROCK
PACIFICA
MORI POINT
POINT SAN PEDRO
COYOTE POINT
FOSTER CITY
HILLSBOROUGH
MONTARA POINT
REDWOOD CITY
REDWOOD POINT
RAVENSWOOD POINT
PALO ALTO
MENLO PARK
PILLAR POINT
MIRAMONTES
EEL ROCK
SEAL ROCK
PORTOLA VALLEY
SAN GREGORIO RANCHO
PESCADERO POINT
BOLSA POINT
PIGEON POINT
FRANKLIN POINTS
AÑO NUEVO POINT

The two-lane road is generally narrow and curvy, with steep grades, particularly between Highway 280 and Skyline Boulevard. According to the 1983 EIR for the Apanolio Canyon Expansion, Route 92 experiences significant peaks in travel demand due to its use as a commute route Monday through Friday and as a recreational route on weekends and holidays. Travel is predominantly eastbound (toward San Mateo) on weekday mornings and predominantly westbound (toward Half Moon Bay) on weekday afternoons. The peak hour of a.m. traffic typically occurs between 7:00 to 8:00 a.m., while the p.m. peak hour typically takes place between 5:00 to 6:00 p.m. On Saturdays and Sundays, the peak hour of westbound (toward the beaches) traffic typically occurs in the early afternoon (1:00 to 2:00 p.m.), while the peak hour of eastbound traffic typically takes place in the late afternoon (4:00 to 5:00 p.m.).[12]

The capacity of Route 92 between Pilarcitos Creek and Crystal Springs Reservoir is estimated to be approximately 1,400 passenger car equivalent (pce) vehicles per hour in each direction.[13] Existing eastbound volumes on weekday mornings nearly reach the roadway capacity. Eastbound volumes during other time periods, however, are well below the roadway capacity. Westbound volumes approach the capacity of the roadway during the p.m. peak hours but are well below it during the remaining time periods.[14]

According to the project EIR, under existing roadway conditions, by 1990, weekday traffic on Highway 92 during critical commute hours (7:00-8:00 a.m. eastbound and 5:00-6:00 p.m. westbound) will exceed highway capacity, a situation characterized by low speeds, long stoppages, zero flow at times and overall congestion. Without roadway improvements, this situation will worsen so that by the year 2020, traffic volume is projected to exceed road capacity by 50-60%.[15]

(2) Refuse Truck Traffic and Passenger Car Activity

In addition to the commute and recreational traffic which is responsible for the peaks in traffic volumes on Route 92, the road is also an important truck route. In 1981, trucks constituted approximately 3.9% of the average daily traffic volume of State Route 92 just east of Half Moon Bay, and approximately 11.2% of the volume just west of the summit of Skyline Boulevard. The larger percentage of truck traffic just west of Skyline Boulevard is due primarily to truck traffic joining the highway from the Pilarcitos Quarry and from the Ox Mountain sanitary landfill.[16]

As the Bayside landfills are phased out, Route 92 will increasingly carry more transfer truck traffic to Ox Mountain.[17] Transfer trucks are large (typically 60 feet in length), heavy trucks which carry refuse from local transfer stations to

landfill sites. Transfer trucks are able to carry four to five times the volume of collection trucks, and thus consolidate four or five collection vehicle trips into one transfer truck trip.

When the Apanolio Canyon landfill begins operation in 1990, approximately 76 transfer trucks (weighing 26 tons) will cross Highway 92 from Bayside transfer stations. This number is projected to increase steadily to 116 trucks per day by 2030 to 2040 when the project is complete.[18]

The current operating conditions governing the Corinda los Trancos landfill restrict the times when refuse trucks are permitted to enter or leave the site. Restrictions are applied during morning and evening commuter peak periods. Also, refuse trucks are not permitted on Sundays.[19] The purpose of these conditions is to reduce conflicts with commuter and recreational traffic on Highway 92. Similar conditions are incorporated in the Apanolio Canyon use permit.

(3) Proposed Improvements to Highway 92

Caltrans has proposed an improvement program for Highway 92. Among the requested improvements are a continuous truck climbing lane in the eastbound direction between Highway 1 and the Skyline Boulevard summit, and a passing lane in the westbound direction between I-280 and the summit. Additionally, several spot improvements such as left turn lanes and deceleration lanes have been proposed to provide safer access to businesses along Route 92 east of Half Moon Bay.[20]

The State Transportation Improvement Program adopted by the California Transportation Commission (CTC) in June 1983, allocates $10 million for the improvements between Highway 1 and the Skyline summit. Funding for the improvements between Skyline and I-280 is being recommended to the CTC for future consideration. Pending detailed feasibility studies, environmental review and permit approvals, construction is likely to begin in 1987 or 1988.[21]

With proposed improvements in place, the capacity of Highway 92 is estimated to increase from the existing 1,400 passenger car equivalent to 2,400 pce.[22] Under this scenario, use of the roadway will increase due to population growth on the Coastside; however, eastbound traffic volume during commute hours will not approach roadway capacity until the year 2020, and westbound traffic volume will remain below this standard through the year 2040.[23]

2. Pescadero Landfill

The Pescadero landfill is a County-owned, contractor-operated facility serving the Coastside south of Lobitos Creek and east to Skyline.[24] In 1975, the County replaced its small Pescadero Dump along Pescadero Road with this modern landfill which is located on a 50-acre site on Bean Hollow Road.[25] The total capacity of this landfill is 430,000 cubic yards.[26] Presently approximately 50,000 cubic yards of landfill are in place leaving a remaining capacity of approximately 380,000 cubic yards.[27] The Pescadero Solid Waste Disposal Site serves only the sparsely populated South Coastside area and receives one truckload of scavenger-collected waste per week.[28]

C. INVENTORY OF EXISTING RESOURCE RECOVERY OPERATIONS

Resource recovery in the County generally falls into three categories: methane recovery, materials recovery, and energy recovery.

1. Methane Recovery

Methane recovery is the process whereby methane gas, a product of organic decomposition, is extracted from the landfill for use as an energy source. The City of Menlo Park took the lead in San Mateo County in effectuating a program for the recovery of methane gas from a sanitary landfill. In April 1982, the City entered in a 20-year contract with Gas Recovery Systems, Inc. which is currently extracting 850,000 to 1 million cubic feet of gas per day and converting it to 1,000 KW of electricity.[29]

Browning-Ferris Industries, pursuant to its operating agreement with the County of San Mateo for the Ox Mountain sanitary landfill, has engaged a consulting firm to investigate the possibility of extracting methane gas from the Corinda los Trancos Canyon portion of Ox Mountain. Methane gas extraction wells are being placed in the landfill and will be available when and if gas recovery becomes economically feasible.

2. Materials Recovery

As the name implies, this category of resource recovery conserves raw materials by recycling them for either reuse or reformulation into other products. Energy usage is also reduced since recycling materials such as glass and aluminum requires only a fraction of the energy used to convert raw ores into finished products. By generating less wastes, landfill usage is also conserved.

Currently within the County, materials recovery is generally achieved by three different methods. Refuse collection companies located in South San Francisco, San Bruno and Daly City hand sort recyclable materials at their transfer stations. Activity is mainly limited to the separation of corrugated cardboard from cardboard rich commercial loads and collection of bundled newsprint. One collection company separates out tin

cans and other ferrous metals. BFI expects to increase their hand sorting of recyclable materials at their new San Carlos transfer station.

The second method of recovering materials within the County consists of recyclable material collection at industrial and volunteer oriented recycling centers. The industry sponsored centers generally specialize in either aluminum collection (Coors, Reynolds and Budweiser) or paper collection (Paper Recovery, Inc.). The citizen and government sponsored centers generally collect a wide spectrum of recyclables, including glass, tires and used oil.

Recently, curbside recycling has been initiated as the third method of material separation within the County. During 1982, the Cities of Menlo Park and Atherton joined in a curbside program. Collected materials are taken to the Marsh Road Recycling Center for processing. During 1982, the project was serving approximately 15,500 dwellings.[30]

According to data presented in the 1984 edition of the CoSWMP, there were 15 recycling depots and one curbside collection program within San Mateo County in 1983, allowing for the recovery of approximately 4-5% of the County's residential and commercially generated waste.[31] Approximately 30% of the aluminum, 15% of the corrugated cardboard and 5% of the ferrous metals were being recovered. Less than 5% of the glass and newsprint was being salvaged.[32] Within the unincorporated areas, the Ox Mountain landfill provides a recycling station for aluminum and newspapers.

3. Energy Recovery

Energy recovery is the process of using solid waste as a fuel to generate energy. The conversion of municipal solid wastes, sewage sludge, industrial wastes and agricultural residues to environmentally acceptable forms of usable fuel and/or energy can be and have been accomplished in a variety of ways. The majority of these methods may be classified into the three general groupings of bioconversion, thermochemical conversion and photochemical conversion. Bioconversion embraces the technologies of composting and anaerobic digestion as the most common forms. Thermochemical conversion includes direct combustion, liquefaction, gasification and pyrolysis. Photochemical conversion processes are primarily those that involve photo-electrolysis.

Currently there is one small waste-to-energy plant located in San Mateo County. A pilot pyrolysis plant at the Port of Redwood City has been constructed by Pyro-Sol, Inc., to process a maximum of 100 tons of refuse per day, derived from an adjacent scrap metal processing plant. Additionally, the City of San Francisco is discussing with the Port of Redwood City the possibility of locating a refuse-to-energy plant at the port. This project, however, is still in the preliminary discussion stage.[33]

D. SOLID WASTE DEMAND

1. Countywide Demand Projected by 2000

Using projected annual solid waste production figures as contained in the 1984 edition of the CoSWMP, by 2003 the population of San Mateo County will be generating approximately 945,000 tons of solid waste per year.[34] Of this waste generated, it is estimated that 834,000 tons will require disposal. Approximately 36% will be from residential uses, 31% from commercial uses, 23% from special uses, 8% from industrial uses and 2% from agricultural uses.[35]

2. Possible Importation of Solid Waste From San Francisco

San Francisco, because of its small geographic size and density of population, has no landfill sites within its borders. It must rely on other jurisdictions to provide landfill capacity. Thus, a critical solid waste issue in the greater San Francisco area involves the disposal of more than 2,000 tons per day of scavenger-collected refuse that is produced in San Francisco.[36]

For the period from November 1, 1983, to October 31, 1988, San Francisco has obtained the use of the Altamont landfill in Alameda County.[37] San Francisco's plans for the period after 1988 appear indefinite. The City is reportedly investigating all options, some of which may impact San Mateo County. The possibilities include an energy recovery facility somewhere in San Mateo County and the use of the Ox Mountain sanitary landfill either for the residue from such a resource recovery facility or for the full 2,000 tons per day of solid waste production.

3. Capacity of the Ox Mountain Landfill

It is projected in the 1984 edition of the CoSWMP that the first phase of the Ox Mountain site (Corinda los Trancos Canyon) can accommodate Countywide demand until 1989. It is projected that the second phase of the Ox Mountain site (Apanolio Canyon) can accommodate Countywide demand until approximately 2039, assuming Ox Mountain's service area is not expanded to serve areas outside the County and resource recovery programs remain stable. In the event San Francisco's waste is deposited at Ox Mountain, Apanolio Canyon landfill is projected to reach design capacity by 2020.[38]

4. Capacity of the Pescadero Landfill

The 1972 environmental impact report for the Pescadero landfill projected that the population of the service area would grow from 2,500 in 1970 to 10,000 in the year 2000. Residential waste, plus waste from State beaches, parks and agriculture was projected to reach a cumulative total of 439,000 cubic yards in 1990. This would be slightly over the capacity of the landfill. The Public Works Department reported in 1980 that the current rate of increase for solid waste at that time was far below the EIR projection and, barring a sudden growth surge for the

area, the Pescadero facility would have sufficient capacity until 2025, at the existing rate of growth.[39] However, according to the Public Works Department, extending the use of the landfill beyond 1986 or 1987 will require major improvements to the existing landfill.[40]

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING SOLID WASTE DISPOSAL ACTIVITIES

A. FEDERAL AND STATE

Numerous Federal, State and regional agencies are involved either directly or indirectly in solid waste management. The more significant agencies dealing with the regulation of disposal activities in San Mateo County are outlined on Table 13.1.

B. REGIONAL

According to the 1980 Association of Bay Area Governments (ABAG) Regional Plan, the basic solid waste management problem in the Bay Area is that most refuse is buried instead of conserved and recycled, and that recoverable energy is lost. While landfilling of solid waste has been the easiest and least expensive method of waste disposal in the past, the plan asserts that this method will become more and more expensive as existing landfills close and new sites must be located at greater distances. In particular, the Regional Plan suggests that removing materials for reuse before landfilling can extend the life of existing landfills and reduce the quantities of waste that have to be trucked to distant sites. Emphasis is on inexpensive source separation recycling measures.[41]

C. COUNTY

1. General Plan Policies

a. Land Use Element

The 1976 Solid Waste Management Plan designated the Planning Department and Planning Commission as having the responsibility of maintaining the Solid Waste Management Plan as an element of the County General Plan insofar as the plan relates to the unincorporated area. With respect to the Corinda los Trancos Canyon, the plan calls for continuing development subject to conditions of the use permit and related agreements between the owner and the County Board of Supervisors. The plan establishes Pescadero and Ox Mountain as long-term solid waste disposal sites.

b. Local Coastal Program

Because both solid waste facilities within unincorporated areas are located within the Coastal Zone, they are subject to compliance with the County Local Coastal Program. The LCP acknowledges Ox Mountain (including the Apanolio Canyon expansion) and Pescadero as solid

TABLE 13.1

FEDERAL, STATE AND REGIONAL AGENCIES MANAGING SOLID WASTE DISPOSAL

AGENCY	SUMMARY OF PROGRAMS AND ACTIVITIES
Federal	
Environmental Protection Agency	The Resource Conservation and Recovery Act created the Office of Solid Waste within EPA. This Act directs EPA to characterize and identify hazardous wastes, and directs the states to develop and implement a State Plan in regard to both solid waste and hazardous waste management. It also directs the states to identify open dumps and to take appropriate corrective actions.
U.S. Army Corps of Engineers	Requires a permit for the discharge of fill material affecting any U.S. waters.
U.S. Department of Agriculture	Regulates disposal of pesticides.
State	
State Solid Waste Management Board	Lead State agency for solid waste management. Sets State policy in the form of the State Solid Waste Management Plan, establishes state-wide standards for disposal and handling of solid wastes, reviews solid waste facility permits, and oversees local Solid Waste Management Plans.
State Water Resources Control Board	Has jurisdiction over solid waste disposal operations that may impact water quality.
Department of Health Services	Oversees vector and odor control standards for landfill operations, and requires a Hazardous Waste Disposal Facility Permit if hazardous wastes are involved.
California Department of Forestry	Issues permits for rubbish dumps and forest product/woodwaste disposal in unincorporated areas, for purposes of fire prevention.

TABLE 13.1 (continued)

FEDERAL, STATE AND REGIONAL AGENCIES MANAGING SOLID WASTE DISPOSAL

AGENCY	SUMMARY OF PROGRAMS AND ACTIVITIES
State	
Department of Food and Agriculture	Oversees pesticide disposal.
Department of Transportation	Responsible for control of litter and hazardous material spills along State highways.
State Air Resources Board	Sets air quality, emissions standards, and model rules for Air Quality Management Districts.
Department of Fish and Game	Enforces requirements for solid waste disposal activities affecting streambeds and/or lakes, and recommends ways to minimize impacts.
Regional	
Bay Area Regional Water Quality Control Board	Develops waste discharge requirements and specifications designed to address present and future protection of ground water quality, and establishes disposal site classifications.
Bay Area Air Quality Management District	Implements local air quality controls and issues permits for activities that may result in air pollution.
Association of Bay Area Governments	Through its 1976 Environmental Management Plan, addresses solid waste problems in the San Francisco Bay region, sets forth actions to meet Federal and State standards and laws, and recommends specific policies with regard to municipal waste management.

waste disposal facilities. Policy 2.47 of the Public Works Component is the only policy in the LCP that directly relates to Solid Waste Management. This policy: (1) requires the monitoring of traffic on Highway 92, including the effects of truck traffic; (2) requires the expansion of the period when trucks are prohibited if this is shown to be necessary to serve commuter traffic; and (3) encourages the reduction of solid waste requiring transportation and disposal at Ox Mountain through techniques such as front-end materials separation at bayside transfer stations.

The current operating agreement between the Board of Supervisors and the San Mateo Scavenger Company (BFI) states that recovery of usable materials or by-products should be implemented if economically feasible. To implement this policy, in 1982, the Planning Commission conditioned the Corinda los Trancos use permit to require that the applicant investigate and report upon the practicality of on-site and off-site material, energy, and methane recovery, and that these reports be prepared in accordance with specific guidelines adopted by the Planning Commission and submitted biennially to the County, to the satisfaction of the Planning Director. The resulting report, San Mateo County Resource Recovery Options Assessment, prepared by Cooper Engineers, was published in December 1983.

2. Other County Policies and Programs

a. 1984 Edition of the County Solid Waste Management Plan

The basic goal of the 1984 edition of the San Mateo County Solid Waste Management Plan is to provide management of solid waste in the most efficient and economic manner which will protect the public health, reduce waste generation and provide for maximum resource recovery. The long and medium range objectives of the Plan are:

(1) to manage solid wastes in such a way as to maximize energy conservation and protection of the environment;

(2) to reduce to a minimum the dependence on landfills by promoting recycling, resource recovery and reduction of residential and commercial wastes;

(3) to effect the recovery of by-products from solid waste and provide for the timely utilization of technological advances in the fields of materials recovery and energy recovery; and

(4) to provide long-term landfill disposal capability for non-recoverable wastes.

The Plan states that solid waste will be delivered to Ox Mountain from the new transfer-processing facility in San Carlos, as well as the three existing transfer facilities in the North County. According to the Plan, refuse collected on the Bayside will be taken to the transfer station, compacted and put in large trucks, which will

haul the material to the Ox Mountain disposal site. The Apanolio Canyon landfill will ultimately serve all of San Mateo County except for the communities of Woodside and Portola Valley. The CoSWMP identifies both the Ox Mountain and Pescadero sites for solid waste disposal facilities.

The Plan encourages governmental agencies to promote resource recovery efforts by the private sector including: (1) separation at the source and at transfer facilities, (2) methane recovery at landfills, (3) energy recovery through waste conversion and (4) reclamation of completed landfill sites whenever practical or feasible.

3. County Zoning Ordinance

a. Land Use Designations Permitting Solid Waste Disposal Facilities

Activities related to solid waste disposal are explicitly permitted within three zoning districts: the M-2 District (Heavy Industrial District), the RM District (Resource Management District) and the RM/CZ District (Resource Management/Coastal Zone District). A use permit is required within the M-2 District. A use permit and a quarry permit are required in the RM District, and a quarry permit is required in the RM/CZ District. Additionally, "garbage dumps" are permitted in any district outside the Coastal Zone subject to a use permit, provided certain findings are made.[42] The Ox Mountain and Pescadero landfill sites are both designated RM/CZ.

b. Excavating, Grading, Filling and Clearing Regulations

Solid waste landfill operations generally require a grading permit as they involve excavation, filling or placement of earth materials, or a combination thereof. The Excavating, Grading, Filling and Clearing Regulations contain standards to minimize the adverse effects of grading, cut and fill operations, land clearing, water runoff and soil erosion. An erosion and sediment control plan, a geotechnical report, and a dust control plan are required as part of the grading plan. The regulations also contain fire safety requirements for equipment used for grading.

SOLID WASTE ISSUES

I. ADEQUACY OF SOLID WASTE DISPOSAL FACILITIES TO ACCOMMODATE CURRENT AND FUTURE DEMAND

The major solid waste disposal issue facing San Mateo County is how to accommodate future solid waste disposal needs in an economical and environmentally acceptable manner. As established in the San Mateo County Solid Waste Management Plan, current solid waste disposal demand within unincorporated areas is being met by the Corinda los Trancos and Pescadero landfills. It is projected that existing and planned solid waste disposal facilities, including the use of the Apanolio Canyon landfill, will provide sufficient capacity to meet the long-term solid waste disposal needs of unincorporated areas as well as those of the County as a whole until the year 2039.[43] The useful life of these facilities could potentially be extended if resource recovery were actively employed and certain waste materials were diverted. On the other hand, the useful life of these facilities could potentially be reduced if San Francisco's solid waste is deposited at Ox Mountain landfill.[44]

II. OPPORTUNITIES AND CONSTRAINTS IN MEETING DEMAND FOR SOLID WASTE DISPOSAL

While major solid waste improvements are planned on a Countywide level through the County Solid Waste Management Plan, the participation of each local jurisdiction is essential for its implementation. The following discussion focuses on opportunities and constraints within unincorporated areas to: (1) mitigate environmental impacts of solid waste disposal activities; (2) protect identified solid waste disposal sites from incompatible land uses; and (3) use resource recovery to extend the useful life of existing solid waste facilities, diminish the need for new landfills and minimize energy consumption. Because the most prevalent form of waste disposal in the County has been landfilling and the major Countywide landfill disposal site, Ox Mountain, is located within the unincorporated area, the focus of the following section is on the impacts of existing solid waste landfill operations.

A. IMPACTS OF LANDFILL OPERATIONS

There are a number of environmental impacts resulting from landfill operations. A major environmental impact of the Ox Mountain landfill is the generation of refuse truck traffic on Highway 92. The impacts of refuse truck traffic extend beyond the landfill site itself.

1. Impacts on Traffic

a. Refuse Truck Traffic Impacts on Highway 92

All vehicular access to the Ox Mountain landfill is from Highway 92, a curving, two-lane road with steep grades. Today, the traffic

volume on Highway 92 nearly reaches the roadway capacity for eastbound traffic in the 7:00-8:00 morning peak hour and for westbound traffic during the 5:00-6:00 evening peak hour.

Landfill-bound trucks amount to a small component of present traffic. It is estimated that landfill trucks account for approximately 72 round trips per day. Of this, 65 are transfer trucks arriving from the Bayside, with the remainder coming from the west.[45] Because trucks are slower and harder to pass than autos, each loaded truck is considered equivalent to 20 passenger cars in assessing road capacity. Truck-caused delays of three minutes often occur on Highway 92.

The rate of waste deposition, and hence the amount of landfill truck traffic, is projected to increase with time. By the year 2000, 95 transfer trucks are expected from the Bayside.[46] With gradual development of the Coastside anticipated in the Local Coastal Program, traffic from other sources will increase as well.

The combination of difficult road conditions, increased passenger car traffic and increased refuse truck traffic is likely to increase traffic delays as well as accidents on Highway 92. Improvements to Highway 92 such as safety improvements or incorporation of passing lanes could help to mitigate the impacts of refuse truck traffic generated by Ox Mountain landfill. Prohibiting refuse trucks from traveling on Highway 92 during peak commuter hours could also help to minimize traffic congestion.

b. Public Use of Landfill Sites

Both the Pescadero and Ox Mountain landfill sites accommodate public dumping, primarily by Coastside residents. It is estimated in an LCP background report that public use of Ox Mountain amounts to less than 200 cars per day on weekends and less than 100 vehicles per weekday.[47] The 1983 Draft EIR for the Apanolio Canyon landfill notes that approximately ten passenger cars or other private vehicles are estimated to cross Highway 92 each day from the Bayside to use the landfill, while 50 vehicles per day are expected from the Coastside.[48] Although the worst traffic condition conflicts could occur on peak recreation weekends, the LCP concluded that it is unlikely that large numbers of people will use the landfill when heavy traffic is anticipated. Until recently, it was felt that the public use of the landfill was not expected to increase with the closing of Marsh Road landfill, as the San Carlos transfer station would accommodate Bayside public dumping.[49] However, the rates charged to dump at Ox Mountain landfills are so much less than for dumping at the San Carlos Transfer Station ($2.00/cubic yard as compared to $7.00/cubic yard), that this is likely to encourage the increased public usage of the Ox Mountain landfills.[50]

2. Environmental Impacts

In addition to traffic impacts, landfill operations may have impacts on erosion, water quality and hydrology, biology, public health and safety, visual quality, noise levels and air quality. A generalized summary of such impacts follows. The specific environmental impacts associated with a potential solid waste facility are reviewed during the environmental assessment of a project, as required by CEQA, with mitigation measures incorporated as conditions of the use permit.

a. Erosion

Vegetation removal and soil disturbance often result in a significant erosion potential. The soil used to cover a sanitary landfill is prone to erosion since it initially lacks any protective vegetation. If not properly contained, the eroded soil from the site may cause downstream sedimentation. This added sediment load can contribute to degradation in water quality or contribute to downstream flooding. It is necessary to take stringent measures to prevent erosion and to protect water resources.

b. Water Quality and Hydrology

Landfill operations may have impacts on water quality and hydrology. Laws for protection of beneficial uses and preservation of water resources mandate that surface or groundwater quality not be impaired by waste disposal. The solid waste itself is easily contained; the principal threat of contamination comes from water which contacts waste and which may escape off-site. The water may be liquid contained in the refuse when brought to the site or it may enter the site and percolate through the waste. Waste-contaminated water is called "leachate."

To ensure that no contact occurs between the leachate and groundwater in an area, the existing drainage pattern on the solid waste disposal site must often be physically altered. The hydrologic parameters that may be affected include: absorption, runoff velocity and quantity, stream alignment and channelization. Mitigation of potential water quality impacts is a fundamental consideration when designing a sanitary landfill. If the site is constructed properly, then project impact can be minimized. The primary mitigating measure is a requirement for a geotechnical survey of the site to resolve design uncertainties. In order to assure continuing protection, it is often necessary to periodically monitor surface and groundwaters.

c. Biology (Vegetation, Fish and Wildlife)

The nature of a landfill is such that the vegetation of the entire fill area up to the ultimate contour must be destroyed. Consequently, wildlife habitat will also be reduced forcing a migration to adjoining areas and a decrease in the population. There can be

no direct preservation of plants and wildlife within the fill boundary. Changes in the hydrology of a site can have a major impact on aquatic life.

Mitigation of biological impacts is limited to minimizing the area of direct disturbance from the project and minimizing its off-site effects. The final cover and planting is important both in site restoration and in water quality protection. Apart from erosion control, vegetation on the closed fill can aid in leachate control. Often the most important mitigation for biology is the protection of the surface waters of tributaries and streams.

d. Public Health and Safety

(1) Pest Problems

Potentially there may be problems with deer, skunks, rats and mice which are attracted to a solid waste disposal site for food. Daily covering and compacting of the waste prevents use of the landfill by animals such as these. Construction activity may also disturb rodent habitats sometimes resulting in migration of mice or other small animals into adjacent developed areas where their presence is undesirable. Often this impact can be mitigated by providing sufficient undeveloped lands adjacent to a landfill to absorb any such rodent migration without adverse impacts.

(2) Fire Hazards

Accidental fire ignition of smoldering materials, spontaneous ignition of landfill materials or illegal volatile materials are all potential sources of landfill-caused fires. There are a number of techniques available to minimize fire hazards which include: inspection of collection bins at landfills and transfer stations to prevent ignitible sources from being introduced into the landfill; removal of all flammable materials from the periphery of the landfill including trees and shrubbery; covering all debris in the landfill with dirt at the end of each operating day; and developing a fire break around the operating perimeter of the landfill. Additionally, machinery used at the landfill can be regulated to minimize the amount of sparks they generate.

e. Visual Quality

Massive landfill projects often totally alter landforms. This can result in the complete loss of the present natural views and aesthetic values. The aesthetic impact to the immediate fill vicinity are profound. While the revegetation of open slopes can help, it will not serve to disguise the fill, nor to mask the large scale disturbance to the site.

Revegetation of exposed slopes will reduce the extent of bare ground seen from afar and may be effective in reducing other environmental impacts such as erosion and siltation in the creeks. Impacts on visual quality are a prime consideration when siting a landfill.

f. Noise Impacts

Two potential sources of noise impact are from traffic generated by the landfill and equipment used for construction and operation of the landfill. Impact of noise from these sources depends not only on the noise they generate but also on the number of receptors exposed to the noise. The scarcity of receptors in the immediate vicinity of existing landfills in unincorporated areas minimizes the impact of noise from construction and operation of the projects. The impact of traffic noise is of greater significance due to the greater number of receptors in the vicinity of Highway 92.

Noise can be reduced by several mitigating measures. These include prohibiting entrance to landfill sites before 7:00 a.m., a period during which a community is particularly sensitive to noise. Careful attention to siting can mitigate potential noise impacts considerably.

g. Air Quality

Construction emissions generally are from two sources: particulates (dust) from grading operations and engine exhaust emissions. Techniques to minimize impacts from particulates include providing sufficient distance between construction activities and receptors, cover and fill techniques to cut down on odor problems and watering of haul roads and fill slopes and surfaces.

A major source of air pollution emissions results from the transportation of refuse from source areas to the landfill by diesel trucks and private automobiles. These emissions are roughly proportional to the number of vehicles and trip miles they represent. The use of large 26 ton transfer trucks for transport of garbage from transfer stations to the landfill results in a decrease in the total number of vehicles otherwise necessary. This must be balanced against the increased emissions of hydrocarbons and carbon monoxide generated by slowed traffic behind these trucks.

B. LAND USE COMPATIBILITY

As previously established, solid waste disposal facilities often generate environmental impacts which cannot totally be mitigated. As a result, it is essential that solid waste disposal facilities be sited away from land uses that would be most sensitive to the impacts of solid waste disposal activities. Once a site is established, it is necessary to discourage incompatible land uses on or adjacent to the site.

C. RESOURCE RECOVERY

The 1984 edition of the County Solid Waste Plan establishes a resource recovery program which sequences resource recovery development over a 20-year time frame. The primary purpose of developing resource recovery alternatives is to reduce the amount of solid waste requiring landfill disposal, thereby extending landfill life, and to conserve other resources wherever cost effective. Resource recovery generally falls into three categories: methane recovery, materials recovery and energy recovery. Materials recovery and energy recovery techniques require some landfill capacity for those residual wastes which cannot be recovered and, therefore, must be complementary to a sanitary landfill. Depending on the method chosen, the landfill lifetime can be extended as much as tenfold. The San Mateo County Resource Recovery Options Assessment evaluated the potential for resource recovery within San Mateo County and reached the following conclusions:

1. Methane Recovery

The recovery of methane gas from a solid waste landfill provides an opportunity to offset the environmental impacts resulting from solid waste disposal. Both Corinda los Trancos and Apanolio Canyon maintain a good potential for future methane gas recovery due to their physical and operational characteristics.[51] Actual development is at an exploratory stage. The existing refuse in place at Corinda los Trancos Canyon is estimated to generate sufficient gas to produce approximately 2,200 therms of energy each day. This amount of energy could heat approximately 800,000 square feet of nearby greenhouses.[52]

2. Materials Recovery (Recycling)

In San Mateo County, residential and commercial solid wastes are estimated by the Public Works Department to be generated at a rate of 4.2 pounds/person/day. Approximately 25-30% of these wastes may be potentially recoverable as recyclable materials.[53] The method of recovery influences the degree of participation in source separation programs. When only recycling centers are available and the general public must deliver their wastes to these drop-off depots, the participation rates are generally about 5%. Under curbside collection programs where local residents set out their separated materials on a scheduled collection day, participation rates of 20% to 50% are being realized, demonstrating the influence of convenience.[54] County regulations currently do not explicitly permit small scale recycling operations in residential or commercial zoning districts.

3. Energy Recovery

The Resource Recovery Options Assessment evaluated the feasibility of a waste-to-energy facility of a sufficient size to serve all of San Mateo County. The study found that direct combustion systems were the most likely candidates for a future waste-to-energy facility in San Mateo County. These facilities are based on combustion processes where the

energy in the wastes is liberated into heat. The heat is subsequently captured in a heat exchanger or boiler and converted into steam which may be converted into electricity by a steam turbine-generator unit and/or marketed directly as process steam to nearby industries. These systems are capable of recovering up to 75% of the energy contained in the waste materials that are processed through the facility.[55] To be practical, either the energy or the fuel produced by these processes must be directly usable, storable, transportable, environmentally acceptable and economically feasible. The report concluded that waste-to-energy technology has been proved in the U.S. and such an operation can be profitable within the first year of operation. Major constraints when considering energy recovery include site selection, air emissions, and ash disposal.

a. Site Selection

As a result of the many environmental impacts resulting from the operation of a waste-to-energy project (e.g. truck traffic, noise, air emissions, etc.), its use can be classified as heavy industrial. As a result, these facilities generally must be restricted to locating only in areas where heavy industrial uses are acceptable and permitted. Generally, a countywide waste-to-energy facility is thought to require 10-20 acres of industrially zoned lands.[56] Preferably, it would be located near industries that are capable of using steam so that the resulting energy need not be converted to electricity which is costly.

b. Air Emissions

Air emissions are a major by-product of direct combustion facilities that may constrain the implementation of a refuse-to-energy facility. The greatest portion of the air emissions are formed from the combustion of solid waste and from the combustion process itself. Other sources of emissions may include front-end processing of the municipal solid waste, cooling tower, fuel oil storage or additional truck and landfill vehicle traffic due to ash hauling. Air pollutants fall into a multitude of categories and are enumerated in the 1983 San Mateo County Resource Recovery Options Assessment.[57] Sufficient air emission control technology is available to meet regulatory standards; however, such controls are expensive.

c. Ash Disposal

Refuse-to-energy combustion units generate significant quantities of ash, which must be disposed within secured landfills or marketed and sold. The ash from a garbage-to-energy facility represents about 20% to 35% by weight of the original weight of the refuse. However, its volume represents less than 10% of the equivalent landfill volume of the waste.[58]

III. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING SOLID WASTE MANAGEMENT

A. REGULATING REFUSE TRUCK TRAFFIC ON HIGHWAY 92

In accordance with LCP Policy 2.47, the current operating conditions governing the Corinda los Trancos landfill limit truck access to the site to specific non-peak hours. These regulations reduce conflicts with commuter traffic on Highway 92. Similar conditions are incorporated in the use permit for the Apanolio Canyon.

The times when refuse trucks are prohibited from entering or leaving Ox Mountain landfills can be changed (increased, decreased or adjusted) to reflect changes in the peak commuter traffic on Highway 92. As more commuter traffic and trucks use Highway 92 and the road reaches its capacity for longer periods of the day, it will be increasingly difficult to find times when truck traffic can be accommodated without conflicting with existing traffic or nighttime quiet periods.

B. IMPROVING HIGHWAY 92

If roadway improvements as proposed by CalTrans and the California Transportation Commission are constructed and truck prohibition periods observed, traffic flows on Highway 92 during peak commuter hours should not exceed roadway capacity through the life of the Apanolio Canyon landfill.[59] Further, according to the Apanolio Canyon Expansion EIR, the roadway improvements will eliminate traffic delays presently caused by loaded transfer trucks climbing Highway 92, and "would fully mitigate the impacts of additional refuse truck traffic generated by the Apanolio Canyon sanitary landfill."[60]

In the event that Highway 92 is not improved, the Apanolio Canyon project is conditioned to allow for future revision in the operating conditions, through the use permit review process, to ensure safe traffic flows. This could include future consideration of expanded prohibition periods or the possibility of required night haulage.

C. MITIGATING ENVIRONMENTAL IMPACTS OF SOLID WASTE DISPOSAL ACTIVITIES

The RM and RM/CZ Zoning District regulations require a quarry permit (Surface Mining and Reclamation Ordinance) to conduct solid waste landfill operations. While the Surface Mining and Reclamation Ordinance addresses many of the environmental issues associated with solid waste disposal operations, the Grading Ordinance by definition more clearly applies to solid waste disposal activities. If applied, the County's Grading Ordinance generally provides for the comprehensive review and mitigation of environmental impacts resulting from solid waste landfill disposal. One shortcoming of the Grading Ordinance is that it does not provide standards for the reclamation of a solid waste site to ensure it is left in a usable condition once the operation has ceased.

The environmental assessment of a landfill project, as required by CEQA and LCP policies that address environmental impacts resulting from activities conducted in the Coastal Zone, further serve to ensure that the potential environmental impacts resulting from a solid waste disposal facility are mitigated to acceptable levels.

The requirement for a use permit amendment if the Ox Mountain service area is expanded to accommodate other jurisdictions further serves to ensure that potential impacts resulting from such an expansion are reviewed and mitigated accordingly.

D. PROTECTING SOLID WASTE DISPOSAL SITES FROM INCOMPATIBLE LAND USES

Both of the solid waste disposal sites located within unincorporated areas, the Pescadero landfill site and the Ox Mountain Ranch site, are designated Resource Management/Coastal Zone/Coastal Development (RM-CZ/CD). The land adjacent to and near these sites is zoned Planned Agricultural District (PAD) or Resource Management/Coastal Zone (RM/CZ). The principal permitted use in the PAD is agriculture with very low density single-family residential development. The RM/CZ zone is a general open space zone that allows, by right, agricultural and low density uses.

The principal permitted uses within these two zoning districts are generally considered compatible with solid waste disposal activities. Other more intense and "sensitive" land uses such as hotels, motels, restaurants, churches and schools are also permitted; however, these uses require either a use permit or a planned agriculture permit which ensures that issues related to compatible land uses are addressed. Additionally, the large acreages required to accrue density credits within these zoning districts further reduces the potential for land use conflicts.

E. INCREASING RESOURCE RECOVERY

1. Methane Recovery

To date, methane gas has not been extracted from solid waste landfill sites located within unincorporated areas. However, operating agreements established between the County and the operators of the Ox Mountain sanitary landfill requiring both the investigation of methane gas extraction and the placement of extraction wells within major landfills ensures that methane gas recovery will be realized when economically feasible.

2. Materials Recovery (Recycling and Waste-to-Energy)

The California Waste Management Board contends that an optimum community recycling program has the potential to divert up to 30% of the residential and commercial waste stream. In San Mateo County only about two percent (by weight) is being recycled. While existing Countywide plans and policies as established in the County's Solid Waste Management Plan

encourage materials recovery (recycling) and the development of a waste-to-energy plant, opportunities to date have been limited as a result of economics and limited technology.

Major resource recovery programs such as curbside recycling and energy recovery are difficult to establish solely within unincorporated areas as they generally require large capital investments and a large number of participants located in contiguous areas. However, unincorporated areas could actively support the development of countywide curbside recycling and waste-to-energy programs of which they could be part. The existing requirement of the use permit for Apanolio Canyon for a biennial report on resource recovery options should assist the County in finding feasible alternatives to solid waste disposal. A deficiency of existing regulations is that the Zoning Ordinance does not explicitly permit small scale resource recovery operations (e.g. placement of recycling bins in residential or other areas) within unincorporated areas.

F. SUMMARY OF PROBLEMS

1. The low rates charged for dumping at Ox Mountain landfills encourage their use instead of the use of Bayside transfer stations and leads to increased traffic on Highway 92.

2. The Zoning Ordinance does not explicitly require a grading permit for solid waste landfill operations.

3. Existing County regulations do not provide standards for the reclamation of a solid waste disposal site to ensure it is left in a usable condition once the landfill is completed.

4. County regulations do not explicitly permit small scale recycling operations in residential and commercial zoning districts within unincorporated areas.

5. Existing resource recovery programs have not maximized opportunities for resource recovery.

IV. ALTERNATIVES

A. RECLAMATION OF A SOLID WASTE LANDFILL SITE

Standards requiring the reclamation of a solid waste landfill site could be added to the County's Ordinance Code. Reclamation standards could be similar to those contained in the County's Surface Mining and Reclamation Ordinance to require: a plan for soil stabilization; erosion prevention; water quality protection; revegetation of the site; feasible restoration of the scenic quality of the site; and other measures which may be appropriate or suitable to permit future alternative land uses. Additionally, the reclamation plan could be required to establish a schedule of periodic reclamation activity so that sites are reclaimed as much as possible consistently with ongoing operations.

B. APPROPRIATE LAND USES ONCE RECLAMATION IS COMPLETE

Generally, landfills are converted to open space or recreation areas where few permanent structures are required because the waste will gradually alter in composition and volume as the fill stabilizes. In the past, County landfills have been considered for future use as County parks, off-road vehicle parks or golf courses, but there presently are no concrete proposals for such end uses. Most low landscaping can be grown over the fill if the final cover is deep and overlain by adequate topsoil. Deeply rooted varieties and large trees are usually unsuccessful because the roots penetrate the waste cells where they are exposed to landfill gases.

Christmas tree farming is common in the Half Moon Bay area and is practiced along the access road to the site. Christmas trees could be grown on the finished fill. Horticultural activities which require greenhouses are also a possible end use for the landfill. The structures, if made of plastic, would not require sturdy foundations and could be replaced should a shift in the fill render them unusable. Similar to tree farming, greenhouse horticulture is already an established activity in the Half Moon Bay area. In addition, locating greenhouses on the landfill may be an ideal way to use the methane gas produced there. Methane extraction is one promising end use for the proposed landfill expansion. Local horticultural growers may be able to use the methane directly, or electrical power may be generated.

C. INCREASE RESOURCE RECOVERY

1. Source Reduction

Source reduction is the ultimate goal in materials conservation, but is probably beyond the jurisdiction of local policy-makers. Examples include: decreased use of packaging materials; increased product durability; less style change; improved ease of repair; and increased use of reusable containers. The manufacturer's selection of specific materials in a product is primarily a function of economics. Actions that could be taken to advocate source reduction range from local advocation of a national waste reduction policy to distribution of information describing the issues and benefits.

2. Recycling

There are a variety of ways of furthering recycling at the local level. The most active way is direct operation of the recycling program, whether it is a drop-off center or curbside recycling system. Another way to assure recycling services is for local communities to enter into contracts or franchise agreements with solid waste collectors. Such contracts or agreements can require total operation of the program by the collector or can assign to the municipality responsibility for certain program aspects such as education and promotion. At a minimum, local agencies could cooperate with private entrepreneurs who can see an economic benefit in recycling selected materials or with service

organizations which are willing to operate less lucrative multi-material drop-off centers. These organizations may need help in finding suitable sites and obtaining permits and land use approvals from local government. Solid waste facilities such as public rubbish collection points should, as a matter of course, include recycling bins. Other public facilities, such as parks and playgrounds, should be given consideration for locating separate receptacles for recyclables.

SOLID WASTE FOOTNOTES

[1] State of California Office of Planning and Research, General Plan Guidelines, September 1980, pp. 202-203.

[2] Board of Supervisors, "Resolution No. 37623, Resolution Approving the Solid Waste Management Plan for San Mateo County as Revised and Adopting it as Part of the Land Use Element of the General Plan," adopted August 16, 1977.

[3] San Mateo County Department of Public Works, 1984 Edition, Solid Waste Management Plan, April 1984, p. III-20.

[4] Ibid., p. III-33.

[5] Thomas Reid Associates, Draft Environmental Impact Report, Ox Mountain Sanitary Landfill, Apanolio Canyon Expansion, October 1983, p. I-1.

[6] San Mateo County Department of Environmental Management, Land Use Plan, Local Coastal Plan Hearing Draft, August 1980, p. 2.55.

[7] San Mateo County Department of Public Works, 1984 Edition, Solid Waste Management Plan, April 1984, p. III-18.

[8] "Land Use Plan, Local Coastal Plan," p. 2.55.

[9] San Mateo County Planning Department, "Ox Mountain/Corinda Los Trancos Canyon Sanitary Landfill," Staff Report to Planning Commission, May 26, 1982, p. 1.

[10] George Laakso, San Mateo County Department of Public Works, May 1984.

[11] San Mateo County Planning Department, "Ox Mountain/Apanolio Canyon Sanitary Landfill," Staff Report to Planning Commission, February 22, 1984, p. 5.

[12] "Draft EIR, Ox Mountain Sanitary Landfill," p. III-43.

[13] Ibid., p. III-44.

The "passenger car equivalent" measure takes into account the additional impact of trucks, buses and recreational vehicles as compared to passenger cars in the amount of highway capacity required. The capacity of 1,400 pce per hour takes into account the roadway widths, grades, sight distances, and passing lane opportunities on this highway.

[14] Ibid., p. III-47.

[15] Ibid., Figure III-8, p. III-48.

[16] Ibid., p. III-43.

[17] "Ox Mountain/Apanolio Canyon Sanitary Landfill," p. 10.

[18] Ibid., p. 11.

[19] San Mateo County Planning Department, "Planning Commission Meeting No. 966," May 26, 1982, p. 8, Items 4 and 5.

[20] "Draft EIR, Ox Mountain Sanitary Landfill," p. III-49.

[21] Ibid., p. III-49.

[22] Ibid., p. III-50.

[23] Ibid., Figure III-8, p. III-48.

[24] "Land Use Plan, Local Coastal Plan," p. 2.55.

[25] "1984 Edition, Solid Waste Management Plan," p. III-26.

[26] "Land Use Plan, Local Coastal Program," p. 2.55.

[27] George Laakso, San Mateo County Department of Public Works, May 14, 1984.

[28] "1984 Edition, Solid Waste Management Plan," p. III-26.

[29] Ibid., p. III-25.

[30] Cooper Engineers, San Mateo County Resource Recovery Options Assessment, December 1983, p. S-7.

[31] Ibid., Tables III-5 and III-6.

[32] Ibid., Tables III-6, III-8, and III-9.

[33] Ibid., p. S-11.

[34] "1984 Edition, Solid Waste Management Plan," p. III-38.

[35] "1984 Edition, Solid Waste Management Plan," Table III-11.

[36] Ibid., p. III-42.

[37] Ibid., p. III-42.

[38] Ibid., p. VI-8.

[39] "Land Use Plan, Local Coastal Program," p. 2.55.

[40] George Laakso, San Mateo County Department of Public Works, May 1984.

[41] Association of Bay Area Governments, Regional Plan 1980, San Francisco Bay Area, July 1980, p. 1 (Solid Waste Management).

[42] The M-2 District permits "dumping, disposal, incineration or reduction of garbage, sewage offal, dead animals or refuse," subject to a use permit. The R-M District permits "waste disposal sites" subject to the use permit requirements of Section 6500(c), which requires a use permit for "garbage dumps." The RM/CZ District permits waste disposal sites subject to a quarry permit. In addition, Chapter 24, Section 6500, permits "garbage dumps" in any district outside the Coastal Zone, provided there is a use permit and the use is found to be necessary for the public health, safety, convenience and welfare.

In order to grant a use permit for a solid waste disposal site, the Planning Commission must find that the proposal will not be detrimental to the public welfare or injurious to property or improvements in the neighborhood. The Zoning Ordinance also authorizes the Planning Commission to designate certain conditions which will ensure that the proposed use will not be detrimental to the public welfare and which will secure Ordinance objectives as to public health, safety and the general welfare.

[43] "1984 Edition, Solid Waste Management Plan," p. VI-8.

[44] As established in the 1984 revised CoSWMP, the estimated lifetime of Apanolio Canyon Landfill at Ox Mountain varies depending on the amount of resource recovery employed and the degree to which San Francisco makes use of the facility for its solid waste disposal needs. Assuming that Apanolio Canyon is filled to the 1,200 foot elevation, the estimated lifetimes vary from 2,018 to 2,039 to 2,041 and beyond in the following scenarios:

Scenario No. 1 (Estimated Lifetime of 2018)

Maximum reliance on landfill. No special efforts toward resource recovery. Unprocessed San Francisco solid waste to Ox Mountain from 1988.

Scenario No. 2 (Estimated Lifetime of 2039)

Curbside recycling and hand-sorting of recyclable materials at transfer stations implemented in 1985. Demolition materials diverted to land reclamation by 1985. No unprocessed solid waste from San Francisco. Residue from San Francisco resource recovery facility starting in 1988.

Scenario No. 3 (Estimated Lifetime of 2041 and Beyond)

Maximum reliance on resource recovery. Curbside recycling and hand-sorting of recyclable materials at transfer stations implemented in 1985. Demolition materials diverted to land reclamation by 1985. No processed or unprocessed solid waste from San Francisco. Full-scale energy recovery (utilizing entire San Mateo County Bayside waste stream) in vicinity of Redwood City in 1993.

[45] George Laakso, San Mateo County Department of Public Works, May 14, 1984.

[46] "Draft EIR, Ox Mountain Sanitary Landfill," p. S-4.

[47] "Land Use Plan, Local Coastal Plan," p. 2.57.

[48] "Draft EIR, Ox Mountain Sanitary Landfill," p. III-47.

[49] "Ox Mountain/Apanolio Canyon Sanitary Landfill," p. 12.

[50] George Laakso, San Mateo County Department of Public Works, May 14, 1984.

[51] "Resource Recovery Options Assessment," p. 11.

[52] Ibid., p. S-1.

[53] Ibid., p. S-3.

[54] Ibid., p. S-3.

[55] Ibid., p. 55.

[56] Ibid., Table 17, p. 118.

[57] Ibid., p. 75.

[58] Ibid., p. 95.

[59] "Draft EIR, Ox Mountain Sanitary Landfill," Table III-8, p. III-48.

[60] Ibid., p. III-55.

SOLID WASTE APPENDIX

APPENDIX A - TOPIC FOR FUTURE CONSIDERATION

APPENDIX A

TOPIC FOR CONSIDERATION DURING FUTURE PLANNING EFFORTS

During Planning Commission hearings, the following topic was identified relating to the Solid Waste Chapter which is most appropriately addressed during future planning efforts, including area plan development and ordinance revisions:

> Review existing County standards for solid waste landfills, as administered by the Environmental Health Department, to ensure that materials that are known to or are likely to contaminate water are provided special handling at landfills to protect groundwater quality.

15

Natural Hazards

Background ▪ Issues

NATURAL HAZARDS BACKGROUND

I. INTRODUCTION

A. SCOPE AND ROLE

Residents of and visitors to the unincorporated areas of the County are subject to risk from three major categories of natural hazards: geotechnical hazards, resulting both directly from seismic events (primarily earthquakes and earthquake-induced landslides) and indirectly from non-seismically related movement of land such as cliff retreat, subsidence and landslides; fire hazards, resulting from grass, brush, or forest fires in wildland areas or structural fires in developed areas; and flooding hazards, resulting from both storm runoff and the inundation that could be caused by catastrophic dam failure.

The Natural Hazards Chapter inventories the location of these hazards in the unincorporated areas of the County; discusses the risks they pose to life and property; reviews current plans, policies and regulations used by the County and other government agencies to address the hazard risks; analyzes the County's opportunities and constraints for further reducing hazard risks; and suggests ways that regulations can be modified or expanded to accomplish this goal. Finally, policies are proposed to address identified issues, incorporating the best management practices for protecting the public from natural hazards through planning, mitigation and the review of new development proposals.

B. STATE PLANNING LAW

This Chapter satisfies the requirements of California Government Code Section 65302(f), requiring local governments to prepare a Seismic Safety Element and Section 65302(i), requiring a Safety Element, as it pertains to the protection of the community from fires and geologic hazards. In addition, Section 65302(a), concerning the requirements of the land use element, states that "the land use element shall also identify areas covered by the plan which are subject to flooding . . ." such areas are identified in this chapter.

An additional general plan requirement is contained in the Alquist-Priolo Special Studies Zones Act of 1972. The Act requires: (1) the State Geologist to delineate special studies zones around all potentially and recently active traces of faults in California, and (2) each local jurisdiction to specify the procedures for reviewing and approving new buildings located within the zones. These procedures and policies are addressed in this Chapter.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing Documents

a. Seismic and Safety Element (1978)

The County's Seismic and Safety Element, adopted in 1978, provides an extensive analysis of both man-made and natural hazards in San Mateo County. Much of the background information in this document has been incorporated into this Chapter, particularly its information on geotechnical hazards. Where appropriate, the information has been updated. The Natural Hazards Chapter provides new and more detailed information on fire and flooding hazards than that contained in the Seismic and Safety Element. The policies of the Natural Hazards Chapter will supersede the Seismic and Safety Element's policies when adopted by the Board of Supervisors.

The Seismic and Safety Element included in its technical appendix a set of Geotechnical Hazards Synthesis Maps, which divides the County into six sectional maps at a scale of 1" = 2,000' and includes seven categories of geotechnical hazards at a level of detail that is very useful in review of site-specific development applications. These maps will be retained as a technical tool to be used in reviewing proposals for new development and could be revised and updated to incorporate new data as it becomes available. A new map which synthesizes the information at a less-detailed scale of 1" = 4,000' has been prepared and is included in this Chapter.

b. Conservation and Open Space Element (1973)

The Conservation and Open Space Element is oriented toward a discussion of the County's resources, but contains some background information and policies for certain natural hazards, particularly flooding hazards. The Natural Hazards Chapter discusses this hazard in much more detail, and its policies for flooding hazards will supersede those of the Conservation and Open Space Element.

c. Local Coastal Program (1980)

The Local Coastal Program is an area plan for the Coastal Zone. The Hazards Component of this document contains policies for the minimization of fire, flooding and geotechnical hazards, focusing on shoreline problems such as cliff erosion and tsunami inundation. These policies will remain operational for the LCP area. The policies of the Natural Hazards Chapter are intended to support those of the LCP at a more general level of detail. Where appropriate, suggestions for future changes in LCP policies have been made.

d. Skyline Area General Plan Amendment (1983)

Like the LCP, the Skyline Area General Plan Amendment document is an area plan whose policies will continue to be operational after adoption of the new General Plan. The Skyline policies, however, provide only very general direction for addressing development in hazardous areas. The Natural Hazards Chapter's policies will, therefore, provide greater guidance for the Skyline area than for the Coastal Zone.

e. Emerald Lake Hills Community Plan (1978)

The Emerald Lake Hills Community Plan, adopted in 1978, will also continue to function as an area plan. Geotechnical and fire hazards were a particular concern of this plan. Like the LCP and Skyline area plans, these policies will continue to be operational for the Emerald Lake Hills area, and the policies of the Natural Hazards Chapter will provide support for them.

f. San Bruno Mountain General Plan Amendment (1976)

Like the LCP, the San Bruno Mountain General Plan Amendment also contains a Hazards Protection Component, which defines policies encouraging the avoidance and mitigation of both natural and man-made hazards. The San Bruno Mountain General Plan Amendment also requires preparation of specific plans for each defined planning area of San Bruno Mountain. Each specific plan requires detailed geotechnical analysis. The policies of this document will continue to be operational for the San Bruno Mountain area after completion of the General Plan update.

2. Other Chapters of the General Plan Update

The Natural Hazards Chapter relies on information on vegetative resources contained in the Vegetative, Water, Fish and Wildlife Chapter that is critical for determining fire hazards. Information from the Water Supply Chapter was also instrumental for the discussion of hazards from flooding. The information contained in the Natural Hazards Chapter has been incorporated into the Rural Land Use Chapter during the process of developing locational criteria for appropriate land uses. Natural Hazards information has also assisted in the designation of urban land uses.

D. DEFINITIONS

The following are definitions of terminology used in this Chapter:

AREA OF SPECIAL FLOOD HAZARD - The land in a flood plain subject to a one percent or greater chance of flooding in any given year; sometimes referred to as the "base flood" or "100-year" flood area.

COASTAL CLIFF EROSION - Wearing away of coastal cliffs due to wave action, wind and weathering, and resultant landsliding.

DEBRIS FLOW/AVALANCHE - Landslides involving mixture of rock fragments, gravel, sand, soil, mud, water and minor organic debris in which flow is the dominant transport mechanism. An extremely high-velocity debris flow landslide is known as a debris avalanche.

EPICENTER - A point at the earth's surface that is closest to the subterranean origin of an earthquake.

EXPANSIVE SOILS - Soils which tend to expand when wet and shrink when dry due to mineralogical composition.

FAULT - An earth fracture or zone of fracture along which the rocks on one side have been displaced in relation to those of the other, in response to the accumulation of stress. A fault is considered to be active if displacement has occurred within the last 11,000 years (Holocene time). When there is parallel motion along a fault, it is described as "strike-slip" displacement. Vertical motion is generally described as "thrust" displacement.

FLOODWAY - The channel of a watercourse plus any adjacent flood plain area that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights.

GROUND FAILURE - A general term for occurrences when seismic activity causes the ground to lose its cohesiveness, as in liquefaction, subsidence and earthquake-related landslides.

GROUND SHAKING - The temporary acceleration of earth's surface caused by the released earthquake energy which can occur vertically, horizontally or in combination.

LANDSLIDE - A general term denoting downslope movement of slope materials composed of rock, soil, fill or combinations thereof.

LIQUEFACTION - The transformation of a saturated granular layer into a fluid state due to intense ground shaking and/or increased pore water pressure.

LURCHING - A sudden roll, pitch or sway of the ground resulting directly from the release of seismic energy.

NON-SEISMIC GEOTECHNICAL HAZARDS - Geotechnical hazards not triggered by or related to seismic activity, including, but not limited to, land-slides, subsidence, expansive soils and coastal stability problems.

SEICHE - Oscillating waves in an enclosed or partly enclosed body of water caused by seismic activity or sudden changes in atmospheric conditions.

SHEAR SURFACE - The plane on which a landslide mass moves with respect to the underlying earth.

SOIL CREEP - Imperceptibly slow downslope movement of soils at a relatively constant rate.

SUBSIDENCE - Lowering or sinking of a section of the earth's crust.

TRANSLATIONAL MOTION - Motion in which all the particles in a landslide mass move at the same velocity along parallel paths.

TSUNAMI - Long, high-velocity sea waves resulting from seismic events which have relatively small wave height in deep water, but which rise significantly in shallow water.

II. INVENTORY OF EXISTING NATURAL HAZARDS

A. GEOTECHNICAL HAZARDS

San Mateo County is located on the border of two major "lithospheric plates," as defined by the earth sciences theory of "plate tectonics."[1] According to this theory, the entirety of the earth's crust is broken up into approximately seven major plates and a dozen minor ones. By luck of geography, San Mateo County is located along a portion of the boundary between the Pacific and North American Plates which, geologists claim, are sliding past each other at about 2 to 2-1/2 inches per year.[2] Most of this slippage occurs along the San Andreas Fault Zone, which traverses the western portion of California in a wide arc from Cape Mendocino to the Gulf of California. Normally, slippage occurs at a slow, constant rate; however, on April 18, 1906, the coastal side of the fault lurched as much as 20 feet northwestward along the Bay Area portion of the fault.[3] This "seismic event" is now known as the great San Francisco Earthquake.

In almost all cases, geotechnical hazards can be defined as those which are either directly or indirectly related to earthquake activity. In this Chapter, they have been divided into "Seismic" and "Seismically-Related and other Geotechnical" hazards.

1. Seismic Hazards

a. Surface Rupture

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. Predicting exactly where surface rupture will occur during a seismic event is difficult because the time and intensity of earthquake occurrence cannot be predicted. The location, however, generally can be assumed to be along an active or potentially active major fault trace, the locations of which are well-documented in San Mateo County.[4] However, there have been cases where supposedly inactive faults have experienced displacement during earthquakes centered on nearby faults.

Although it is one of the most violent manifestations of earthquake activity, surface rupture has not historically been a frequent occurrence in San Mateo County. The only recorded incident of surface rupture in the County occurred during the 1906 San Francisco earthquake in the form of right-lateral displacement along the San Andreas Fault (i.e. horizontal movement with the western side of the fault moving north relative to the eastern side).

The Natural Hazards map illustrates the primary faults in San Mateo County, along which surface rupture is most likely to occur. These include the San Andreas and Seal Cove-San Gregorio Faults (which are right-lateral, strike-slip faults). Rupture along these two faults is likely to be horizontal. Fault displacement is more likely to be vertical along "thrust faults," such as occurred in the 1971 San Fernando earthquake.

b. Ground Shaking

Ground shaking, a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, is normally the major cause of damage in seismic events. Several parameters control the extent of ground shaking. These include the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. In a major earthquake, any portion of the County could potentially experience ground shaking.

Magnitude[5] is a measure of the energy released by an earthquake. Intensity,[6] on the other hand, measures the perceptible effects of such energy at a given locality. Intensity varies with distance from the epicenter, decreasing as the source of the energy becomes farther away. Intensity also depends on the local geologic conditions. It is a more subjective measure than magnitude because it is determined from the reactions of people and structures at specific localities and is, therefore, based on human observation rather than machine calibration. However, it is sometimes a more meaningful measure than magnitude in human affairs precisely because it is related to people.

The common standard for measurement of magnitude used by geologists and seismologists is the Richter Scale.[7] Its counterpart for measuring intensity is the Modified Mercalli Intensity Scale.[8] Table 15.1 compares the two scales, describing the relative expected earthquake damage resulting from different levels on each scale.

Ground shaking in San Mateo County is a potentially serious hazard. The San Andreas Fault runs immediately west of the County's most heavily populated region, the urbanized area lying between the foothills of the Santa Cruz Mountains and the western shore of the San Francisco Bay. Earthquakes centered on the San Andreas, Hayward and Calaveras faults have caused ground shaking in the County, as have seismic events as far away as Hollister to the south and Santa Rosa to the north.

15.1M

SAN MATEO COUNTY GENERAL PLAN

NATURAL HAZARDS

GEOTECHNICAL HAZARD

AREA OF HIGH LANDSLIDE SUSCEPTIBILITY (V, VI & L-MF 360) U.S.G.S.

ALQUIST-PRIOLO SPECIAL STUDIES ZONE

TSUNAMI AND SEICHE INUNDATION AREAS

COASTAL CLIFF STABILITY

LS LOW STABILITY
MS MODERATE STABILITY
HS HIGH STABILITY

FIRE HAZARD

HAZARDOUS FIRE AREAS

FLOOD HAZARD

AREAS OF SPECIAL FLOOD HAZARD (UNINCORPORATED AREA ONLY)

DAM FAILURE INUNDATION ZONES

NOTE: FOR GENERAL PLANNING PURPOSES ONLY. NOT TO BE USED FOR SITE SPECIFIC STUDIES. SEE TEXT FOR SOURCES.

0 4000 8000 16000 32,000 FEET

99 320 ac.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

SAN FRANCISCO BAY

BRISBANE

SIERRA POINT

OYSTER POINT

SOUTH SAN FRANCISCO

POINT SAN BRUNO

PACIFICA

MUSSEL ROCK

MONTARA POINT

PILLAR POINT

COYOTE POINT

HILLSBOROUGH

BURLINGAME

REDWOOD CITY

REDWOOD POINT

RAVENSWOOD POINT

MENLO PARK

SAN ANDREAS FAULT ZONE

SEAL COVE - SAN GREGORIO FAULT ZONE

PORTOLA VALLEY

MUSSEL ROCK

PESCADERO POINT

BOLSA POINT

PIGEON POINT

FRANKLIN POINT

AÑO NUEVO POINT

TABLE 15.1

RELATIONSHIP OF RICHTER MAGNITUDE
AND MODIFIED MERCALLI INTENSITY SCALES TO EXPECTED EARTHQUAKE DAMAGE

RICHTER MAGNITUDE	MODIFIED MERCALLI MAXIMUM INTENSITY (AT EPICENTER)	EXPECTED EARTHQUAKE DAMAGE
2	I-II	Usually detected only by instruments.
3	III	Felt indoors. May not be recognized as earthquake.
4	IV - V	Felt by most people; structures shake; windows and dishes rattle; wooden walls and frame creak; slight damage to unsecured objects.
5	VI - VII	Felt by all; many frightened and run outdoors; glassware breaks; items fall off shelves; furniture moves; cracks in unreinforced masonry; fall of chimneys, cornices and other unreinforced architectural ornament; some small slides can occur.
6	VII - VIII	Difficult to stand; steering of autos is affected; potentially moderate to major structural damage in masonry structures; frame houses move off foundations if not bolted; branches broken off trees; collapse of elevated structures such as chimneys, water towers.
7	IX - X	General panic; Major total damage to masonry structures; underground pipes broken; frame structures seriously damaged; cracks in ground; large landslides likely; serious damage to dams, dikes, embankments.

TABLE 15.1 (continued)

RELATIONSHIP OF RICHTER MAGNITUDE
AND MODIFIED MERCALLI INTENSITY SCALES TO EXPECTED EARTHQUAKE DAMAGE

RICHTER MAGNITUDE	MODIFIED MERCALLI MAXIMUM INTENSITY (AT EPICENTER)	EXPECTED EARTHQUAKE DAMAGE
8+	X - XII	Major and total damages to buildings and infrastructure.

Source: California Division of Mines and Geology, "CDMG Notes," after Charles F. Richter, 1958, Elementary Seismology.

Most recorded earthquakes[9] in the Bay Area have been relatively small (i.e., Richter magnitude less than 5.0). Only one earthquake above magnitude 5.0 with an epicenter in the County has been recorded since 1900 - the 1957 Daly City earthquake of magnitude 5.3, which had an accompanying Modified Mercalli Intensity level of VII. Another earthquake as powerful as the 1906 San Francisco earthquake, which had magnitude of 8.3, surely would cause ground shaking in the County even if its epicenter were elsewhere in the Bay Area. Such an earthquake could cause great damage to susceptible structures in San Mateo County, especially in the heavily populated Bayside, much of which is underlain by alluvial deposits, Bay mud and artificial fill. Particular damage could occur in taller buildings. Earthquake waves can initiate vibrations in such buildings causing loss of exterior glazing and extensive structural damage if "resonance"[10] occurs.

The National Oceanic and Atmospheric Administration (NOAA) report, entitled A Study of Earthquake Losses in the San Francisco Bay Area[11] shows that nearly all of urbanized San Mateo County would experience Modified Mercalli Intensity levels of IX and X in the event of another magnitude 8.3 earthquake on the San Andreas Fault. Such intensity levels could create general panic, potentially cause cracked reservoirs and result in widespread damage to masonry and frame structures.

c. Seismically Induced Ground Failure

Seismic ground failure refers to all situations in which seismic activity causes the ground to lose its structural integrity, such as liquefaction, subsidence and earthquake related landslides. Landslides are addressed more thoroughly in the next section.

(1) Liquefaction

Liquefaction is the temporary transformation of a saturated granular soil layer to a liquefied state as a result of seismic ground shaking.[12] In unique situations where this layer is at or near the surface, increased pressure from rising groundwater may decrease the load bearing capacity of the soil to a quicksand-like consistency, causing buildings and foundations to sink downward.[13] A subsurface layer which liquefies may serve as a sliding surface for overlying layers. Such a layer works much like ball bearings by reducing friction to the point that landslides and lateral spreading may occur even on very slight slopes.

The San Mateo County Geotechnical Hazards Synthesis maps, an appendix to the Seismic and Safety Element derived from U.S.G.S. source maps, show areas of highly generalized liquefaction potential based on geologic materials. These maps indicate that much of the urbanized area of the County is underlain by sediment layers which range from low to locally

high in liquefaction potential. However, to determine the liquefaction potential at a given site, an onsite geotechnical study is normally required. The County Geologist indicates that there are very few unincorporated areas of the County where liquefaction could result in major structural problems.[14]

Liquefaction potential is highest in fine-grained cohesionless sands. Liquefaction of clay or clay-rich layers is unlikely due to the highly cohesive nature of the clay minerals. Since saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface (low confining pressure) have higher liquefaction potential than those in which the water table is deep (high confining pressure). Lands proximate to San Francisco Bay often have these characteristics.

(2) Seismically-Induced Subsidence

Subsidence, defined as the sinking or lowering of a part of the earth's surface, can occur as a result of or independent of earthquakes. Seismically-induced subsidence can be either a direct or an indirect result of an earthquake. Direct tectonic displacement of bedrock can result from strong earthquakes, causing either subsidence or uplift of up to several feet over relatively large areas of ground surface. Indirect subsidence, resulting from compaction of granular soil layers caused by ground shaking, is more common. Such shaking causes subsidence by compressing the soil deposit so that pore space formerly filled by groundwater or air is eliminated. However, there must be an outlet for evacuation of these pore spaces in order for subsidence to occur.

d. Tsunamis and Seiches

Tsunamis are extremely long ocean waves caused by undersea earthquakes, volcanic eruptions or massive landslides into adjacent water bodies. Tsunamis are generally small in height in deep water, but very long and can rise to 20 feet or more when they approach the coast, causing great destruction in shoreline locations.

No tsunamis have been known to strike San Mateo County. However, the 1964 Alaska earthquake resulted in a tsunami striking Crescent City in Del Norte County just south of the Oregon border, killing eight people. The origin of the wave was assumed to be the Aleutian Trench off the Alaskan Coast. The U.S.G.S. has produced a map delineating areas subject to tsunami inundation, based on a 20-foot runup along coastal areas and also at the Golden Gate. Such a runup is estimated to occur an average of once every 200 years.[15] This information has been incorporated into the Natural Hazards map.

The areas of the County which would be most heavily damaged by a tsunami are those along the Pacific Coast: Point Ano Nuevo, the

Pescadero Creek and San Gregorio Creek estuaries, Half Moon Bay, portions of San Pedro Valley, Rockaway Beach and Laguna Salada. The degree of damage experienced by these areas would depend on the local sea bottom and coastal topographic characteristics, as well as the incoming direction of the tsunami. The potential tsunami inundation areas are indicated on the Natural Hazards map.

A 20-foot tsunami runup at the Golden Gate would be attenuated to a maximum of 8 feet at Sierra Point (Brisbane) and roughly 4 feet at Ravenswood Point (East Palo Alto), based on the U.S.G.S. analysis. Bayshore locations which are most subject to tsunami damage include Sierra, Oyster, Coyote and Ravenswood Points; the San Francisco Airport area; the Burlingame Marina; Brewer Island in Foster City; Belmont Slough; Greco Island and portions of Bair Island off Redwood City.

Seiches are oscillating waves in an enclosed or partly-enclosed body of water, caused by earthquakes or landslides which displace part of the water body. Four water bodies in San Mateo County are believed to be large enough to pose significant seiche potential: Upper Crystal Springs Reservoir, Lower Crystal Springs Reservoir, San Andreas Lake and Pilarcitos Lake. If an earthquake similar in magnitude to the 1906 earthquake were to occur at a time when these water bodies were at the high water mark, seiches could overtop the spillways of these water bodies by several feet, causing large scale inundation downstream.[16]

e. Inundation from Seismically-Induced Dam Failure

Inundation from dam failure in the aftermath of a seismic event can pose serious risks to large segments of the population. Dam failure may be the result of direct ground rupture (if the dam is located in or near a fault zone) or severe ground shaking. Flooding and possible dam failure could also occur in the event of an earthquake-induced landslide into the reservoir which displaces a large volume of water. Seismically-induced dam failures are normally associated with older hydraulic fill dams. The San Fernando Dam in Southern California was built in this manner. Its partial failure during the 1971 earthquake necessitated the emergency evacuation of over 80,000 downstream residents.[17]

In San Mateo County, there are presently 13 dams that are large enough to endanger lives and property in the event of failure. These are listed in Table 15.2. Eleven of these dams are large enough and in locations such that failure would endanger a sizeable population. The flood plain that would result from catastrophic failure of each of these eleven dams has been mapped and incorporated into the Natural Hazards map, pursuant to the requirements of State law.[18]

TABLE 15.2

SAN MATEO COUNTY DAMS FOR WHICH INUNDATION ZONE MAPS HAVE BEEN PREPARED

DAM	OWNER	DAM HEIGHT (feet)	DAM CAPACITY (acre-feet)	SIZE OF POPULATION AFFECTED BY INUNDATION AREA[1]
Bear Gulch	California Water Service	61	672	1,000
Burlingame	Town of Hillsborough	87	91	2,800
Crocker	Town of Hillsborough	45	34	2,800
Crystal Springs	San Francisco Water Dept.	140	54,000	70,000
Emerald Lake	Emerald Lake Country Club	57	87	7,500
Felt Lake[2]	Stanford University	67	900	8,000
Johnston	Half Moon Bay Properties	27	30	100
Laurel	City of San Mateo	40	55	750
Notre Dame	College of Notre Dame	51	120	500
Pilarcitos	San Francisco Water Dept.	103	3,100	300
Rickey/West	Allen and Co. et al	64	47	100
San Andreas	San Francisco Water Dept.	107	18,500	70,000
Searsville	Stanford University	68	952	14,000

Source: San Mateo Operational Area, Dam Failure Contingency Plan, July 1983.

Note: 1. Includes population in both unincorporated and incorporated areas.

2. Although this dam is located in Santa Clara County, the inundation area includes portions of San Mateo County along the San Francisquito Creek.

Based on a "worst case" scenario, which assumes an earthquake on the San Andreas Fault of approximately 8.3 magnitude and the simultaneous failure of both the San Andreas and Lower Crystal Springs Dams (which are located directly on the fault), it has been estimated that inundation could cause 20-25,000 deaths in the greater San Mateo, Burlingame, Belmont, San Carlos areas.[19] For historical perspective, however, neither dam was damaged during the 1906 earthquake.

2. Seismically-Related and Other Geotechnical Hazards

a. Unstable Slopes

(1) Soil Creep

Soil creep is the slow downslope movement of soil and weathered bedrock. The moving layer can range from a few centimeters to several feet in thickness. Rates of movement also vary, ranging from less than a centimeter per year to 10 centimeters or more per week.[20] The rate of soil creep depends on several factors, including slope, slope materials and climate. The rate of creep can be increased or decreased by human activities, especially when the load on creeping slopes is increased with buildings or artificial fill. On the other hand, in certain situations, correct placement of artificial fill can decrease soil creep.

Although it is too slow to be perceptible, the cumulative effects of creep are easily recognized: cracked sidewalks, pavement and walls; leaning or bent trees and fences; and shifts in the alignment of linear features such as railroad tracks, streets and fences.

Soil creep in the unincorporated areas of San Mateo County does not constitute a significant natural hazard, but its effects on individual structures can be very damaging over time if not recognized and taken into account at the time of development.

(2) Landslides

Landslides include all movements of soil, rock or debris as a result of falling, sliding or flowing.[21] Most landslides are a combination of two or more types of motion and/or material. Landslides are categorized according to the types of motion and material involved. They can be directly caused by earthquakes or be completely independent of them.

Falls describe the sudden movement of material from vertical or near-vertical slopes, and are generally labeled by the type of material displaced (e.g., soilfall, rockfall).[22]

Slides refer to movements in which the material moves more or less as a unit along recognizable shear surfaces. If the shear surface is concave, the slide movement will be rotational, and is denoted by the term "slump." If the shear surface is planar, translational movement occurs and the term "slide" is used alone. Both slides and slumps are further classified according to the type of material involved (e.g., earth slump, rockslide, debris slide, where "debris" refers to combinations of soil, fill, weathered bedrock and or/organic material).[23]

Flows describe the movement of material in which a myriad of small-scale movements rather than massive sliding is the dominant mechanism of transport. This category is further broken down by the type of material involved and the rate at which it moves (e.g., debris flow, mudflow). The modifier "avalanche" is used to describe exceptionally fast flows.[24]

The occurrence of landslides is determined by both natural and human factors. Natural factors include the cohesive strength and shrink-swell characteristics of the affected minerals, the orientation of joints and planes of weakness between slide material and bedrock, the steepness of slopes, the degree of saturation of ground materials (highly affected by rainfall), and the density of vegetation. Human factors include the oversteepening and overloading of slopes, the removal of natural vegetation, the addition of water to the soil by watering of lawns and septic system drain fields, and onsite ponding of storm runoff.

The winters of 1982 and 1983 provided a grim reminder of the degree of hazard from landslides in San Mateo County. An extraordinarily intense storm on January 4, 1982 saturated many areas, triggering hundreds of small to major landslides in the County. Three children were killed in Pacifica when a debris avalanche struck a home, and millions of dollars in property damage were attributed to landslides throughout the County.[25]

The majority of these landslides occurred in steep sections of the western and northern parts of the County, and fortunately most of them were in sparsely populated areas. Damage would have been much greater if these areas were more heavily urbanized.

According to a U.S.G.S. study of nine Bay Area counties,[26] done in 1968-1969, the potential economic losses from landslides are directly proportional to population density. For San Mateo County, the hillside areas (both incorporated and unincorporated), from Redwood City to Daly City and Brisbane have the greatest potential for economic loss due to landslides. However, as the population of the County increases and more development takes place in rural unincorporated areas, the potential for economic loss due to landslides could increase

in other areas of the County as well. The Natural Hazards map indicates the concentration of areas of high landslide susceptibility in the southern portion of the County between Skyline Boulevard and the Coast.

b. Cliff Erosion

Wave action removes material from the base of coastal cliffs along the western edge of the County, causing varying degrees of landsliding and cliff erosion. This rate of erosion is dependent upon several factors, including the steepness of coastal slopes, lithology, the degree of consolidation of cliff materials, the response to precipitation and the incoming intensity and direction of waves. The Natural Hazards map identifies the relative stability of coastal cliff areas.[27]

Depletion or disturbance of protective beach sand can result in increased cliff erosion. This has happened at El Granada, where construction of a breakwater disturbed the natural balance between beach processes and cliff erosion. South of the breakwater, erosion has increased from approximately one foot per year to six feet per year, causing damage to sewer lines and roads.[28]

Coastal landslides are a serious problem in areas of low geologic stability. Significant property and street damage has occurred in the Westlake, Calera Valley and Seal Cove areas due to landsliding. The most significant coastal landslide is Devil's Slide, which Highway 1 traverses in order to connect Pacifica with the Mid-Coast.

c. Non-Seismic Land Subsidence and Differential Settlement

Subsidence and differential settlement (the uneven lowering of the ground surface) constitute minor natural hazards in San Mateo County. Local subsidence may be caused by extracting more groundwater than is replaced by the natural hydrologic cycle. The results from this drawdown are empty pore spaces in the soil, which are compacted from the weight of overlying material. Subsidence in San Mateo County has been minimal compared to the San Jose area, where subsidence of up to eight feet has occurred due to ground water extraction.[29]

Differential settlement, on the other hand, is a more common hazard, often occurring when buildings and bridges are built on poor foundation materials. Pilings are often used to anchor structures to firmer deposits below the surface in these situations. Surface footings tend to be used to support less important structures. If surface footings are used to support one part of a structure and pilings for another, differential settlement will occur, with the area supported by surface footings setting faster than the piling supported section. However, differential settlement generally occurs slowly enough that its effects are not serious.

Areas of the County most susceptible to differential settlement and subsidence are the bay muds and the historic marshlands, which have been covered with artificial fill over the last 150 years. These areas are sinking as the deposits slowly consolidate. The rate of consolidation decreases with time, but it may take up to 100 years for complete stabilization, during which time the loss of elevation could amount to several feet.

d. Shrink/Swell Behavior

Shrink/swell soils are those which can expand or contract depending on moisture content and soil mineralogy. Generally, expansive soils are associated with the presence of certain types of clay minerals, which expand considerably when wet and shrink, often into fine dusts, when dry.

Peat and other organic soils may pose a subsidence hazard. These soils, generally found in existing or former marshy areas, are highly compressible when dry. Upon drainage, the organic material (often partially decomposed plant matter) undergoes oxidation and results in a decrease in soil volume. Organic soils have not been extensively mapped in San Mateo County, and subsidence from their oxidation is likely to affect only a small portion of the County.

B. FIRE HAZARDS

1. Wildland Fires

San Mateo County, like many other parts of California, has environmental characteristics which increase the potential for fires in wildland areas. Highly flammable vegetation, long and dry summers, rugged topography, poor access for fire vehicles, increasing recreational use of remote lands and continuing popularity of rural residential development are all factors which are present in many of the unincorporated portions of the County which contribute to this hazard potential.

The degree of fire hazard is dependent on three major components: (1) the natural setting of the wildland area; (2) the degree of human use and occupancy of the wildland area; and (3) the level and ability of public services to respond to fires that do occur.

a. Natural Setting

(1) Vegetation Type

In San Mateo County, almost the entire unincorporated rural area is covered with woodland, brush or grassland except for the cultivated lands in the Coastal Zone. In recent years, extensive study has been undertaken at the State level to classify the fire hazard severity of different regions of the State. One of the key components in measuring severity is the type and quantity of flammable vegetation within a given unit

of land area. This factor, also known as "fuel loading characteristics," can then be combined with weather and slope to obtain a measure of relative hazard.

Three basic fuel loading characteristics have been identified by the State.[30] "Heavy" fuel loading vegetation is assigned to woodland and brushwood areas. This characteristic is generally assigned to vegetation that is six feet or more in height and which has a crown density[31] of 20 percent or more of the ground area. The heavy fuel loading vegetative types include conifers, and mixed evergreen timberlands and chaparral, which are found in abundance in the rural area of the County (see map of Vegetative Types in Vegetative, Water, Fish and Wildlife Chapter).

"Medium" fuel loading vegetation generally includes scrub vegetation that is less than six feet in height but with similar crown density characteristics. This category includes California sagebrush, coyote brush, manzanita and other chaparral species common to the County, as identified in the Vegetative, Water, Fish and Wildlife Chapter.

"Light" fuel loading vegetative types are various types of grasslands, herbaceous rangelands and irrigated pasture lands. These areas are almost completely treeless and, although highly flammable during dry seasons, do not have significant fuel content to sustain any fire that might be started.

(2) Weather Factors

The second major natural characteristic to consider in fire hazard measurement are local weather conditions. In Northern California, very little rain normally falls between mid-April and the beginning of November. By September, many portions of the State are tinder dry from months of aridity. At the same time, it is not unusual for strong, drying winds to blow in from the north and east.

The State has established three "critical fire weather frequency" classes to measure the weather-related fire hazard severity. These classes basically measure the annual number of days in which a critical "fire load index" is exceeded over a 10-year period, with Class I the lowest and Class III the highest level of danger.[32]

A fire weather frequency class rating has been provided for all of the U.S.G.S. quadrangles in California. Due to the high rainfall experienced by the portion of San Mateo County west of Skyline Boulevard, as well as the cooling influence of the summer coastal fog, no portion of San Mateo County is given the most severe weather rating.[33]

(3) Slope Characteristics

The third major characteristic of fire hazard measurement is the degree of slope present in a localized area. The rugged terrain and steep slopes that characterize much of the County's rural area can create extreme access problems for fighting fires once they have started. Generally, vegetation is more abundant in steep canyon areas due to less severe sun and wind exposure and greater capture of rain runoff. Fires that start in the bottom of canyons will burn sixteen times faster upslope than if they begin at the top of ridges and burn downslope.[34]

The State has divided slope categories into three different classes of fire severity.[35] Class I includes slopes from 0 to 40%. This category assumes that direct attack on the fire is possible with all-wheel drive fire trucks, bulldozers, hand crews and aircraft. Class II includes slopes of between 41 and 60%. This class assumes that direct attack is not possible with fire trucks, but still possible in most cases with bull-dozers, hand crews and aircraft. Class III (slopes greater than 61%) includes areas mostly beyond the capability of bull-dozers which can only be directly attacked by hand crews and aircraft.

(4) Composite Fire Hazard Severity Scale

Based on the information obtained over years of research into the effects of vegetative fuel loading, weather and slope factors in determining fire risk, the State has developed a fire hazard severity matrix for general planning purposes.[36] This matrix is reproduced in Table 15.3.

b. Human Use of the Wildland Area

The degree of fire hazard in the wildland areas is also greatly dependent on the number of persons who have access to those areas, whether as permanent residents or daytime visitors. The Rural Land Use Chapter has documented the trends in land conversion and use occurring in the more remote regions of the County. Although a significant amount of new residential development has not occurred in these areas, the access to the development that has occurred does not always meet the standards necessary for optimum fire vehicle access. This is true for certain private roads that have been constructed to serve new development and for certain public roads that were accepted into the County road system in like and kind.[37]

The Rural Land Use and Parks and Recreation Resources Chapters have also discussed the trends of increased visitor usage to rural parks and open space lands. Many of the large private properties in hazardous fire areas that have been purchased for open space use have recently been opened for the first time to public access, thereby increasing the risk of wildfire.

TABLE 15.3

COMPOSITE FIRE HAZARD SEVERITY RATINGS[1]
FOR VEGETATIVE FUEL LOADING, SLOPE AND WEATHER CONDITIONS

	CRITICAL FIRE WEATHER FREQUENCY[2]								
	FREQUENCY I			FREQUENCY II			FREQUENCY III		
	Slope (%)			Slope (%)			(Slope (%)		
FUEL LOADING[3]	0-40 (1)[3]	41-60 (1.6)	61+ (2.0)	0-40 (1)	41-60 (1.6)	61+ (2.0)	0-40 (1)	41-60 (1.6)	61+ (2.0)
Light (Grass) (1)[3]	1	1.6	2	2	3.2	4	8	12.8	16
Medium (Scrub) (8)	8	12.8	16	16	25.6	32	64	102.4	128
Heavy (Woods - Brushwood} (16)	16	25.6	32	32	51.2	64	124	204.8	256

Source: California Department of Forestry, "Fire Safe Guides for Residential Development in California," 1980.

Notes: 1. Fire Hazard Severity Ratings can be interpreted as follows:

Moderate Hazard = 1.0 - 12.8
High Hazard = 16.0 - 32.0
Extreme Hazard = 51.2 - 256.0

2. "Critical fire weather frequency" is a term used by the California Department of Forestry to rate weather conditions that are likely to produce high intensity fires. The frequency ratings, I, II, or III, are based on the number of days per year that a critical "fire load index" is exceeded in a given fire danger rating area. Frequency I (moderate) is assigned to areas exceeding this index less than one day per year over a 10-year period. Frequency II (high) is assigned for areas exceeding the index from 1 to 9.5 days per year and Frequency III (extreme) for those areas exceeding 9.5 days. No portion of San Mateo County is included in Frequency III.

3. The figures in parentheses represent numerical values assigned to slope/fuel loading classes in order to arrive at the fire hazard severity ratings.

c. Level of Fire Protection Services

(1) California Department of Forestry/County Fire Responsibility Areas

Since 1962, the County has contracted with the California Department of Forestry for structural fire protection and general rescue services in the unincorporated areas of the County not served by other fire districts or departments. Officially, this service is provided by CDF under the title of the County Fire Department. In some counties, CDF only has wildland fire protection (for forest, brush and grassland fires) in what are known as "State Responsibility Areas."[38] The general goal of the CDF/County Fire System is to provide a response time of five minutes or less to any fire occurring in the rural area 90% of the time.[39]

There are four main CDF/County Fire substations located within the boundaries of San Mateo County. The rural area is served by stations at Skylonda (near the intersection of Skyline Boulevard and State Route 84) and Pescadero. Additional support is available for the rural area from CDF's Saratoga Summit Station on Skyline Boulevard in Santa Clara County. The unincorporated urban area on the Bayside is served by fire stations in Emerald Lake Hills and on Tower Road in Belmont.

County Fire protection services for the rural area are supplemented by eight volunteer fire companies. These small companies made up of local residents often are the first to respond to local emergencies. In recognition of their value, the Board of Supervisors annually budgets funds for the volunteers' equipment, protective clothing and training as part of the County's contract with CDF. Table 15.4 lists the County Fire and volunteer fire protection facilities, their level of staffing, and the equipment available for fire protection services.

Another measure of the adequacy of the level of fire protection for a particular area is the insurance rating set by the Insurance Services Office, a grading schedule to measure the relative fire risk of different communities. The I.S.O. rating reflects the adequacy of water supply, adequacy of the fire department, the quality of fire communications and the frequency of fire safety control programs. The grading system ranks areas from one (best) to ten (most deficient).[40]

In San Mateo County, the grading classifications range from Class 3 to Class 9, with several of the City fire departments in the Class 3 rating. The unincorporated areas served by CDF range from a rating of 4 in County Service Area No. 1 (San Mateo Highlands) to 8 in the Pescadero, Burlingame Hills,

TABLE 15.4

CALIFORNIA DEPARTMENT OF FORESTRY/COUNTY FIRE DEPARTMENT SUMMARY OF FACILITIES, PERSONNEL AND EQUIPMENT SERVING THE UNINCORPORATED AREA

FACILITY	LOCATION	EQUIPMENT AVAILABLE[1]	PERSONNEL
California Department of Forestry Facilities[2]			
Skylonda Station	Skyline Blvd. near State Route 84	3 Engines	14
Belmont Station	Tower Road, Belmont	3 Engines	23
Pescadero Station	Pescadero	2 Engines	12
Emerald Lake Station	Jefferson Avenue, Woodside	1 Engine	6
Volunteer Facilities			
Palomar Park Volunteer	Palomar Drive (unincorporated area in San Carlos Sphere of Influence)	1 Engine 1 Rescue Vehicle	11
Kings Mountain Volunteer	Skyline Blvd. (near Kings Mountain Road intersection)	1 Engine 1 Rescue Vehicle 1 Water Tender	23
Skylonda Volunteer	Woodside Road and Skyline Blvd.	1 Engine	7
La Honda Volunteer	La Honda	1 Engine 1 Water Tender	11
Pescadero Volunteer	Pescadero	1 Engine 1 Water Tender "Jaws of Life"	15
Loma Mar Volunteer	Pescadero Road, Loma Mar	1 Engine	12
Middleton Tract	End of Portola State Park Road	1 Engine	12
South Skyline/ Saratoga Summit	Skyline Blvd., near State Rt. 9	1 Water Tender	15

Source: California Division of Forestry/County Fire Department

TABLE 15.4 (continued)

CALIFORNIA DEPARTMENT OF FORESTRY/COUNTY FIRE DEPARTMENT SUMMARY OF FACILITIES, PERSONNEL AND EQUIPMENT SERVING THE UNINCORPORATED AREA

Notes:
1. During the summer, CDF/County Fire loses three contract engines. However, the State (CDF) mans five engines and hires approximately 20 additional seasonal personnel which can be used for structural fire protection.

2. All CDF companies have medical and rescue equipment and vehicle extrication equipment.

Palomar Park, and Skyline County Water District areas. The remaining unincorporated areas which encompass most of the rural County have been rated Class 9.[41]

(2) Other Fire Protection District Responsibility Areas

Fire protection districts provide fire protection services to portions of the unincorporated area which are not served by CDF/County Fire. In addition to providing fire protection services, districts also provide the following services: ambulance, rescue and fire aid; clearing of vegetation; adoption of fire prevention ordinances; issuance of burning permits; and dissemination of fire prevention information. Seven fire protection districts directly serve portions of the unincorporated areas of San Mateo County that are not served by CDF/County Fire. These districts have varying mutual aid agreements with other jurisdictions, allowing them to request back up aid if necessary. Table 15.5 lists the individual fire protection districts, the number of their facilities, the portions of the unincorporated area served by each, and the number of personnel and equipment they have available. This table also summarizes the mutual aid agreements each district has with other districts.

2. Urban Fires

CDF/County Fire generally provides fire protection services to the unincorporated rural areas, with the exception of a few urbanized unincorporated portions of the County, most significantly, Emerald Lake Hills, Palomar Park and San Mateo Highlands. Other unincorporated urban areas are served by fire protection districts, as indicated in Table 15.5. In these areas, structural fire hazards can be a major problem.

The key components in measuring relative fire hazard in urban areas are access for fire vehicles and availability and adequacy of water for fire flow. Weather is usually not an important factor in the urban portion of the County. Response time is generally faster in urban areas. Two of County Fire's four stations, Belmont and Emerald Lake, are located in the unincorporated urban area. The independent fire protection districts have facilities in close proximity to developed urban areas.

In the Belmont area, water supply is generally adequate to meet the needs for fighting structural fires. In Emerald Lake Hills and Devonshire Canyon the key problems have been inadequate roads and water distribution systems (hydrants and size of water lines).[42]

C. FLOODING HAZARDS

1. Rural Flooding Hazards

The risk of flooding in the rural area is dependent on several variables: the amount and intensity of rainfall that is annually

TABLE 15.5

FIRE PROTECTION AGENCIES[1] SERVING SAN MATEO COUNTY UNINCORPORATED AREAS
SUMMARY OF FACILITIES, UNINCORPORATED AREA SERVED, PERSONNEL,
EQUIPMENT AND MUTUAL AID AGREEMENTS

FIRE PROTECTION AGENCY	AREA SERVED (UNINCORPORATED)	PERSONNEL	EQUIPMENT	MUTUAL AID AGREEMENT[2]
Colma F.P.D.	Unincorporated areas between Daly City and Colma, including Broadmoor	.5[3]	4 Engines 1 Rescue	San Mateo County
Half Moon Bay F.P.D.	El Granada, Miramar, Princeton-By-The-Sea and the canyons east and south of Half Moon Bay	18	5 Engines 1 Rescue	San Mateo County
Menlo Park F.P.D.	Unincorporated areas in Atherton, East Palo Alto and Menlo Park	104	6 Engines 2 Rescue	Redwood City and Palo Alto
Palo Alto Fire Dept.	Most of unincorporated Stanford lands[4]	4	1 Pumper 1 Staff Car	Woodside, Menlo Park[5] CDF
Point Montara F.P.D.	Moss Beach and Montara	5	3 Engines	San Mateo County Half Moon Bay
Redwood City Fire Dept.	Portion of North Fair Oaks, north of Middlefield Road	3	1 Engine 1 Ladder Truck	Menlo Park
San Francisco Fire Dept.	San Francisco International Airport	65	5 Engines 1 Pumper 1 Ladder Truck 1 Rescue Boat 1 Rescue	San Mateo County
South County Fire[6] Agency	Harbor Industrial Area[7]	67	5 Engines	Redwood City and San Mateo County

TABLE 15.5 (continued)

FIRE PROTECTION AGENCIES[1] SERVING SAN MATEO COUNTY UNINCORPORATED AREAS
SUMMARY OF FACILITIES, UNINCORPORATED AREA SERVED, PERSONNEL,
EQUIPMENT AND MUTUAL AID AGREEMENTS

FIRE PROTECTION AGENCY	AREA SERVED (UNINCORPORATED)	PERSONNEL	EQUIPMENT	MUTUAL AID AGREEMENT[2]
Woodside F.P.D.	Los Trancos Woods, Vista Verde, Ladera, Emerald Lake Hills, and portions of Stanford Lands[8]	33	5 Engines 1 Rescue City	San Mateo County, Menlo Park, Redwood Palo Alto, and CDF

Source: San Mateo County Local Agency Formation Commission, Cities and Special Districts Handbook, 1984, and Telephone Survey of other Fire Protection Agencies, 1984.

Notes:
1. This table includes all fire protection agencies serving unincorporated areas outside of CDF/County Fire responsibility areas.
2. This column summarizes the districts that have mutual aid agreements for response to fire emergencies.
3. The .5 personnel figure refers to the one-half of the fire prevention officer position that is funded by the district. Other personnel of the district are volunteers and are paid a small hourly sum when called.
4. Palo Alto Fire Department provides primary fire protection services to most of the unincorporated Stanford lands under terms of a contract with the University. Woodside Fire Protection District is the primary response agency for portions of the Stanford lands as outlined below in Note 8.
5. Stanford has an automatic mutual response agreement with Menlo Park Fire Protection District by which a simultaneous response occurs. This differs from the mutual aid agreement which is more of a "backup" response.
6. South County Fire is a consolidated fire agency created by a joint powers agreement that combined the Belmont Fire Protection District and San Carlos Fire Department.
7. A portion of Harbor Industrial is served by CDF/County Fire.
8. Woodside Fire Protection District provides first response to the Guernsey Field and Jasper Ridge portions of the unincorporated Stanford land.

received in each watershed; the width and topographic setting of the flood plains of the major streams; the degree to which flood control improvements have been made; and, most importantly, the amount of development that is located within known flood plains.

The unincorporated rural areas of San Mateo County are drained by 21 major watersheds. All but two of these drain to the Pacific Ocean. Only the Crystal Springs and San Francisquito Watersheds drain to San Francisco Bay. In the rural area, the major streams remain almost completely in undisturbed natural conditions. Very few flood control improvements outside of installation of culverts and occasional clearance of debris from creek channels have taken place. Major flood control projects such as channelization or channel diversion have only been undertaken in more densely populated urban areas on the Bayside.

Compared to neighboring Bay Area counties, the rural portion of San Mateo County receives abundant annual rainfall. In effect, the rural mountainous areas act as a "rain trap." Average rainfall in the rural area ranges from more than 45 inches per year in the Skyline Ridge area to over 30 inches per year in most of the South Coast Watersheds west of Skyline. By comparison, Redwood City, located on the east side of the Skyline Ridge, averages only 19 inches per year.[43]

During years of average rainfall and relatively mild storm systems, the natural stream channels of the rural watersheds are adequate to drain the runoff that is generated. However, in years of abnormally high rainfall or unusually severe storms, disastrous flooding can occur. Runoff during such conditions cascades rapidly down the narrow stream channels of the mountainous areas. The strong velocity of flood waters during these conditions can carry debris for long distances, blocking stream channels and creating areas of severe localized flooding.

Table 15.6 summarizes the annual measured stream flow of San Gregorio and Pescadero Creeks between 1970-81. This table indicates the wide variation in runoff that can occur in the rural area. In the San Gregorio watershed, an area that drains over 39,000 acres, runoff has ranged from over 61,000 acre-feet in 1972-73 to only 840 acre-feet in the severe drought year of 1976-77.

Major floods in the County have occurred in 1940, 1955, 1958, 1973 and 1982. The December 1955 flood was the most severe in recent history until the 1982 flooding event. The 1982 flood had its most severe impacts in the Pescadero area, the one part of the rural area where a significant amount of development has occurred in a natural flood plain. The storm of January 4, 1982 almost completely flooded the rural service center, blocked all access roads to the town, and severed telephone and electric power services. Most of the residents of Pescadero had to be evacuated.

The standard for assessing the risk of flood hazard has been to determine the "100-year flood plain" for waterways that have the potential for creating hazards to life and property. The flood plain for this

TABLE 15.6

ANNUAL MEASURED STREAMFLOW FOR PESCADERO AND SAN GREGORIO CREEKS
WATER YEARS 1970-1981
(acre-feet)[1]

	MEASURED STREAMFLOW	
WATER YEAR[2]	PESCADERO CREEK[3]	SAN GREGORIO CREEK[4]
1970	30,420	28,790
1971	18,540	22,840
1972	4,660	5,630
1973	51,830	61,220
1974	47,290	57,820
1975	25,780	19,020
1976	2,990	2,220
1977	1,250	840
1978	45,620	34,110
1979	16,600	18,210
1980	41,520	34,630
1981	9,640	9,250
12 Year Mean	24,680	24,550
12 Year High	51,830 (1973)	61,220 (1973)
12 Year Low	1,250 (1977)	840 (1977)

Source: U.S. Geological Survey, Water Resources Data for California, Reports for Water Years 1970-1981

Notes:
1. An "acre-foot" is defined as the volume of water that would cover one acre to a depth of one foot. Each acre-foot is equivalent to 325,851 gallons.
2. A "water year" is the official term of measurement used by U.S.G.S. to monitor seasonal streamflow. It corresponds to the beginning of each rain season (October) and measures through to the end of September.
3. The Pescadero Creek measuring station is located 5.3 miles upstream from the mouth of the creek (approximately 3.0 miles east of the town of Pescadero).
4. The San Gregorio Creel measuring station is located just south of the town of San Gregorio, approximately 1.4 miles upstream of the mouth of the creek.

100-year flood is the area that has a one percent statistical probability of being exceeding in any given year. This flood plain has also been referred to as the "base flood."

In recent years, the area of the 100-year flood has been further refined and divided into the floodway and floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain area that must be kept free of encroachment so that the 100-year flood may be carried without substantial increases in flood heights. Federal and County regulations for development in flood plains, which are discussed later in this section, maintain this distinction.[44] Although the 1982-1983 flooding was severe in the Pescadero area and other portions of the County, it did not exceed the 100-year flood plain boundaries delineated for the County by Federal agencies.

The Natural Hazards map illustrates the flood prone areas of San Mateo County. This map indicates the extent of the 100-year flood plain in Pescadero and other areas. These areas will be referred to as "areas of special flood hazard." This map also indicates the potential for flooding in inundation zones of dams located in San Mateo County.

Inundation is a hazard which, although having very low probability, can expose large numbers of persons to extreme risk. As a result, the California Emergency Services Act requires the preparation of engineered maps indicating the maximum area that would be flooded during a catastrophic dam failure. Table 15.2 lists the dams for which inundation maps have been prepared.

2. Urban Flooding Hazards

In more densely populated urban areas, the risks to life and property from flood hazards are increased. In the past, development patterns in urban areas have generally ignored the threat of flooding. As more and more development occurred within floodplain areas, it often became necessary to finance expensive engineering solutions to the flooding problems.

In the urban portion of the County, the problem of directing storm runoff from the mountains to the Bay has been addressed through various flood control and drainage districts. Table 15.7 lists the various flood control zones within the urban portion of the County. The financing mechanisms of these districts varies, but generally they are financed by assessments on each property within the district benefiting from construction of flood control improvements. These improvements have included installation of culverts, bridges, construction of levees, various methods of channel alteration or installation of underground storm drains. In spite of these improvements, however, many of the creek channels could be overtopped during the 100-year flood.[45]

The "solution" to the flood hazard problem in the urban area can itself create certain hazardous situations. When natural stream channels are altered and vegetation is removed, the velocity of the storm runoff

TABLE 15.7

SAN MATEO COUNTY FLOOD CONTROL DISTRICT ZONES

DISTRICT	AREA SERVED	TOTAL ASSESSED VALUATION, 1982-83 (in millions of (dollars)
Colma Creek Flood Control Zone	Portions of Daly City, South San Francisco, Colma, Pacifica and other unincorporated areas	2,430
Colma Creek Flood Central Subzone 1	Central portion of South San Francisco, west of Highway 101	69
Colma Creek Flood Control Subzone 2	Parts of southern and eastern South San Francisco, completely surrounding Colma Creek Flood Control Subzone 1	517
Colma Creek Flood Control Subzone 3	Portions of Daly City, South San Francisco and other unincorporated areas	1,844
Ravenswood Slough Flood Control Zone	Portions of East Palo Alto and Menlo Park	347
San Bruno Creek Flood Control Zone 1	Lands owned by the San Francisco International Airport west of Highway 1	5
San Bruno Creek Flood Control Zone 2	The drainage basin area within the City of San Bruno	686
San Francisquito Creek Flood Control Zone 1	Southern East Palo Alto area, along the border between Santa Clara and San Mateo Counties	46

TABLE 15.7 (continued)

SAN MATEO COUNTY FLOOD CONTROL DISTRICT ZONES

DISTRICT	AREA SERVED	TOTAL ASSESSED VALUATION, 1982-83 (in millions of (dollars)
San Francisquito Creek Flood Control Zone 2	Portions of Woodside, Menlo Park, East Palo Alto and Portola Valley, bounded by the Santa Clara, San Mateo County borderline and Skyline Boulevard	1,330

Source: San Mateo County Local Agency Formation Commission, City and District Handbook, 1984.

increases because it can more efficiently flow toward the Bay. This can create hazards to those who might accidentally fall into the creek, particularly young children.

Urban areas can also be victimized by the problem of debris blockage of creek channels. In many areas, residential neighborhoods border directly on creek channels. These areas could easily be spot-flooded if the channels are not clear. Additionally, decaying flood-deposited garbage or other organic material could create health hazards in the aftermath of a flood.

The hazards of tidal flooding in the unincorporated areas proximate to San Francisco Bay have been mitigated to some degree by the series of levees constructed for salt evaporation ponds. The location of these ponds is indicated in the Minerals Chapter. Generally, however, these levees would not withstand the flood intensities of the 100-year base flood.[46]

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING NATURAL HAZARDS

A. GEOTECHNICAL HAZARDS

1. Federal

a. Earthquake Hazards Reduction Act of 1977

In 1977, Congress adopted the National Earthquake Hazards Reduction Act,[47] which resulted in the preparation of the "National Earthquake Hazards Reduction Program." The Federal Emergency Management Agency (FEMA) was designated as the coordinating agency for this program, which has three major objectives: (1) predicting and preparing for earthquakes; (2) seeking ways in which government, industry and the public can apply knowledge of seismic risk when making land use decisions; and (3) promoting the most up-to-date earthquake resistant design and construction technologies through an ongoing research and development program. A clear focus of the program is to avoid the necessity of dispensing Federal disaster funds by mitigating earthquake hazards in advance.

b. Disaster Relief Act of 1974

In 1974, Congress adopted the Disaster Relief Act[48] in order to clarify the Federal government's role in rendering disaster assistance and to encourage more effective disaster preparedness planning at the State and local levels. The key features of this Act are: (1) specifying the procedures by which the States can request Federal disaster relief funds and aid; (2) encouraging the development of comprehensive disaster preparedness plans at the Federal, State and local levels; (3) achieving better coordination among agencies for response to disaster situations; (4) encouraging hazard mitigation measures to reduce future losses, including development of land use and construction regulations; (5) insuring

that Federal agencies are adequately mobilized to provide disaster warnings to State and local officials; and (6) providing Federal assistance and long-range economic recovery planning services for areas that receive substantial losses due to disasters. As defined in this legislation, a disaster includes earthquakes and other geotechnical hazards. The execution of the provisions of the Act also rests with the Federal Emergency Management Agency (FEMA).

c. United States Geological Survey (U.S.G.S.)

The United States Geological Survey was established by Congress for the examination of the geological structure, mineral resources and products of lands in the public domain.[49] The U.S.G.S. also has the principal Federal responsibility for earth science aspects of earthquake hazards reduction. The main components of this program are: (1) acquisition and dissemination of information on earthquake occurrences; (2) mapping and evaluation of earthquake hazards; and (3) developing improved capability to predict the time, place and magnitude of earthquakes.

2. State and Regional

a. The Field Act (1933)

In 1933, in the aftermath of a strong earthquake that completely destroyed a high school in Long Beach, the State Legislature adopted The Field Act.[50] This Act amended the Education Code to require that public schools be designed for the protection of life and property, specifically incorporating concern about the hazards of earthquakes. The Education Code was later amended to require that geological and soil engineering studies be conducted on all new school sites and existing sites where deemed necessary by the State Geologist.

b. California Emergency Services Act (1970)

The California Emergency Services Act (CESA) was adopted in 1970 to insure that preparations within the State will be adequate to address natural, man-made or war-caused emergencies.[51] This law: (1) specifies the emergency powers granted to the governor and the governing bodies of the political subdivisions of the State in times of emergency; (2) defines different levels of emergency and the procedures for their proclamation by the governor; (3) establishes an Office of Emergency Services in the Governor's Office and requires that a "State Emergency Plan" be prepared and coordinated by that office; (4) provides for the mutual aid and coordination of State agencies and departments in implementing the emergency plan; and (5) specifies that the emergency plan should be carried out by the State's political subdivisions (e.g. cities and counties).

The Act also establishes the California Emergency Council as an ongoing planning and advisory council to the governor. The Emergency

Council has divided the State into mutual aid regions for emergency response. Each county is an "operational area" within the mutual aid region, and is authorized to create a local disaster council if desired.[52]

c. Alquist-Priolo Special Studies Zones Act (1972)

The Alquist-Priolo Special Studies Zones Act of 1972 was the State Legislature's response to concern for public safety in the aftermath of the San Fernando earthquake of 1971.[53] The Act required the State Geologist to delineate Special Studies zones around all potentially and recently active fault traces in California. Normally these zones include an area that is one-quarter mile or less in width.

The intent of these zones is to avoid the construction of structures for human occupancy on or near hazardous fault areas so that catastrophic rupture during a seismic event is prevented. In implementing the Act, the State submitted preliminary maps to all cities and counties affected by the zones. After review by local agencies, the State Geologist officially designated the Special Study zones, often with modifications requested by the cities or counties. Once officially adopted, the local jurisdictions are required to adopt review procedures for new development proposed within the zones.

The Act also provides that each building permit issued within a Special Studies zone be assessed a fee not to exceed one-tenth of one percent of the total valuation of the proposed building construction. One half of the proceeds of this fee will be retained by the County for implementation of the local jurisdiction's Alquist-Priolo requirements. The remaining proceeds are sent to the State General Fund for further geotechnical research.[54]

d. Strong Motion Instrumentation Program (1972)

Section 2705 of the Public Resources Code was added soon after the passage of the Alquist-Priolo Act. This section requires all cities and counties to assess fees on each building permit, not to exceed .007% or fifty cents (whichever is higher) in order to establish a funding source for the local installation of strong motion monitoring instruments.

e. Amendments to the State Health and Safety Code (1974)

In the aftermath of the 1971 San Fernando Earthquake, amendments were made to the State Health and Safety Code to require geological and engineering studies for new hospitals and additions which affect the structure of existing hospitals.[55] Other amendments were added to require that most new buildings be constructed to resist lateral forces, exempting small wood-frame structures.[56]

f. Senate Bill 1993 (1980)

In 1980, the State Legislature approved Senate Bill 1993, which amended the Municipal Improvement Act of 1911 to allow the formation of hazard abatement districts to address geologic hazards.[57] This bill also included geologic hazard abatement as a service which may be provided by a County service area and included earthquakes as one of the geologic hazards that may be mitigated by formation of an assessment district.

g. Assembly Bill 604 (1982)

In 1982, the Legislature adopted Assembly Bill 604 in order to establish a low-cost loan program for owners of structurally unsafe buildings in order to bring them up to standards for seismic safety.[58] This bill authorizes local agencies to provide financing, providing that the interest rate charged by the agency is limited to the amount necessary to pay interest on bonds issued for such program and to defray administrative costs. It also authorizes local agencies to conduct this program in tandem with the Marks-Foran Residential Rehabilitation Act of 1973.

h. Landslide Hazard Identification Program (1983)

In 1983, the Legislature passed Assembly Bill 101.[59] This bill requires the State Division of Mines and Geology to prepare maps of landslide areas within urban areas of the State. These maps would be reviewed annually by the Legislature and are intended for use by local agencies in their planning programs. In July 1984, the Division of Mines and Geology began contacting local agencies to determine the scope of data needed at the local level to implement this program.[60]

3. Regional

a. Association of Bay Area Governments (ABAG), Regional Plan for the San Francisco Bay Area, Safety and Earthquakes Chapters

The Association of Bay Area Governments (ABAG) prepares and annually reviews the Regional Plan for the San Francisco Bay Area. This Regional Plan contains Safety and Earthquake Preparedness Chapters which set regional objectives for addressing these issues. The Safety Chapter discusses pre-disaster hazard reduction methods that can be taken by local government, ways of improving coordination among agencies for response to emergencies and post-disaster recovery planning.

The Earthquakes Chapter focuses on incorporating Seismic Safety concerns into ABAG's plan and project review functions, supporting or advocating legislation at the Federal and State level, and providing assistance to ABAG member governments about seismic safety issues. Included among the review functions are the review of local

general plan seismic safety and safety elements for conformance with regional goals.

4. County

a. General Plan Policies

(1) Seismic and Safety Element

The Seismic and Safety Element, adopted in 1976, contains policies which generally: (1) propose strategies for the reduction of the risk of geotechnical hazards to acceptable levels; and (2) support the integration of data on geotechnical hazards into the development review process. The document was prepared as an interjurisdictional effort, evaluating seismic and safety issues for fourteen of the County's cities, as well as for the unincorporated area. Most of the cities adopted the element as their own, with policy variations dependent on local conditions.

More specifically, the policies of the Seismic and Safety Element call for the expenditure of funds for active reduction of the most critical geotechnical hazards, require that future land use proposals incorporate hazard mitigation measures to reduce the risk of exposure of residents to them, and require that geotechnical information and risk evaluation be incorporated into the review process for proposals for zoning changes, subdivision or building permits. Policies also suggest criteria for the location of critical public utilities and facilities, consideration of the hazards of tsunamis, seiches and dam failure inundation in review of development in areas exposed to those risks, and express support of interjurisdictional cooperation and educational programs to increase public awareness of geotechnical hazards.[61]

To provide a technical data base for the evaluation of the presence of geotechnical hazards on individual parcels proposed for development, a set of Geotechnical Hazards Synthesis Maps were prepared and included as an appendix to the Seismic and Safety Element. The Alquist-Priolo Special Studies Zones were included on these maps in compliance with State law requirements.[62] The synthesis maps divide the County into five sections, illustrating at a workable scale the principal hazards found in the rural area.

(2) Conservation and Open Space Element

The Conservation and Open Space Element, adopted in 1973, contains policies for the protection and enhancement of the County's natural resources. This document contains maps of hazard areas and designates much of the rural area for open space due to identified hazards of steep slopes and landslide

susceptibility. The scale of the maps included in this document, however, is useful only for a very general overview of hazard areas. The Conservation and Open Space Element also contains policies requiring the preparation of detailed geotechnical reports during preparation of environmental review for public and private projects to consider soil capabilities and potential erosion impacts.

(3) Area Plans

(a) Local Coastal Program (LCP)

The LCP contains a Hazards Component[63] which evaluates geotechnical, fire and flooding hazards in the Coastal Zone, designates their location and incorporates policies to address them. Important policies of this component are the application of geologic hazard review criteria to designated geologic hazard areas, regulation of development on coastal bluffs, requirements for geotechnical review of development proposals in designated hazardous areas and regulation of development on 30% or steeper slopes. Adherence to these policies is required prior to issuance of any coastal development permit.

(b) Emerald Lake Hills Community Plan

Policy 5.1 of the plan for Emerald Lake Hills requires adequate geological investigation of any site conditions before issuance of building permits.

(c) North Fair Oaks Community Plan

Liquefaction could be a potential problem in isolated portions of North Fair Oaks during a major seismic event. The North Fair Oaks Community Plan's Policy 5.2 incorporates the Seismic and Safety Element's policies related to liquefaction potential to resolve this issue.

b. Other County Policies and Programs

(1) County Building Permit Review Procedures

The County's building code allows the building official to withhold the issuance of a building permit if the County Engineer or his subordinate, the County Geologist, requires more information.[64] If a discretionary action on a building permit is necessary, the application is assigned to a project planner, who refers the matter to the County Geologist for review. Discretionary review is necessary in any building permit application for a new dwelling.[65]

The County Geologist has set guidelines on the types of building permits that can be processed without geotechnical review.[66] Geotechnical reports are mandatory for any development proposed within the boundaries of the Alquist-Priolo Zones or the County's GH overlay zoning district.

In cases where referral is made to the County Geologist, the decision of whether or not to prepare a geotechnical investigation rests solely with him. He bases his decision on his knowledge of the County, as well as a preliminary check of available information, including aerial photographs, previous geotechnical reports on or near the site, U.S.G.S. geotechnical maps and Alquist-Priolo Special Studies Zone Maps. In some cases, a visit to the field is also necessary before a decision is made.[67]

Once it is determined that a geotechnical investigation is necessary, a report that meets the County's minimum standards for geotechnical reports must be prepared by an outside consultant.[68] This report must be reviewed and approved by the County Geologist prior to issuance of the building permit. The County Geologist estimates that approximately 50% of building permit applications that are reviewed are processed without requiring geotechnical investigations.[69]

(2) County CEQA Guidelines

The County's CEQA Guidelines require an Initial Study to evaluate environmental implications of a project unless the project is exempt. The Initial Study has a section containing geologic questions. Positive answers to these questions make it likely that a more extensive environmental document will need to be prepared. In major projects, a geotechnical investigation is normally included as an appendix to the environmental document.

(3) County Emergency Response Procedures

The California Emergency Services Act of 1970 specifies that the State emergency plan be carried out by the State's political subdivisions. The County and the twenty cities have prepared the San Mateo Operational Area Emergency Plan,[70] which is consistent and compatible with the State Emergency Plan, and have entered into a joint powers agreement for the purpose of carrying out coordinated plans for the protection of lives and property in the event of an emergency. Member cities and the County prepare separate plans for their respective jurisdictions. However, the County coordinates emergency response planning between agencies. An area administrator is responsible for activating emergency response activities.

In the event of an earthquake, an initial assessment of damage to basic communications systems, dams, hospitals and other critical facilities is made and reported to the County Manager and to the State Office of Emergency Services. Once an assessment of damage has been made, the area administrator makes the appropriate recommendation for a disaster declaration,[71] and coordinates mutual aid requests. The area administrator's office also maintains liaison with the media, compiles damage assessment information and establishes a public inquiry center. If the earthquake is of such magnitude that a disaster area need be declared by the State, the procedures of the State Emergency Response Plan would be applied.

c. County Ordinances

(1) County Zoning Ordinance

(a) Geologic Hazards District (GH)

The GH district is an overlay zone that may be combined with any other zoning district.[72] Its regulations are additive to those of the underlying zone. This district is applied to extremely hazardous geologic areas and is adopted only after preparation of a geotechnical report prepared by a certified engineering geologist under the direction of or subject to review by the County Geologist. The conclusions and recommendations of this report become the standards for review in that GH district after its adoption by the Board of Supervisors.

No building permit may be issued within this district until: (1) review of a geotechnical report on the development proposal is completed by the County Geologist; and (2) the applicant records a restriction on the parcel's deed explaining that it is located in a hazardous district. At the present time, the only designated GH district in the County is in the Seal Cove area of Moss Beach.

This GH district contains three zones which define varying degrees of geotechnical severity. Zone 1 is an extremely high risk area where the feasibility of reducing the risks associated with a project to an acceptable level is considered extremely low. Zone 2 is an area of questionable stability where the hazard may be reduced to an acceptable level through proper site management. Zone 3 is an area of low to moderate risk where the feasibility of reducing risk is considered to be relatively high. Most of the area within this district is in Zone 3, although there is a large amount of land adjacent to the coastal bluffs that is in Zone 1.

(b) Resource Management Districts (RM and RM/CZ)

Extensive geotechnical considerations are incorporated into the development review criteria of the RM zoning district. The project must satisfy environmental quality, site design, hazards to public safety and, where appropriate tsunami, seismic fault/fracture and slope instability criteria prior to final approval.[73] In most cases, a geotechnical investigation is required by the County Geologist during this phase.

Geotechnical factors are also taken into consideration in computing density credits allowed for a parcel under application. Among these are landslide susceptibility, active faults and steep slopes. Fewer density credits are allowed in portions of a parcel that contain these features in the Coastal Zone than in other RM areas.

(c) Timberland Production Districts (TPZ and TPZ/CZ)

The TPZ districts have similar procedures to the RM. A density matrix is used to consider the same geotechnical factors as the RM district in computing allowable density. There are also development review criteria which must be met.[74] Major development is subject to a detailed development and timber management plan which includes criteria for the evaluation of geotechnical and other environmental factors. Geotechnical hazards which affect the harvest of timber are evaluated during review of this plan.

(d) Planned Agricultural District (PAD)

The PAD, like the RM and TPZ, also allows a density of development that is determined by a matrix analysis which includes landslide susceptibility and slope.[75]

(e) Residential Hillside District (RH)

The RH district was adopted into the County Zoning Ordinance to address development issues in the Emerald Lake Hills area.[76] The district's regulations attempt to minimize disruption of the unique hillside environment of the area, while also addressing the hazards associated with such development. Section 6814 of this Ordinance allows the County Geologist to require geotechnical reports prior to issuance of building, grading or design review permits.

(2) Other County Ordinances

(a) County Subdivision Ordinance

Any proposal for the subdivision of land is subject to the requirements of Ordinance 595 (as amended). This ordinance requires geological and soils reports on any site proposed for subdivision unless specifically waived by the County Geologist.

(b) County Grading Ordinance

Any application for a grading permit must be accompanied by a geotechnical investigation that fulfills the County's Minimum Standards for Geotechnical Reports, unless specifically waived by the Director of Public Works.[77] The consultant who prepares the geotechnical report is responsible for construction supervision and inspection of cut and fill areas. Upon completion of grading, the consultant must also certify that the site was graded and filled in accordance with approved geotechnical recommendations.

B. FIRE HAZARDS

1. Federal

a. Clarke-McNary Act (1924)

The Clarke-McNary Act, adopted by Congress in 1924, authorizes the Secretary of Agriculture to recommend systems for adequate fire protection for protection of Federal, State and local timber resources and authorizes the Secretary to assist in protection of these lands when threatened. It also authorizes expenditure of Federal funds to assist local governments in these efforts. The Clarke-McNary Act has been accepted into California Law by Section 4185 of the State Public Resources Code.

b. National Fire Prevention and Control Act (1974)

In 1974, Congress adopted the National Fire Prevention and Control Act in an effort to reduce the nation's losses caused by fire. Key features of this act provide assistance and training programs for the States and local agencies, the establishment of a National Fire Data Center and the establishment of master plans for fire prevention and control at the Federal, State and local levels. This program is under the direction of FEMA, which is required to make an annual report to Congress. The master plan for fire protection is used by FEMA in its disaster preparedness planning efforts.

2. State

a. State Department of Forestry Responsibility Areas

The California Department of Forestry has primary responsibility of preventing and suppressing wildland fires in the unincorporated areas known as State responsibility areas. In addition, San Mateo County has contracted with the State to receive both structural and wildland fire protection services and to extend structural fire protection to areas beyond State responsibility areas.

b. Designation of Hazardous Fire Areas

The State Public Resources Code (Section 4253 of Division 4) allows the Director of the Department of Forestry to designate areas which contain flammable vegetative material as hazardous fire areas and to close such areas to public access during times of severe fire hazard. However, highway access through such areas cannot be prevented by this closure.

In San Mateo County, most of the rural areas located outside of the cultivated regions of the Coastal Zone have been included in the designated hazardous fire areas map. The boundary of this area is indicated on the Natural Hazards map. According to CDF/County Fire personnel, important areas have been omitted from the designated hazardous areas and should be included in future mapping efforts.[78]

c. Designation of Fire Hazard Severity Zones

SB 78 (1981) and SB 1916 (1982) require the Director of the California Department of Forestry to zone all State responsibility areas according to the degree of fire hazard severity.[79] These zones are to reflect homogeneous landscapes as much as possible, with the relative fire hazard designation based on fuel loading, slope, critical weather and other relevant factors. The presence of existing development is not to be considered an additional risk factor. The Department of Forestry has begun to reidentify these zones. When the preliminary maps are completed, they will be referred to the Board of Supervisors of each affected County for a public hearing. Once the maps have been certified after this public review, the State Fire Marshal will develop regulations for each zone for roof coverings and attic openings on all new buildings and remodelings covering more than fifty per cent of the structure.[80]

The principal product of this process will be a map of each county that will indicate the State responsibility areas divided into the three zones of fire hazard severity. This map will then be used by the Building Inspection Department of each county in order to apply the State Fire Marshal's regulations. The fire hazard severity zones will be reviewed periodically by the Department of Forestry and updated where appropriate. The County would be consulted for review and comment during any such update.

3. County

a. County General Plan Policies

(1) Seismic and Safety Element

The Seismic and Safety Element contains specific policies to address fire safety issues. These include identifying the areas of greatest fire risk, supporting mapping programs of the California Department of Forestry, improving planning, zoning, subdivision and building standards to incorporate fire protection concerns, conducting a comprehensive review of County fire ordinances and the structure of the County's fire protection system for their adequacy to address fire emergencies, and developing a phasing program for the siting of future fire stations sites and the training of volunteer fire companies.

(2) Conservation and Open Space Element

The natural vegetative resources general management policies of the Conservation and Open Space Element express the need to protect natural vegetation by implementing the "fire safe" program endorsed by the County Supervisors Association of California. This program suggests guidelines for fire safety in California watersheds, including methods for avoiding trespass into remote watershed areas and controlled burning in hazardous areas.

(3) Area Plans

(a) Local Coastal Program

The LCP's Hazards Component designates high fire risk areas as those defined by the California Department of Forestry. These areas are indicated on the Critical Fire Areas map. The Hazards Component also requires that all residential development be reviewed by the County Fire Warden for adequate fire protection.

(b) Skyline Area General Plan Amendment

During hearings on the Skyline-Santa Cruz Mountains Area Study, there was extensive discussion about the condition of the minor roads in the study area and the possible implications of these conditions for emergency response by fire vehicles.[81] The study also identified the need for an update and reorganization of the County Fire Ordinance. Although no new policies for fire protection were adopted into the General Plan as a result of the study, the issues identified remain to be addressed.

(c) Emerald Lake Hills Community Plan

During the preparation of the Emerald Lake Hills Community Plan, two of the most critical issues were the substandard road system serving the area and the inadequate water distribution system. Both of these problems have significant implications for fire protection.

The plan resulted in policies encouraging the development of an adequate water distribution system for better fire flow standards, established minimum road width standards and set a priority schedule for improvement of hazardous streets with poor access. A policy was also adopted encouraging construction of a second fire station in the northern part of the community.

b. Other County Policies and Programs

(1) County Road Standards

The County has adopted road standards for public and private roads. These standards, which have evolved over time through a series of resolutions, policies and ordinances, specify grade, width, shoulder and surfacing requirements for both urban and rural roads.[82]

Existing County standards allow a minimum of 16-foot widths with one-foot shoulders for private roads and 22-foot widths with one-foot shoulders for public roads serving local neighborhoods. Greater widths are required for major collectors and arterials.

The Skyline Area General Plan Amendment resulted in the adoption of a separate set of road standards for the Skyline Area.[83] These standards retain the County's width and shoulder requirements, but do not allow the deferral of improvements, as permitted by previous ordinances. The Skyline standards also encourage use of the County's Creative Road Design Guide in situations where applications of the road standards would create severe environmental damage.

County road standards are generally adequate for assuring access for fire vehicles responding to an emergency, although fire officials have expressed a preference for roads at least 18 feet in width to adequately accommodate two-way traffic in rural areas. This can be critical due to the wide nature of fire apparatus.

(2) CEQA Guidelines

An evaluation of a project's impact on fire safety is addressed during the Initial Study that is prepared for all projects not

exempted from environmental review. If it is determined that an environmental document is required, access and fire safety issues are normally addressed in an analysis of impacts on public services or circulation. This is a particularly important issue for projects proposed in the rural area.

c. County Ordinances

(1) County Zoning Ordinance

(a) Resource Management Districts (RM and RM/CZ)

The procedures for review of projects proposed within the Resource Management districts were discussed in detail in the section of Geotechnical Hazards. However, there are specific development review criteria that must be met to address fire hazards, including hazards to public safety criteria, prior to issuance of a development review permit.

(b) Timberland Preserve (Production) Districts (TPZ and TPZ/CZ)

Proposals for development in the Timberland Preserve (Production) Zone must meet development design criteria prior to obtaining a development review permit. Among these are the general design criterion and special hazard areas design criterion, both of which incorporate fire safety concerns.

(c) Residential Hillside District (RH)

The RH district was adopted to implement the recommendations of the Emerald Lake Hills Community Plan. Among the purposes of the district are to increase accessibility of the area in order to minimize the danger from fires. This is accomplished through design review procedures, decreasing the potential buildout by minimizing parcel size based on slope and merger of contiguous undersized lots. Access for fire vehicles is of prime concern during project design review in this district.

(2) Other County Ordinances

(a) County Fire Ordinance (Ordinance 2611)

In 1979, the County revised its fire protection regulations, consolidating them into Chapter 15, Part Two of the County Ordinance Code. This Chapter, known more commonly as the County Fire Ordinance, applies to all of the unincorporated area of the County that is served by the California Department of Forestry (CDF) under the terms of its contract with the County.

The County Fire Ordinance defines fire hazard areas, sets fire safety standards for structures located in such areas and sets criteria for the review of building permit and land division applications. CDF/County Fire reviews and conditions these applications for land development as part of normal County development review procedures. The scope of their review includes: (1) assuring that fire hydrant location, pressure standards and waterlines conform to the requirements of the Ordinance; (2) reviewing proposed on and offsite circulation for conformity with access standards set by the Ordinance; (3) withholding approval of building permits or tentative maps until it is demonstrated that they will be served by a public water supply or adequate onsite water storage tanks designed to specifications of the Ordinance; (4) requiring fire resistant roofing, screening of openings to attics and foundations and adequate clearance around the proposed structure for fire safety; and (5) encouraging the use of fire resistant landscaping for new development.

A more detailed summary of CDF/County Fire standards is presented in Table 15.8.

(2) County Subdivision Ordinance

The County Subdivision Ordinance more precisely defines many of the access requirements of the County Fire Ordinance with regard to access and water supply requirements. Section 3.3 of the Ordinance specifies the improvements that are required for water supply prior to subdivision approval. Section 2.1 provides general specifications for streets. A staff person from CDF/County Fire reviews all applications for subdivision and sets appropriate conditions to meet fire safety requirements prior to approval.

C. FLOODING HAZARDS

1. Federal

a. Community Development Block Grant Program

The Department of Housing and Urban Development's Community Development Block Grant Program allows the expenditure of Federal funds in certain situations for the installation of flood and drainage facilities. It also allows for the expenditure of these funds during declared emergencies.

b. U.S. Soil Conservation Service

The U.S. Soil Conservation Service is authorized to conduct watershed management studies and to pursue small flood control projects in certain areas. County flood control and resource conservation districts are normally the sponsoring agencies for these projects.

TABLE 15.8

FIRE REGULATIONS FOR NEW DWELLING UNITS AND SUBDIVISIONS
PROPOSED WITHIN CDF/COUNTY FIRE RESPONSIBILITY AREA

REGULATION	REQUIREMENTS FOR NEW DWELLING UNITS	REQUIREMENTS FOR NEW SUBDIVISIONS
WATER SUPPLY		
Fire Flow	In areas served by public water systems:	
	Single-Family Units: 500 gallons per minute (gpm) for 2 hours at 20 psi residual operating pressure.	Major subdivisions must meet the same minimum fire flow requirements.
	Multi-Family Units: 1500 gpm for 2 hours at 20 psi residual operating pressure.	County Fire Warden may require extension of public water system as condition of approval for Minor Land Divisions.
	In areas outside of public water systems:	
	Single-Family Units: Tank, pipe and discharge valve must deliver 200 gpm.	Minimum fire flow to be demonstrated in accordance with standards of County Fire Warden.
	Other Building Types: As determined by Fire Warden.	
Hydrants	Single-Family Units: Within 250-foot intervals from each dwelling unit.	Hydrant Spacing to be determined by County Fire Warden.
	For Multi-Family Units: Within 200-foot intervals from each multi-family unit.	
	Not applicable in areas outside of public water system.	

TABLE 15.8 (continued)

FIRE REGULATIONS FOR NEW DWELLING UNITS AND SUBDIVISIONS
PROPOSED WITHIN CDF/COUNTY FIRE RESPONSIBILITY AREA

REGULATION	REQUIREMENTS FOR NEW DWELLING UNITS	REQUIREMENTS FOR NEW SUBDIVISIONS
On-Site Storage	Areas outside of public water systems only:	
	Storage tank holding minimum of 4,000 gallons to be used solely for fire protection. Larger tanks required based on square footage.	On-site storage necessary to provide minimum fire flow in accordance with standards of the County Fire Warden.
	Swimming pools, ponds or other sources may be used as supplement to tank if approved by Fire Warden.	
	Two or more buildings may be served by one water storage tank if approved by Fire Warden.	
ROAD ACCESS		
Road Lengths	No specified road length requirement for new single-family units.	Dead end roads must be appropriately marked. Maximum length for dead-end/cul-de-sac roadway of 1,000 feet, or 600 feet in hazardous fire areas.
Turnarounds	No specified requirements.	Minimum diameter for dead-end turnarounds of 75 feet.
Emergency Escape Route	No specified requirements.	Alternate or additional access routes may be required by Fire Warden.

TABLE 15.8 (continued)

FIRE REGULATIONS FOR NEW DWELLING UNITS AND SUBDIVISIONS
PROPOSED WITHIN CDF/COUNTY FIRE RESPONSIBILITY AREA

REGULATION	REQUIREMENTS FOR NEW DWELLING UNITS	REQUIREMENTS FOR NEW SUBDIVISIONS
Road Width	No standards specified. County fire Warden defers to County Road Standards administered by Department of Public Works.	No standards specified. County Fire Warden defers to County Road Standards administered by Department of Public Works.
SITE DESIGN		
Flammable Material	No hazardous flammable material within 30 feet of building.	Not applicable.
Vegetative Clearance	No flammable vegetation within 30-100 feet of structure or property line or near transmission lines, as required by Fire Warden. No portion of tree within 10 inches of chimney/stove pipe.	Not applicable.
BUILDING MATERIALS		
Roofs	Structures over 100 square feet within hazardous fire areas must have Class C or better fire-resistant roof coverings.	Not applicable.
Walls	Exterior walls must have fire resistance ratings as specified in Building Code.	Not applicable.
Screens	Chimneys in timber/brush areas must have galvanized or copper spark arrestor with mesh of 1/2 inch or smaller.	Not applicable.

TABLE 15.8 (continued)

FIRE REGULATIONS FOR NEW DWELLING UNITS AND SUBDIVISIONS
PROPOSED WITHIN CDF/COUNTY FIRE RESPONSIBILITY AREA

REGULATION	REQUIREMENTS FOR NEW DWELLING UNITS	REQUIREMENTS FOR NEW SUBDIVISIONS
	Openings in roof, underfloors and to attics must have wire mesh screen with at least 3/8-inch openings.	
Built-In Fire Protection Systems	Multi-family residences 35 feet above lowest level of fire protection access or greater than 2,500 square foot floor area must have alarm and automatic sprinkler system which meets National Fire Protection Association standards. Standpipe/hose required in multi-story buildings. County Fire Warden determines type, number of built in systems required.	Not applicable.

Sources: California Department of Forestry/County Fire Department
San Mateo County Fire Ordinance (Ordinance No. 2611)
San Mateo County Subdivision Ordinance (Ordinance No. 595)

c. U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers has a major responsibility for flood control throughout the United States. The Corps prepares flood plain studies, recommends flood control projects and constructs and maintains them. The Corps can provide studies to local agencies, the cost of which is shared with the Federal government. In San Mateo County, there are presently no flood control projects maintained by the Corps. However, studies were conducted for the County in 1965 for Pacific Coastal streams and in 1958 for streams in South San Francisco.

d. National Flood Insurance Program

The National Flood Insurance Program was established by the National Flood Insurance Act of 1968 in response to ever-increasing losses from floods and expenditure of Federal disaster funds. The program is designed to protect the public interest by making available relatively low cost flood insurance coverage in hazardous flood areas and by requiring sound flood plain management measures to minimize future exposure of lives and property to hazards in these areas. The goal of this program is to reduce the need for and dependence on Federal flood disaster relief appropriations through safer construction practices.

The program was amended by the Flood Disaster Protection Act of 1973, which increased the available limits of flood coverage and required mandatory participation in the program as a condition for participation in any Federal assistance programs in the local jurisdiction, including loans administered through the Federal Housing Authority (FHA).

The Federal Emergency Management Agency (FEMA) is in charge of the administration of this program. The first step in the implementation of the program was the delineation of emergency flood hazard boundaries through the adoption of flood hazard boundary maps (FHBM) and the availability of subsidized insurance for residents in these areas. These maps delineated the boundaries of the 100-year flood plain based on the best available information, recognizing that more detailed study would be necessary before specific insurance rates are set. With the adoption of these maps, subsidized emergency flood insurance became available for San Mateo County.[84]

In order to enter the regular phase of the NFIP, FEMA coordinates a more detailed study to more precisely define the flooding risks within each flood hazard boundary. This study ultimately results in the floodway boundary and floodway maps and flood insurance rate maps (FIRM). These maps establish different flood insurance rates based on the relative risk of flood hazard identified on the FIRM maps. The draft maps are sent to affected local agencies for review and comment.

Once finalized, the local jurisdiction is given a specific time frame during which local ordinances must be prepared specifying how development will be regulated within the identified flood zones. Once this is accomplished, enrollment of the local jurisdiction in the regular phase of the NFIP is complete. New rates, which substantially expand the coverage available to property owners within the flood hazard areas, become available in addition to the insurance available in the emergency phase. The County entered the regular phase of the program on July 3, 1984, with the adoption of Ordinance No 03002.

e. Disaster Relief Act of 1974

The Disaster Relief Act of 1974, which outlines Federal response to local emergencies, was discussed in the previous section on geotechnical hazards. Flooding is one of the specified emergencies under which the Federal response could be mobilized. Key provisions related to flooding are the requirement that buildings and mobile homes cannot be replaced, repaired or restored without complying with the National Flood Insurance Program, and that any reconstruction and planning efforts incorporate information on flood hazards.

2. State

Government Code Section 65302(a) requires that the Land Use element of the General Plan identify areas that are subject to flooding and be reviewed annually with respect to such areas.

3. County

a. County General Plan Policies

(1) Seismic and Safety Element

The County's Seismic and Safety Element contains several policies which address flood hazard areas and mitigation measures that should be incorporated into the development review process. These range from general policies which prioritize the allocation of funds for the correction of hazards that pose significant threats to life, safety, or property, to policies which recommend the location of new utilities and critical use facilities outside of hazard areas. Support is expressed for relocation assistance, insurance programs (including the Federal Flood Insurance Program), and educational programs that promote hazard awareness. There are also more specific policies for improvements to land use regulations, establishment of design criteria for flood plain areas, and policies for dam failure inundation zones.

(2) Conservation and Open Space Element

The Conservation and Open Space Element contains an extensive discussion of the water resources of the County and includes a map illustrating flood-prone areas. The water resource general management policies of this document encourage the retention of water courses in their natural state, and recommend flood plain management and zoning programs to implement this goal. In addition, the policies recommend preparation of maps to identify the 100-year flood plain for major County streams and the drafting of regulations for development proposed in those flood plains.

(3) Area Plans

(a) Local Coastal Program

The LCP Hazards Component contains policies which designate flood hazard areas consistent with the designations on the geotechnical hazards synthesis maps of the Seismic and Safety Element. The flood hazard areas, which are defined as areas that have a one percent chance of flood based on rainfall and flood records during historic time (otherwise known as the "one hundred year flood"), were derived from 1975 Federal Insurance Administration (FIA) maps developed for the emergency phase of the Federal Flood Insurance Program.

The Hazards Component contains policies requiring consideration of flooding hazards from wave and tidal action in coastal areas and from streams in interior portions of the Coastal Zone. These policies prohibit development within the one percent flood plain except within the Pescadero rural service center, where it is allowed with appropriate design mitigation.

(b) Emerald Lake Hills Community Plan

The Emerald Lake Hills Community Plan identifies areas of potential flooding and inundation from possible failure of the dams which support upper and lower Emerald Lake. The plan's policies prohibit building within these defined areas.

(c) North Fair Oaks Community Plan

The North Fair Oaks Community Plan identifies flooding problems in this urbanized area that result from inadequate storm drainage facilities. The plan contains a policy which calls for the correction of storm drainage problems in the community.

b. Other County Policies and Programs

(1) County Flood Hazard Ordinance

This County has adopted a Flood Hazard Ordinance in order to fulfill the requirements for entry into the National Flood Insurance Program. This Ordinance regulates development in hazardous areas defined by flood insurance rate maps (FIRM) and floodway boundary maps that have been prepared for FEMA. These maps have been reviewed by the County Department of Public Works, and a number of technical problems were resolved in October 1983, according to FEMA. Now that the maps and the ordinance are adopted, the County passes from the Emergency Phase into the regular Flood Insurance Program.

The Flood Hazard Ordinance applies to all areas of "special flood hazard."[85] These areas include the 100-year flood plain, floodway areas (defined in the La Honda and Pescadero areas only), and coastal high hazard areas (which are in the process of being defined by a separate FEMA study). Regulations specific to each of these areas are defined by the Ordinance. A development permit issued by the Planning Director or his authorized representative must be obtained prior to any construction of improvements in any area of flood hazard. This permit need not be a separate document, but may be a clearance signature integrated into the approval process for an existing required permit. Prior to even accepting an application for development in a flood hazard area, a certificate of feasibility for necessary wells, sewers or on-site sewage disposal systems must be obtained from the Office of Environmental Health.[86]

The strongest regulations apply to any new development proposed in a designated floodway zone. No encroachment, including fill, new construction or improvements to existing structures, is permitted in floodways unless a registered civil engineer certifies that such encroachment will not result in any increase in flood levels during a flooding event.

The Ordinance specifies cases where exceptions may be granted, and a detailed application procedure for exception is outlined. The most easily obtained of these exceptions is for structures of historic value as listed on Federal, State or local registries. These can be exempted without filing the detailed application for exception specified by Section 6828.6 of the Ordinance.

The Ordinance also amends the density matrix criteria for the CD, PAD, RM/CZ and TPZ/CZ zoning districts to define flood hazard areas consistent with the definitions of the Flood Hazard Ordinance.

(2) County Flood Control District

The San Mateo County Flood Control District was created by an act of the State Legislature in 1959. This district is empowered to study flood conditions in the County and to construct flood control facilities after formation of a zone consisting of a particular watershed to be served. The County presently has established nine of these zones, all in the urban Bayside. These are summarized in Table 15.7. There are presently no flood control zones in the rural area west of the summit of the Santa Cruz Mountains. Financing of flood control improvements is through assessments of property with the identified zones.

NATURAL HAZARDS ISSUES

I. GEOTECHNICAL HAZARDS

A. IMPORTANCE OF PROTECTING PEOPLE FROM GEOTECHNICAL HAZARDS

Few events have the potential to create such severe physical devastation and psychological trauma for the County's residents as the loss of ground stability caused by earthquakes, landslides and other geotechnical hazards. Although these occurrences in most cases cannot be prevented, measures can be taken to protect the public from their most devastating effects. Knowledge of geotechnical hazards continues to expand. In the future, it may be possible to actually predict when earthquakes and landslides will occur and where they will be located. Until then, the County can best approach the problem of significant geotechnical hazards by informing the public of where they are located, by avoiding the location of new development near them, by reducing their impact to acceptable levels through proper engineering and by being prepared for the disruptions to the normal functioning of society that they may cause.

The consequences of geotechnical hazards can be severe, as illustrated by the mudslides in 1982 that killed twelve people in the Love Creek Canyon area in Santa Cruz County and three children in Pacifica.[87] Although loss of life is certainly the most tragic result of such disasters, they can also cause severe economic dislocations, both to private individuals and local government. Over $44,500,000 in lawsuits and claims were filed against local governments in San Mateo County as a result of damages from the devastating January 3-5, 1982 storm.[88]

It has been estimated that an earthquake on the same order of magnitude as the 1906 San Francisco earthquake could result in as many as 3,000 to 11,000 deaths in the greater Bay Area.[89] Critical services and facilities would be lost for up to 72 hours after such an event.[90] A recent report of the State Seismic Safety Commission has concluded that emergency response systems in the State need to be improved in a number of areas before adequate response to a major earthquake can be assured. One conclusion of this report is that the public could be better informed about how individuals can prepare for a post-earthquake situation.[91]

B. OPPORTUNITIES AND CONSTRAINTS FOR REDUCING GEOTECHNICAL HAZARDS TO AN ACCEPTABLE LEVEL

1. The Extent and Magnitude of the Hazard

San Mateo County's location at the interface of two of the earth's massive lithospheric plates is a fact of nature that is not subject to physical alteration. The stresses that build up in the subterranean rocks by the interaction of these two plates make it a certainty that

earthquakes and earthquake-related geotechnical impacts will occur in the future. Whether these earthquakes will occur within the County on the San Andreas or Seal Cove-San Gregorio Faults or on other major faults in the Bay Area cannot presently be predicted, nor can their potential magnitude. However, there is general agreement among seismologists that a very large earthquake on the same order of magnitude as the 1906 quake (magnitude 8.3) is likely to occur before the end of this century.[92]

Although the presence of earthquake faults is a major geotechnical hazard, more of the County's geographic area could be affected by landslides. The poorly consolidated bedrock which characterizes much of the Santa Cruz Mountains area may combine with other factors such as deep weathering, adverse structural orientation, steep slopes and heavy rainfall to create conditions of locally high landslide potential.

The Natural Hazards map illustrates the extent and magnitude of the geotechnical hazard areas in San Mateo County, including areas of coastal cliff instability[93] and areas subject to flooding from seismically-induced seiches and tsunamis.[94] This map illustrates that much of the southern and western portion of the County is highly susceptible to landsliding.[95] It also delineates the Alquist-Priolo Special Studies zones for the areas immediately adjacent to the two major fault zones.[96] The information on this map is intended to provide a generalized picture of the geotechnical hazards in the County and to act as an early warning signal when considering the location of new development and planning for other land uses. More detailed sources of information, which are discussed in this section, are also available to County staff. In many cases, there may be specific sites within generally defined hazardous areas that are relatively free of hazards.

The quality of information defining the extent and magnitude of geotechnical hazards is vitally important. The County has the opportunity to periodically maintain and update this information when reviewing the General Plan. Information is constantly changing, and research efforts being undertaken by other agencies could be added to the data base. For example, the State is currently attempting to identify areas of severe landsliding hazard through a new mapping program.[97] Hopefully, the information base that would be available from this program, when added to the existing geotechnical hazard data base, would provide the County with additional opportunities to avoid catastrophic situations before they occur, to identify developed areas that are potentially threatened and to implement mitigation measures where appropriate.

2. Reducing the Hazard at the Source

Research and data about the causes and effects of geotechnical events and mitigation measures for reducing the risk of these hazards at their source continue to be developed. Correcting existing hazardous structures, repairing identified hazard areas (such as landslides), or incorporating structural mitigation techniques into a proposed project are techniques that can lessen the hazard to an acceptable level. For

nonseismic geotechnical hazards such as certain landslide deposits, areas of soil creep, subsidence, or shrink-swell soils, engineering measures are available to reduce the hazard so that it does not pose a severe threat to development. These measures include construction of retaining walls, flexible foundation design, design of foundation footings to accommodate changes in soil strength or expansivity, and repair or reconstruction of slide areas with engineered fill. However, the costs of these measures can be enormous.

Not all geotechnical hazards, however, are capable of mitigation at their source. No structural solution can mitigate hazards such as movement along earthquake faults or sudden, massive landslides caused by large storms or triggered by earthquakes. For those hazards that can technically be mitigated the costs of doing so can be enormous. It is estimated that the repair of the massive landslide along Devil's Slide, the so-called "Marine Disposal" alternative alignment for the reconstruction of State Highway 1, would cost between $42-50 million.[98] Devil's Slide is an unusual case that is only being considered for repair because the existing highway alignment is there. However, it is illustrative of the costs of repair of large landslides. There are other areas of the County where landslide mitigation could have similar costs.

The reduction of geotechnical hazards at their source has been a matter of concern for private property owners who desire to facilitate development or to protect their existing property from geotechnical hazards which became a problem after initial construction. The County's role has historically been to require mitigation of geotechnical hazards when necessary during review of development proposals, correcting hazards that affect public roads or other facilities, and the repair of roads and clearance of debris caused by landslides in the aftermath of storms. Due to funding limitations, the County is generally not able to correct geotechnical hazards at their source except in local severe, life-threatening situations.[99]

No comprehensive inventory has ever been undertaken by the County to identify potentially hazardous geotechnical conditions that directly threaten critical facilities or the lives of large numbers of people. This could be useful for prioritizing the use of funds for the abatement of the hazards if they become available.

3. <u>The Existing Pattern of Development and Services</u>

In the past, areas of extensive geotechnical hazards were mostly avoided due to their remoteness and the ample supply of more easily developable land in the gently sloping areas proximate to San Francisco Bay. The most hazardous areas, such as the San Andreas Fault zone, the unstable areas of the Santa Cruz Mountains, and the unconsolidated bay mud soils at the shore of the bay were generally not built upon. Critical facilities needed to serve the developed areas also tended to be located in less hazardous areas, the major exception being the storage reservoirs

for the Hetch-Hetchy system. Crystal Springs and San Andreas Reservoirs are located right on the San Andreas Fault.[100]

There were, however, exceptions in this development pattern. Perhaps the most significant is the Seal Cove area near Moss Beach, where residential development has occurred in areas transversed by the Seal Cove-San Gregorio Fault system.[101] Other development has occurred in areas of steeply sloping, potentially unstable soils in both incorporated and unincorporated areas of the County. The landsliding that occurred during the 1982 and 1983 winter storms was a grim reminder of what can occur after development has taken place in hazardous areas. Although nothing may happen for many years, as in the case of the Love Creek area, when disaster strikes it is quite often devastating.[102]

The effect of geotechnical hazards on existing infrastructure is also a matter of concern. Areas in the rural part of the County could be easily isolated if a disaster severed their critical lifelines and services. Table 15.9 indicates the critical lifelines and structures of the existing development pattern in the County that could be affected by geotechnical hazards, and the areas of the County that would be affected by their loss in a major earthquake.

There is little that the County can do to change the overall development pattern that has occurred over time, even if the development has occurred in hazardous locations. In the most geotechnically hazardous areas, the County could make efforts to disclose possible hazards to potential buyers of property. This could be accomplished through: (1) maintaining an information base that generally defines the extent and magnitude of the hazard, (2) improving public information and outreach programs, (3) working with the real estate industry to make this information available, (4) encouraging residents of potentially hazardous areas to obtain earthquake insurance, and/or (5) informing future buyers of property that potentially hazardous conditions are present. The County can also encourage mitigation of geotechnical hazards by providers of critical facilities and services in order to minimize disruptions in the event of a disaster.

4. The Location of New Development

Evaluating the location of new development through its general planning and development review processes provides the County with its greatest opportunity for reducing the risks of geotechnical hazards. Decisions about the appropriate location for new residential, commercial, or industrial growth are made during the formulation of the General Plan or specific area plans. At this level, the County has the opportunity to use the geotechnical information base to minimize the number of residents exposed to the risks of the most severe hazard areas and to encourage development in relatively hazard-free areas. The General Plan land use map can recommend densities for new development that are appropriately scaled to the relative presence of hazards. It can also

TABLE 15.9

CRITICAL AND LIFELINE FACILITIES AND SERVICES IN SAN MATEO COUNTY
THAT WOULD BE DAMAGED BY A MAJOR EARTHQUAKE[1]
EXPECTED CLOSURE LENGTH AND AREAS OF THE COUNTY AFFECTED

FACILITY/SERVICE	EXPECTED CLOSURE LENGTH AFTER EARTHQUAKE	AFFECTED AREAS OF THE COUNTY
HIGHWAYS		
U.S. 101		
Menlo Park to Candlestick Park	Over 72 Hours	Entire Bayside east of El Camino Real
San Francisco Airport Access	Less than 48 hours (access could be re-routed via Route 82)	Entire County
Interstate 280		
Daly City to Redwood City	Less than 36 hours; possibly open in 8 hours	Entire Bayside
Interstate 380		
I-280 to Route 82	Expected to remain open	North County
Interstate 380		
I-280/U.S. 101 Interchange	Over 72 Hours	North County, San Francisco Airport
State Route 1		
Devil's Slide	Over 72 Hours	North County Coastside
San Andreas Fault Crossing	Over 72 Hours	North County Coastside

TABLE 15.9 (continued)

CRITICAL AND LIFELINE FACILITIES AND SERVICES IN SAN MATEO COUNTY
THAT WOULD BE DAMAGED BY A MAJOR EARTHQUAKE[1]
EXPECTED CLOSURE LENGTH AND AREAS OF THE COUNTY AFFECTED

FACILITY/SERVICE	EXPECTED CLOSURE LENGTH AFTER EARTHQUAKE	AFFECTED AREAS OF THE COUNTY
Daly City to Santa Cruz	Over 72 Hours	Entire Coastside
State Route 35		
Daly City to Burlingame	Over 72 Hours	North County
State Route 82 (El Camino Real)	Expected to remain open with many detours and delays	Entire Bayside
State Route 92		
Half Moon Bay to Interstate 280	Over 72 Hours	Mid-Coastside: Half Moon Bay, Montara, Miramar, El Granada, Moss Beach
AIRPORTS		
San Francisco International	Over 72 Hours (possibly several weeks)	Entire County and Bay Region
RAIL FACILITIES		
Southern Pacific Commuter Line	Over 72 Hours to Indefinitely	South Bayside
Southern Pacific South Bay Crossing between Fremont and Menlo Park	Over 72 Hours to Indefinitely	South Bayside

TABLE 15.9 (continued)

CRITICAL AND LIFELINE FACILITIES AND SERVICES IN SAN MATEO COUNTY
THAT WOULD BE DAMAGED BY A MAJOR EARTHQUAKE[1]
EXPECTED CLOSURE LENGTH AND AREAS OF THE COUNTY AFFECTED

FACILITY/SERVICE	EXPECTED CLOSURE LENGTH AFTER EARTHQUAKE	AFFECTED AREAS OF THE COUNTY
WATER SUPPLY SYSTEMS		
Broadmoor Pipelines	Over 72 Hours	North County/San Francisco
San Andreas Water Treatment Plant	Over 72 Hours	Entire County
Lower Crystal Springs Dam	N/A	Leakage from Dam after large earthquake expected. Significant area of Mid Bayside may need to be evacuated
ELECTRIC POWER FACILITIES		
Martin Substation	Difficult to estimate	North County, San Francisco
Other Major Substations	Difficult to estimate	Entire County
NATURAL GAS SUPPLY		
S.F. Airport Pipeline	Localized ruptures will cause loss of service for extended periods	North Bayside, Bayshore Areas
Pipelines Along San Andreas Fault near Crystal Springs Reservoir	Localized ruptures will cause loss of service for extended periods	Mid to North Bayside

TABLE 15.9 (continued)

CRITICAL AND LIFELINE FACILITIES AND SERVICES IN SAN MATEO COUNTY
THAT WOULD BE DAMAGED BY A MAJOR EARTHQUAKE[1]
EXPECTED CLOSURE LENGTH AND AREAS OF THE COUNTY AFFECTED

FACILITY/SERVICE	EXPECTED CLOSURE LENGTH AFTER EARTHQUAKE	AFFECTED AREAS OF THE COUNTY
COMMUNICATIONS FACILITIES		
Telephone systems	Reduced levels of service; some closure of facilities	Entire County
MARINE FACILITIES		
Port Facilities	Indefinitely inoperable	Bayside South of Hunter's Point
Marinas	Difficult to estimate	Bayside

Source: California Division of Mines & Geology, Earthquake Planning Scenario, Special Publication 61, 1982.

Note: 1. A "major earthquake" is assumed to be the same magnitude as the 1906 San Francisco earthquake (8.3 on the Richter Scale) or greater.

provide a valuable tool to developers, the real estate industry, and private citizens in guiding their decisions for the purchase of property and/or the location of new construction.

Information about geotechnical hazards is important when considering the location of new critical facilities, structures, and infrastructure, particularly those facilities that require ongoing maintenance from the County. The costs of maintaining roads, sewer systems, and water supplies can be staggering if they are located in unstable or hazardous areas. A subdivision that was approved in the early 1960's in the foothills near San Jose has resulted in enormous maintenance and legal costs to the city.[103] In 1982, the City of Foster City documented serious erosion and breakage of water and sewer lines due to the acidic and unconsolidated nature of the bay mud soils where they were located.[104] Repair of these facilities was estimated to cost several million dollars. The County has many areas of similarly hazardous terrain where new development could experience similar problems.

Once the General Plan makes the generalized decision on the appropriate location and densities for new development, more specific information can be required of applicants when individual site development is proposed. In almost all cases, this requires some level of environmental evaluation. At this stage, there are opportunities to incorporate measures to avoid the hazard, correct the hazard, and/or disclose the hazard to future potential owners of the property. Many sites that are defined on generalized maps as being hazardous may very well be deemed suitable for development after more specific geotechnical review has been conducted. Geotechnical reports could be required in situations where caution needs to be exercised. These reports could be designed to analyze both site specific hazards and the potential impact of the project on neighboring properties. Often the introduction of a structure or its associated landscaping or septic system can have a destabilizing effect on slope stability. Nearby properties located downslope could be dramatically affected.[105]

This site specific stage of the process provides the County with its most precise means of reducing geotechnical hazards to an acceptable level. It also provides an opportunity to accumulate additional localized information that can be used in the review of future development proposals. The drawback of requiring site specific investigations is that they can increase the cost of development for the individual property owner and increase the time necessary for obtaining permits. However, when viewed in the context of the potential destruction of the applicant's structure, the costs are eminently justifiable. Depending on the size of the project and difficulty of the site, geotechnical reports normally range in cost from approximately a thousand dollars up to $10,000. The average price is $2,000 - $2,500. In contrast, structural damage from earthquakes can reach to hundreds of thousands of dollars.[106]

5. Increasing Public Awareness

Members of the public are often not aware of the extent and magnitude of geotechnical hazards. This knowledge can be crucial when making decisions about the purchase of real property. Although public awareness in these matters continues to increase, citizens still purchase property only to find that the feasibility of construction on it is very low.

In its regulation of development, the County has an opportunity to provide a consumer protection service which minimizes these problems. First, information can be disseminated through the media, County sponsored educational programs, or by distributing maps and pamphlets. This General Plan, for example, will provide the public with information on the location of geotechnically hazardous areas and how hazards can be avoided or mitigated. In previous years, the San Mateo County Board of Realtors distributed maps to the public that generally located areas of geotechnical and flooding hazards.[107]

A second method would be to provide information on the location of geotechnical hazards at the earliest possible moment of the development review process. This could be accomplished by informing an applicant that his parcel is located in a potentially hazardous area at the time of an application for a building permit or subdivision. The County could promote pre-application conferences where a potential applicant meets with County staff to obtain information about a site prior to submitting an application. Still another method of providing information would be to place a hazard overlay zone on all properties located in hazardous areas. State law presently requires realtors to disclose to a purchaser that a parcel is located within an Alquist-Priolo Special Studies Zone.[108] However, many areas of geotechnical hazards, particularly the areas of high landslide susceptibility, are located outside of the Special Study Zones. The hazard overlay zone could easily identify these areas for anyone making an inquiry at the development review counter.

A third method would be to pursue methods to ensure disclosure of geotechnical hazard issues during future property transactions. For example, as a condition of subdivision or building permit approval, a disclosure document indicating potential hazards associated with the property could be required for filing with the County Clerk. In the most hazardous situations, the County could further ensure disclosure through deed restriction recordation, providing open knowledge to all interested parties. A preliminary title report, which is normally required during or prior to escrow, would be the mechanism for disclosing the information in these documents, providing the potential buyer with an excellent record of the hazards associated with the property.

Efforts to provide for adequate and accurate public awareness face a number of constraints. The geotechnical information base has grown rapidly in the past decade. It may be difficult to keep the public updated, and maps that are distributed for public information may rapidly

become obsolete. A constant effort to update the geotechnical information base would be necessary, as would periodic outreach to the media. One way this might be accomplished would be through the annual review of the General Plan. Another concern is the level of detail of involvement of County staff. The County does not have adequate resources to become a consultant for each individual applicant.

6. Emergency Response Planning and Procedures

The promptness and quality of response in the aftermath of an earthquake or other catastrophic geotechnical event is crucial in minimizing the loss of life and property. The County's emergency response planning efforts provide a significant opportunity to prepare for such contingencies. These efforts include being prepared to provide and coordinate direct aid services immediately after the disaster has occurred, promoting preparedness planning by the private citizen, and long-range planning for post-disaster reconstruction. Methods of achieving these efforts include:

a. Identifying and evaluating areas of particularly high geotechnical hazards which contain critical facilities and/or lifelines that could be seriously damaged, thereby isolating portions of the population or depriving them of essential emergency services.

b. Determining how emergency services will be provided to these areas after a disaster occurs and how long it is expected to take before normal services are restored.

c. Informing the County's citizens of where to go if emergency aid or shelter is needed and what emergency supplies they should have available in the event of a disaster.

d. Preparing plans for reconstruction that guide the location of development. This could be crucial, because a post-disaster reconstruction program would need to be initiated rapidly, and there would be great pressure to rebuild on hazardous areas that may have been destroyed during the disaster.

There are constraints to achieving these objectives. Procedures for delivering emergency services have never been tested in a large earthquake situation, and areas of responsibility for the different government agencies are not always clearly defined. The public is generally unaware of the extent of disruptions that could be caused by an earthquake. In areas which are developed, there is significant investment in infrastructure, and real estate values are high. It would be almost impossible to avoid rebuilding in the same location. However, in much of the unincorporated area, where densities are lower, there are opportunities for relocation of development after a disaster occurs.

The emergency response system is coordinated by the County Office of Emergency Services from a central command post in the County government center, which could be isolated from areas hit hardest by a geotechnical

disaster. Efforts could be made to identify subareas that will be isolated and to establish local command posts and more precise emergency response plans for these areas. However, funding limitations for emergency response planning presents a serious constraint to exploring these issues at the present time.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING GEOTECHNICAL HAZARDS

San Mateo County has been a leader in developing review procedures to address geotechnical hazards. The prevalence of geotechnical hazards in the unincorporated area has made this a necessity, and the excellent information base that has been developed for the County by U.S.G.S. and other sources has facilitated the development of regulations. There are, however, refinements in these procedures that could promote more effective protection. There are also additional programs that the County could pursue to further reduce geotechnical risks.

1. Extent and Magnitude Issues

The extent and magnitude of the geotechnical hazards in the County cannot presently be accurately predicted, nor can earthquakes and other events be prevented. The County, however, can attempt to avoid new development in areas with known geotechnical hazards and plan for emergency response after a disaster occurs.

To understand the extent and magnitude of geotechnical hazards, it is necessary to develop and maintain an up-to-date information base and being able to correctly evaluate and interpret its information. The County has generally been successful in gathering the appropriate sources of geotechnical information and using them during review of new development proposals. These sources have been combined in the Geotechnical Hazards Synthesis maps, originally prepared as an appendix to the 1978 Seismic and Safety Element. The County Department of Public Works also has access to number of special studies done by U.S.G.S. and other agencies as well many site specific geotechnical reports prepared in conjunction with development proposals. In many cases, this information supersedes the Geotechnical Hazards Synthesis maps. However, there has been no procedure for periodically updating these maps. Information on geotechnical matters is constantly evolving and research is being conducted by a variety of public agencies. The Department of Public Works uses such information when conducting geotechnical review. Storing this information in an easily accessible location for use by the public and other members of the staff and reviewing it periodically to assure its current relevance could be useful in the review of development proposals.

For example, the maps used in the calculation of allowable densities in the RM, RM/CZ, TPZ, TPZ/CZ and PAD zoning districts include a map used to determine landslide susceptibility. This map could be updated with new information developed by U.S.G.S. that would make it more locally accurate. However, the earlier U.S.G.S. map is specifically referenced

by the Zoning Ordinance and, hence, continues to be used in the determination of allowable density.[109] A periodic review, which could occur during an annual update of the General Plan, could assist in identifying and correcting situations like this.

The extent and magnitude of geotechnical hazards can also be mitigated through information that predicts or evaluates the most likely time that a hazard will occur. The success of efforts being undertaken to predict future earthquakes and other geotechnical hazards depends greatly on County cooperation with research being conducted at the State and Federal levels. The County has implemented State law requirements to collect a small fee for the State's strong motion instrumentation program, a program designed to install as many strong motion monitoring instruments[110] as possible in order to more accurately monitor seismic activity. The State is also preparing a series of maps to identify areas of high landslide hazard which would supplement existing U.S.G.S. sources.[111] The County could cooperate with this program and incorporate its information into the geotechnical hazards information base when completed.

2. Reducing Geotechnical Hazards at Their Source

The County's efforts to reduce geotechnical hazards at their source have usually been limited to emergency response and clearance of immediate problems resulting from landslides or other geotechnical hazards which normally take place after winter storms. These efforts normally do not completely remove the hazard, but rather clear the most obvious symptoms (removing the toe of a larger landslide in road clearing, for example). Many of the landslides that are cleared one year will occur again the next year. The County Department of Public Works annually budgets several hundred thousand dollars for road clearance and debris removal. However, this budget is designed to respond to emergencies rather than to identify and correct the causes of the emergency.

Reduction of geotechnical hazards at their source is also accomplished by private citizens. In certain cases, direct mitigation of the hazard through construction of retaining walls, engineered fill, or other means is required by the County as a condition of approval for building permits or subdivisions, or is pursued by individuals to protect existing development that is threatened. These structural measures can be effective and are used often in older neighborhoods which are already extensively developed. However, they can be extremely costly. Generally, attempting to reduce hazards at their source is not as effective as outright avoidance of hazardous areas.

3. Existing Pattern of Development and Services

The pattern of development that has occurred in San Mateo County cannot be dramatically altered even if the presence of hazards is discovered in populated areas. Existing regulations can address geotechnical hazard issues for new "infill" development that occurs, but they offer few opportunities for protecting existing developed areas.

One way that residents of existing developed areas are informed of hazards is during real estate transactions on properties located within Alquist-Priolo Zones. State law requires realtors to notify prospective buyers of the presence of properties within these zones. Although the disclosure can cause some confusion on the part of the buyer and is dependent greatly on the knowledge of the realtor, it provides an early "flag" that caution needs to be exercised in the purchase and/or subsequent development of the property. The need for the real estate community to provide this information further reinforces the importance of maintaining an up-to-date information base at the County level.

Existing critical facilities such as schools and hospitals in developed areas have been constructed to meet the requirements of the County's building code, which has been updated to reflect changes in State law requiring geotechnical review and analysis, and resistance of lateral forces. These changes began with the Field Act (1933) which requires the most rigid standards for the construction of school buildings. The protections offered in these regulations should ensure the structural safety of public buildings in all but the most devastating of earthquakes. Each of the major public utilities have prepared plans for restoring service and have incorporated structural design measures to minimize the failure of their facilities in earthquakes. These measures are, as yet, untested by a major earthquake. The existing pattern of development is likely to be greatly disrupted by blockage of roads, destruction of bridges, severing of water supply and gas pipelines, electric power failures and loss of telephone service after a major earthquake.

Similarly, on a neighborhood scale, many developed areas have been plagued by unstable soils, minor landslides and other geotechnical hazards. Few public efforts have been made to correct these situations due to the cost of abating the hazards at their source. Private efforts are also constrained by cost. However, there are methods of mitigation that could be pursued. One method is the formation of a geotechnical hazard abatement district pursuant to recent changes in State law.[112] The County could make greater efforts to keep informed of potential financing mechanisms for correcting hazards in existing developed areas and for informing the public of their availability.

If a large disaster occurs, the declaration of a disaster area under the provisions of the California Emergency Services Act and the Federal Disaster Relief Act makes low interest loans available to residents whose property has been damaged. These programs require that any reconstruction must conform to building codes that address geotechnical hazards.[113] Both acts encourage comprehensive land use planning for future avoidance of the hazard. Their most effective provision for enforcement is the power to withhold the loans until geotechnical concerns have been satisfied.

4. Location of New Development

The County's development review procedures for privately initiated building permit and subdivision proposals effectively address geotechnical hazards by requiring geotechnical reports and/or environmental review when appropriate. This level of review extends to building additions and construction of swimming pools in some situations[114] and allows for the avoidance of geotechnical hazards in site specific situations. Projects undertaken by the Public Works Department also receive geotechnical review prior to construction.

The RM, TPZ and PAD zoning regulations incorporate the presence of geotechnical hazards in the determination of allowable densities. Areas containing slope instability and landslide susceptibility are assigned one density credit per 160 acres in the Coastal Zone and one credit per 40 acres in the lands outside the Coastal Zone. There are also density considerations for slope and the presence of fault zones. These regulations allow an appropriate level of development that limits the number of residents who can be potentially exposed to such hazardous areas.

Although existing development review ordinances can identify the location of geotechnical hazards on a site proposed for development, they generally contain no provisions for requiring dedication of such areas for permanent open space. The RM district regulations grant a density bonus if portions of a site are dedicated for open space, but do not require this.

5. Increasing Public Awareness

The County's most comprehensive effort to supply the public with information on geotechnical hazards has been the Geotechnical Hazards Synthesis maps which indicate, at a scale that could identify most individual parcels, the location of earthquake faults, active landslides and other hazards. These maps are a useful resource that identifies the hazards that are likely to be present, but they could be revised to incorporate new information that has been developed in recent years, particularly with regard to landsliding.[115] No procedure for periodically amending maps available for public distribution or for incorporating new information into the General Plan has been adopted by the County.

Although the maps have been available and provide a quality level of information, most members of the public are unaware of their existence. The dissemination of information about geotechnical hazards could be improved through increased efforts by the County for outreach such as public seminars and communication with realtors or the news media. The earliest possible notice provides an opportunity for members of the public to avoid many of the development problems that could result later.

Another mechanism that could assist in informing the public that geotechnical hazards are present are overlay zones. The Geologic Hazard

(GH) overlay zone identifies the Seal Cove area as one of extreme geologic hazard. By having this zoning district illustrated on County zoning maps, any member of the public is immediately informed of the potential hazard when inquiring about a piece of property.

There are, however, many portions of the County which are hazardous (albeit to a lesser degree than Seal Cove), but which have no obvious mechanism such as the overlay zone to inform potential buyers of property of the geotechnical risks. The County could consider expanding the overlay concept to over more of these areas or improve the information available about a piece of property during initial public inquiry.

Formal methods of increasing public awareness that are used by the County are even more effective. Deed restrictions or encumbrances filed on parcels of land can provide notice to prospective buyers of potential geotechnical hazards. This procedure is used in the GH district in the Seal Cove area, where the filing of a deed restriction explaining the scope of the hazard is required prior to issuance of a building permit.[116]

Although the deed restriction is one of the most effective mechanisms for public notification (it would be discovered during any preliminary title search), the County can only impose this mechanism during issuance of new building permits or subdivision approvals in the GH district. Existing development located in other geotechnically hazardous areas would not be eligible for this type of notice. The County can also require notices on parcels in approved subdivision maps that warn of potential geotechnical hazard or the need for further review. This mechanism can be very effective and has been used on a number of occasions.

6. Emergency Response Planning and Procedures

The County's adopted emergency response procedures meet the requirements of State law and adequately define the procedures for determining the level of disaster conditions once they occur and for requesting State and Federal aid in case of an emergency. The procedures contain a detailed listing of the appropriate responses for each public agency in the event of a disaster and assign hierarchical responsibility for the staff of those agencies. Emphasis is placed on central coordination from emergency response headquarters in Redwood City. This is necessary for coordination of Federal and State agencies as they assist the County in its efforts to respond to a disaster.[117]

If the County emergency response procedures have deficiencies, they are a lack of emphasis on localized response efforts. The plan does not identify subareas that will be isolated in the event of geotechnical disaster. It does identify emergency centers where individuals can obtain emergency aid. There is a general lack of emphasis on the response that individuals and local communities can make in the event of an emergency and on how a community or individual should prepare for a

disaster by accumulating food, water and other emergency supplies. These efforts could be better publicized.

The emergency plan does not address the issue of how reconstruction should proceed after an earthquake or related disaster. Buildings that are destroyed during such an event will need to be rebuilt in order to provide housing and employment for the County's citizens. Should such development be reconstructed in the location where it was destroyed even if that location is hazardous? Are there other areas that are more appropriate for reconstruction? What building codes or construction techniques should be used? These are questions that could be answered in a post-disaster plan. There will be a need to move rapidly in such a situation, and pressures for reconstruction could lead to repeat of construction in hazardous areas.

7. Summary of Problems

a. The diverse nature of the sources of geotechnical information that is available for review of development proposals often makes it difficult for staff to be aware of and to provide the best information to the public. A system of consolidating the information sources and periodically updating them could be considered to improve public awareness.

b. There are various efforts being conducted by Federal, State, and other local agencies to improve methods for prediction of earthquakes, landslides, and other geotechnical hazards, and for designing appropriate mitigation measures to protect new development. The County could more actively support these efforts and incorporate them into its development review procedures.

c. The County could make greater efforts to inventory the most serious geotechnical hazard areas and make efforts to abate them, particularly if they affect critical services and facilities.

d. Greater effort could be made to inform the public of methods available to finance the abatement of geotechnical hazards.

e. The County presently has no procedures for requiring dedication of geotechnically hazardous areas for open space uses during review of subdivision or building permit requests. Incentives such as density bonuses in trade for such dedication could be explored.

f. The County could improve its efforts to inform the general public about the location of geotechnical hazards, their degree of risk, and how they can be prepared in case an emergency occurs. This could be accomplished through greater availability of geotechnical information, seminars, and other educational programs. Perhaps the best opportunity for disclosure occurs during the transaction of property. The County could consider requiring deed restrictions that notify potential buyers of hazards in areas outside of the GH

zone. The County could also consider informing local boards of realtors of the scope of geotechnical hazards.

g. The County's emergency response system could be clarified and better publicized. A more precise inventory of critical facilities that would be greatly affected by emergencies is needed. Members of the public could be better informed of the need to be prepared for a breakdown in services, the appropriate actions they can take during such emergencies, and the locations where they can obtain emergency aid in their neighborhoods, particularly if these areas are isolated during a disaster. The emergency response procedures do not presently contain a plan for post-disaster reconstruction.

D. ALTERNATIVES

1. Directly Abating Geotechnical Hazards

The County could pursue programs for inventorying and abating the most critical geotechnical hazards, concentrating on those hazards which pose significant threats to life, property, and critical facilities. However, this strategy could be very costly and require significant staff time. Additionally, many of the hazards are of such magnitude that they cannot possibly be abated.

2. Improving and Maintaining the Geotechnical Hazards Data Base

Since many of the geotechnical hazards cannot be directly controlled, an information base that is up-to-date, well publicized, and available to the staff and the public can assist in the avoidance of geotechnical hazards. The County could improve the organization and dissemination of information by: (1) preparing maps for the general public and real estate offices which delineate the general areas where hazards are likely; (2) having staff prepared to answer more specific questions for applicants who are concerned property in these areas; (3) establishing a procedure for periodic update and review of the available geotechnical hazards information such as during the annual review of the General Plan; (4) encouraging more pre-application conferences with applicants; (5) supporting programs for mapping and monitoring of hazardous areas being conducted by the State and other agencies; (6) updating the Geotechnical Hazards Synthesis maps; and (7) investigating whether other portions of the County should be included within the GH overlay district.

3. Requiring More Extensive Disclosure of Geotechnical Hazards During Development Review

At the present time, deed restrictions which indicate that a parcel of land is located within a potentially hazardous area are required as a condition of approval only in the GH district. The County could consider expanding this system to include any parcel which is identified through development review to be affected by a geotechnical hazard and to pursue other methods in addition to deed restrictions.

4. Allow Development to Occur Regardless of the Extent of the Hazard

The County could take a more laissez faire approach by allowing development to occur in defined geotechnical hazard areas subject to demonstration by the applicant that he/she has obtained insurance to cover earthquake or other geotechnical hazard losses. A waiver exempting the County from liability would need to be included if this alternative was pursued. This alternative would eliminate many of the administrative costs for the applicant, but could create higher risks for future residents.

5. Improving Emergency Response Procedures

The County could improve emergency response procedures through more effective publicity. Informing residents of how they can prepare themselves and of where they could seek aid in their immediate neighborhoods would be the most valuable result of pursuing this alternative. One way this might be accomplished would be through more frequent simulated earthquake drills in schools and other public buildings.

6. Maintain Existing Geotechnical Review Procedures

The County could continue to require geotechnical investigations during review of individual site development applications in accordance with current procedures. Experience has shown that this approach eliminates more than 95% of future site geotechnical problems.[118]

7. Adopt Land Use Policies to Avoid Hazards

The County could adopt a policy for urban development that would direct future urban growth away from areas of known geotechnical hazards. Zoning Ordinances could be amended if necessary to emphasize lower densities in defined hazardous areas.

II. FIRE HAZARDS

A. IMPORTANCE OF PROTECTING PEOPLE FROM FIRE HAZARDS

The threat of fire has affected human settlements, both urban and rural, from the beginning of recorded history. On occasion, it has dramatically changed the pattern of development in and near those settlements. The great London fire of 1666 completely altered the urban design of that city, as did the Chicago fire late in the 19th century. The San Francisco earthquake of 1906 caused tremendous damage, but the true magnitude of the disaster occurred from fires that raged unchecked after the earthquake due to the destruction of roads and water supply systems. The pattern of development seen in San Francisco today was greatly shaped by the reconstruction after this fire.

The alteration of a city's development pattern is a relatively subtle consequence of fires when compared to the billions of dollars of property losses, the loss of lives and serious injuries, and the severe

economic dislocations of individuals, businesses and insurance providers that annually result from fires in this country. The provision of adequate fire protection is one of the principle concerns of both citizens and government.

In California, a unique combination of population pressures, vegetation, climate and topography creates more severe fire hazard conditions than in many other parts of the world. Rugged, steeply sloping terrain, sparse water supplies and highly flammable vegetation, conditions that are often located at the edge of expanding urban areas, can make residential development treacherous unless great care is taken to incorporate fire safety measures and to ensure that adequate fire protection infrastructure is available. Many residents of these areas have a casual attitude about the extent of the fire hazard or are unaware of its magnitude.

Examples of the threat from fires in California are numerous. Perhaps the most devastating local examples in recent history have been the 1981 Atlas Peak fire in Napa County that destroyed 61 homes and burned over 21,000 acres, and the 1970 fire in the Berkeley Hills that destroyed 36 homes. Many of the homes destroyed in these fires might have been saved if measures to minimize the fire hazard had been more effectively incorporated into individual site design.[119]

Wildland fires threaten public safety in other ways. Fires can have devastating impacts on the vegetative resources of the County which are needed to provide slope stability, watershed protection and wildlife habitat. In mountainous areas, the loss of vegetation can result in increased erosion and runoff, which can in turn result in aggravated flooding hazards and increase the likelihood of mudslides. Stream siltation is likely to increase due to runoff from unprotected slopes. This can seriously affect streams that are needed for water supply and water recharge for reservoirs. Loss of vegetative cover and siltation can also dramatically alter the scenic and recreational amenity of rural areas and greatly damage fish and wildlife habitat.

Fire can threaten the public welfare by destroying an important economic resource: productive timberlands. Fire in forested areas destroys young trees needed for regrowth and weakens others so that they are more susceptible to wind damage, insects and disease. Repeated uncontrolled fire can convert forests into scrubby growth and result in dramatic loss of topsoil. The value of forested lands, unlike brush or grass covered lands, is not easily recovered. The required regrowth period for productive use of timber is generally lengthy.[120]

B. OPPORTUNITIES AND CONSTRAINTS FOR REDUCING FIRE HAZARDS TO AN ACCEPTABLE LEVEL

1. Extent and Magnitude of the Hazard

The vegetation, climate and topography of San Mateo County present varying conditions of potential fire risk and magnitude. In the

northern Santa Cruz Mountains area, in the vicinity of Skyline Boulevard, scrub vegetation and forested lands have fuel loading characteristics and slope conditions which present a definite fire hazard. The threat of fire, on the other hand, is tempered in irrigated agricultural lands or in coastal areas where climatic conditions are generally more moist. The California Department of Forestry (CDF) considered the variety of these conditions when it delineated the Hazardous Fire Areas Map of San Mateo County in 1979. The boundaries of this map have been reproduced on the Natural Hazards map, illustrating the brush, range and forest lands where fire poses a threat to the County's scenic, natural and economic resources.

Although a significant portion of the unincorporated area is included within the hazardous fire area, San Mateo County has been fortunate to have no extensive history of major wildland fires. This is due in great part to the high rainfall and more temperate climate found in the County in comparison to other Bay Area counties. No portion of the County is rated as having "extreme" fire hazard conditions by CDF. There are only a few days between May and November where fuel and weather conditions are so critical that smaller fires could escape initial attack and become larger, more destructive wildland fires. In 1983, in San Mateo County, CDF responded to 58 wildland fires.[121] All of them were contained within two to ten acres. However, 1983 had an extraordinarily wet winter, which contributed to a reduction of the fire hazard.

In spite of the excellent past record, continuing rural residential development in wildland areas and the growing use of open space and parklands for outdoor recreation increase the risk of fire. The County has an opportunity to recognize the potential magnitude of the fire hazard when considering appropriate land use designations and when evaluating development proposals in the rural area. Additionally, the County has the opportunity to improve its information base and maps of fire hazard areas by incorporating information prepared by CDF and other agencies that more precisely defines the hazardous fire areas. CDF is currently preparing maps to redefine fire hazard severity zones in San Mateo County, as part of a mapping program administered by the State Fire Marshal that will cover all 58 counties.[122]

2. Reducing the Hazard at the Source

The hazard created by the spread of wildland and urban fires can be reduced by two principle methods: (1) fuel management and structural clearance requirements that modify the threat of fire by controlling or removing flammable vegetation and (2) provision of improved access for vehicles and personnel to fight any fires that might occur.

Fuel management can be achieved through such methods as pruning, thinning or prescribed burning of the dense brush understory that is highly flammable and can accumulate to dangerous levels. Brush accumulation is common in the rural unincorporated areas, but it is a particular problem when located in and around developed areas. Brush removal and maintenance of adequate clearance between structures and flammable vegetation

helps to create a barrier which lowers the intensity at which a fire burns. Many of the homes that were lost in the 1981 Napa County fire could have been saved if structural clearance requirements had been more rigidly adhered to by individual property owners, and fire resistive roofing materials had been used.

On the other hand, removal of flammable vegetation can be as destructive to the scenic, natural and economic resources of the rural area as a natural fire unless conducted under the most carefully controlled conditions and circumstances. Fuel management programs can also be costly, requiring the periodic labor of individuals to conduct controlled burning, maintain the vegetation and provide follow-up inspection to enforce the program.

The absence of access in hazardous fire areas is one of the key determinants in increasing fire risk. Access can be improved through construction of new roads, improvements of existing roads or construction of fire breaks and emergency access routes in wildland areas. However, there are constraints and consequences of providing better fire access. A key concern is that provision of access into remote areas can severely damage sensitive resource areas. The California Department of Forestry recently discontinued maintaining fire breaks along the ridgetops of San Bruno Mountain to avoid adversely impacting the habitat of several endangered butterfly species.[123] However, CDF does continue its maintenance of two fire breaks within the boundary of the San Francisco watershed lands pursuant to agreements with the San Francisco Water Department.

3. The Existing Pattern of Development and Services

a. Rural Residential Development

As documented in more detail in the Rural Land Use Chapter, most of the existing residential development in the rural unincorporated areas is concentrated in rural service centers and rural subdivisions. This land use pattern provides the opportunity for more efficient fire protection services. Although there are a few exceptions, these developed areas are near major roads and have relatively good access for fire protection vehicles on internal collector and neighborhood streets. Water supply systems tend to be adequate near major roads, particularly in the subdivided areas immediately adjacent to Skyline Boulevard, which can be served from hydrants that connect to Skyline County Water District lines. Private mutual systems such as Skylonda Mutual and the Cuesta La Honda system also supply water to hydrants located in these subdivided areas, although these smaller systems have occasionally had difficulty in maintaining adequate water pressures for fire flow in their lines.

However, a significant number of rural dwellings located in remote areas of the County have poor access, steep slopes, and are surrounded by highly flammable vegetation. In many instances, both

public and private roads serving these areas are marginally capable of allowing access for fire vehicles and would have extreme difficulty in accommodating two-way traffic during a fire emergency. This situation is complicated by the absence of a secondary means of access to many remote parcels. Evacuation of residents could be a critical problem due to the lack of such emergency "escape routes."

The existing pattern of rural residential development can also affect fire vehicle response time, which is perhaps the most critical factor in providing adequate fire protection. In many cases, and particularly in areas where there are numerous private roads, road patterns can be confusing and streets may not be properly identified in a manner to most efficiently direct responding fire vehicles. Delays in response due to confusing road patterns can result in the loss of structures that normally would be saved. The remoteness of some dwellings constructed on large parcels with no nearby neighbors can make it difficult to even detect the presence of a fire, especially during adverse weather conditions. In remote areas, the County could consider requiring each individual site to have available resources to fight any fire that might occur.

There are additional constraints to providing fire protection to existing developed areas. Even if fire protection vehicles reach a fire in time, many homes are not connected to public water systems. These homes must rely on on-site storage to supplement water that is brought to the site by fire apparatus. Experience has shown that many of the older developed areas have inadequate on-site storage that does not provide adequate fire flow pressure. The fire flow pressure can also be a problem even in areas that do have a public water system. Often the diameter of water lines and their available water pressure is inadequate to meet modern standards for fire fighting.[124]

The materials used for construction in rural dwellings can also add to the fire hazard. Many of the older homes in the rural area were constructed prior to the adoption of modern building and fire codes by the County. Materials such as untreated shake siding, unenclosed underfloor areas and untreated wood shingle roofing are no longer permitted by modern codes but are present in many rural dwellings.

One strategy the County could pursue to reduce the fire hazards in existing development would be to conduct a code enforcement inspection program and to require mitigation of any identified severe fire hazards. The constraint to such a strategy is the costs for staff to do the inspection and the potential financial hardships created for residents that would be required to mitigate the hazard.

b. Development in Unincorporated Urban Areas

In the County's unincorporated urban areas, there are numerous areas where residential development has occurred on steeply sloping terrain containing flammable brush or grass lands. These areas can

have even greater risk of fire than wildland areas due to the closer proximity of structures. Other parts of the urban area which may be developed to even greater densities are located on flatter terrain with good access and can be more easily served by fire apparatus. The County may wish to encourage further development in these areas.

While many of the homes in these areas were constructed in compliance with modern building and fire code requirements, a significant number can be considered substandard. Access, water supply and vegetation clearance are also major constraints to providing adequate fire protection in the urban areas. Areas that have had numerous problems are Emerald Lake Hills, Palomar Park and Devonshire Canyon. Access problems are particularly acute in these areas. Under normal conditions, many of the roads can barely accommodate fire vehicles.

CDF reports that there have been situations during weekends when parked cars have prevented access for vehicles responding to fire calls. An additional hazard resulting from this situation is potential head-on collisions between fire vehicles and approaching traffic. The collision threat increases during times when people are trying to escape a fire in these areas.[125]

This situation provides the County with opportunities to investigate on-street parking requirements and to examine ways of improving vehicular access such as one-way loop roads or more frequent provision of turn-outs. However, there is normally community opposition to significant changes that are proposed when circulation is affected.

A major constraint for fire protection in the unincorporated urban residential areas is the availability of water supply to fight a fire at a given site. The antiquated water systems that serve many of these areas often have water lines that cannot deliver adequate fire flow even if adequate water supply is available.[126] As a consequence, adequate on-site storage to supplement the water system could be required and defined by County ordinances. Another possible opportunity would be the installation of residential sprinkler systems in homes in existing developed areas that have identified deficiencies. It is questionable, however, whether changes in water supply could be required for existing development. The real opportunities could be realized during review of new development.

c. Other Land Uses and Facilities

San Mateo County does not have the same potential for industrial based fires in its unincorporated areas as other urbanized counties do. Industrial uses are concentrated within areas of North Fair Oaks and Harbor Industrial area and include auto body shops, heavy machinery and candle manufacturers. In the areas zoned for light industrial use, companies are typically smaller enterprises with a shorter length of tenancy, with the exception of the EIMAC facility

in the Harbor Industrial area. Fire protection for the unincorporated urban areas is provided by fire districts. The EIMAC facility, however, is served by CDF/County Fire. These districts have an opportunity to review compliance with their fire standards during review of new business changes and during annual inspections. The County could encourage the annexation of industrial areas to other fire districts to provide for more efficient fire protection services and to concentrate CDF/County Fire efforts in more rural areas.

Other land uses and facilities which are subject to and pose the risk of fire include public and private recreation facilities and institutions such as schools, where the number of occupants is high. The 1975 Fire Protection Study prepared by Gage-Babcock and Associates for San Mateo County estimated an overall slight to moderated life loss potential from fire in the County, based on construction type and exit facilities.[127] The County has the opportunity to require the most stringent fire safety requirements during the review of new public buildings or facilities proposed in the unincorporated area in order to keep fire losses to a minimum. The County also could encourage standardization of fire protection requirements with other cities and fire protection districts.

d. Services

Existing CDF/County Fire facilities of the California Department of Forestry, which were initially built in more remote areas to respond to wildland fires, are not in all cases located where the most efficient response time to all structural fires can be realized. In both the urban and rural area, County Fire facilities could be more optimally located to quickly service fires within their present political boundaries. The recognition of this situation has encouraged more efficient use of fire protection services through mutual aid agreements between neighboring fire protection agencies.

Specifically, automatic aid agreements allow neighboring fire protection districts to respond automatically to a fire if their fire protection facilities or equipment are closer to the incident. In isolated areas where there are no nearby district fire stations, there are usually volunteer facilities which can initially respond to a fire. The County could examine the structure of its present fire protection services for possible reallocation or relocation of facilities to serve existing developed areas.

e. Cost of Services

The cost of providing fire protection services is generally quite high. In 1983, over $8 million was expended by fire protection districts serving the unincorporated areas for rescue, ambulance and fire aid services.[128] The County's contractual agreement with CDF for structural fire protection will cost $2.4 million in fiscal year 1984-85.[129] The County has the opportunity to reduce the cost of

fire protection services over time through: (1) requiring fire hazard mitigation measures during the review of new development, including built-in fire protection systems, and (2) the consolidating of fire protection services where appropriate. However, many developed areas will continue to need a high level of fire protection services due to limited access and inadequate water supply.

4. The Location of New Development

While various land uses can increase the threat of fire, land use planning and development review procedures present the County with its greatest opportunity to avoid, lessen and mitigate fire hazards. Where development cannot be completely avoided in hazardous fire areas, it is possible to minimize the threat and potential impacts of fire through allowing less intensive and lower density land uses. This strategy might be particularly applicable in high fire hazard zones of the County's wildland areas.

The County also has an opportunity to ensure adequate fire protection by locating new development within service areas of water districts or private water companies, which have adequate capacity and are in close proximity to fire protection facilities so that efficient "response times" can be achieved. Where this is not feasible, the County could require on-site mitigation measures to provide fire protection. During the development review process, an applicant for development could be required to demonstrate on-site water storage, water pressure for fire flow, access for fire protection vehicles and a secondary evacuation route in case of emergency. Applicants for building permits could also be required to maintain adequate clearance of flammable vegetation around the structure, use fire resistant vegetation for landscaping and use building materials that conform with modern building and fire codes. During the Napa County fire in 1981, it was found that inadequate vegetative clearance was a primary cause for the loss of dwellings, and that certain ornamental landscaping varietals actually attracted the spreading fires. The requirement for providing adequate access for fire protection vehicles is especially critical. Once a pattern of development has been established, it is extremely difficult to "retrofit" a road system.[130]

One additional opportunity for fire protection for new development could be considered, the installation of sprinkler systems to spray water directly on any fire within a structure. These systems can be very useful, particularly in remote areas where there are lengthy response times. The constraints to requiring the installation of sprinkler systems are their cost (which can range upward from $2,000/dwelling unit dependent upon the square footage of the structure)[131] and the potential water damage that can occur to interiors from activation of the system. In addition, many fires are caused by flames spreading to the roofs of structures from adjacent units or nearby wildland fires. Most sprinkler systems are designed to water only interior areas.

One positive advantage of sprinkler systems could be the potential long-term reduction of fire insurance rates due to system installation. Sprinkler installation could also have long-term benefits for the County because they could reduce the need for expansion of fire protection services.

5. Providing Public Awareness

It is important for members of the public to be aware of the extent and location of fire hazard areas and methods they can take to reduce those fire hazards. The County has various opportunities for increasing public awareness about fire hazards, including educational programs conducted at schools or other community centers, newspapers and other media, outreach programs from fire officials and integrating data about fire hazards into the development review process. The County General Plan can also contribute to the public awareness. The delineation of fire hazard areas on the Natural Hazards map is one way of achieving this. A more precise definition of the different degree of fire hazard severity zones could also assist in informing the public. The most severe hazard areas an overlay zoning district which could specify fire hazard reduction requirements and give early notice to realtors and applicants of potential fire risks associated with property they are proposing to purchase or develop.

6. Emergency Response Planning and Procedures

The County has the opportunity to encourage efficient response and coordination of outside fire protection agencies during major fire emergencies through participation in the master mutual aid agreement and continuing participation in the State's fire and rescue emergency plan. It is particularly useful for fire protection agencies in the County to be aware of the procedures for requesting mutual aid, the coordination of disaster relief efforts and the coordination of reconstruction efforts after the disaster has occurred. It could also be useful to inform the general public of these procedures and of actions they need to take in order to evacuate an area or to seek shelter in the event of disaster.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING FIRE HAZARDS

1. Extent and Magnitude Issues

The California Department of Forestry has kept abreast of the extent and magnitude of fire hazard conditions in the wildland areas. To accurately reflect any changes due to urbanization, CDF redesignates the boundaries of its "State Responsibility Areas" every five years. They also have identified specific land uses and facilities that are directly threatened by fire in these areas through their Fire Hazard and Risk Inventory and Action Program. CDF is presently in the process of redefining existing fire hazard severity zones in order to implement recent State legislation. Once these zones have been formally adopted, regulations for appropriate roof coverings and attic openings for each zone

will be developed by the State Fire Marshal. The County will be consulted during this process. Eventually, the County will need to amend its building code to adopt the new roofing requirements.

The County's existing Fire Hazard Ordinance refers to the Hazardous Fire Areas map which was developed by the County in 1979 when the Ordinance was adopted. The purpose of this map is to identify the hazardous areas within State responsibility areas as well as those within the contracted area served by CDF/County Fire.

The Hazardous Fire Areas map may not accurately reflect the extent and magnitude of the fire hazard in unincorporated San Mateo County.[132] For example, Emerald Lake Hills and Devonshire Canyon, which have a history of fire problems, are not included within the map's boundaries. The County could consider revising this map to include these and other hazardous areas. The information being gathered by CDF for their fire hazard severity zones mapping project should be useful in more precisely defining both the extent of the hazard and the areas where the Fire Hazard Ordinance requirements could appropriately be applied.

2. Reducing the Hazard at the Source

The County's Fire Hazard Ordinance requires the maintenance of clearance of potentially flammable vegetation around structures located in hazardous fire areas. Over 50% of other fire protection agencies that serve unincorporated pockets also requires some form of vegetative clearance around structures.[133] While the regulations and enforcement procedures of these agencies vary, they all have had notable success in reducing the spread of fire. CDF annually inspects all structures located in State Responsibility Areas for conformance with structural clearance requirements. Local volunteer fire departments supplement CDF inspections and have become responsible for enforcing the clearance of vegetation around structures in areas such as Emerald Lake Hills and Palomar Park, which fall outside of State and County designated fire hazard areas. The degree to which local fire departments participate and enforce the clearance of vegetation varies and is greatly dependent on community awareness and support.

CDF is not presently conducting any major fuel management programs in San Mateo County. In nearby Big Basin in Santa Cruz County, actual burning programs to reduce fuel loading are being conducted in some areas. CDF has a chaparral management program in which private landowners can participate. This program can cover up to 90% of the costs of a fuel management project under cost-sharing arrangements.[134]

CDF maintains firebreaks along Butano Truck Trail and in the San Francisco watershed lands. A fire break along the ridge of San Bruno Mountain could have been useful in more efficiently containing a fire that recently jumped from the south slope to the north slope and threatened homes in Brisbane.[135]

3. Existing Pattern of Development and Services

The problems of water supply and access for fire protection vehicles in existing developed areas are not easily addressed. There are few mechanisms available to the County to upgrade water and road systems to meet current standards for an existing pattern of development. Road access and improvement requirements were a major issue during the hearings on the Skyline study, and both the Planning Commission and Board of Supervisors struggled to find equitable ways of assuring adequate road access. In recognition of the unique problems of the rural developed areas, policies were adopted to require that adequate access is present prior to approval of new building permits and subdivisions. However, controversy over defining the appropriate level of road improvements and addressing existing developed areas in the Skyline area continues. The Department of Public Works is presently studying whether specific improvement requirements for individual roads should be adopted, also in response to one of the adopted Skyline policies.[136]

One strategy to improve access would be to convert narrow roads to one-way access in areas where feasible. The County could also forbid parking in areas where road widths are particularly narrow. However, these potential solutions are likely to be unpopular with residents.

Road improvements to provide better access in developed areas would be costly, environmentally damaging and, in most cases, unpopular with area residents. Funding for such improvements would primarily be through assessment district proceedings, which would require neighborhood support. Experience has shown that the costs involved make this support unlikely.

The County Fire Protection Regulations contain a provision that allows the County Fire Warden to abate any hazardous fire conditions in existing developed areas if violations are discovered. In practice, the County does not inspect structures for compliance with fire codes. However, if 50% or more of the structure is being replaced or altered or a complaint about the health and safety of a structure has been verified as a code violation, then fire code compliance will be required.

The County presently has no ordinance requiring residential sprinkler systems. This could be investigated as a possible solution to problems of existing developed areas. Fire officials are generally supportive of the installation of such systems.

The fire protection services of San Mateo County were recently the subject of a study by the Government Research Council. This study concluded that San Mateo County fire protection services are "good in comparison with jurisdictions in similar urban settings", but did recommend a number of "reduced deployment" and consolidation options for reorganizing fire protection services.[137]

4. Location of New Development

In the review of proposed development, the County effectively implements standards for fire-safe construction required by the Uniform Building Code. In addition, all building plans and land divisions are reviewed by a representative from CDF/County Fire Department to ensure that regulations in the County's Fire Ordinance are met. Existing regulations that enhance the provision of fire protection services when new development is proposed include requirements for on-site storage, the sizing of water lines and the location of hydrants and/or standpipes. While the fire protection ordinance has been effective to date for reviewing new development, the organization of the ordinance is confusing. There is general agreement between CDF and County staffs that the ordinance should be rewritten and reformatted. A policy supporting this concept was approved in concept during the Skyline hearings.[138]

The County will have a good opportunity to pursue this revision when the fire hazard severity zones discussed earlier are defined by CDF. The State Fire Marshal will propose specific fire protection measures and roof covering standards for each severity zone defined by their study. These requirements could be incorporated into a revised County Fire Ordinance, as could the revised definition of what constitutes a hazardous area. This newly-defined hazardous area could also be delineated on the Natural Hazards map. It could include hazardous areas such as Emerald Lake Hills and Devonshire Canyon that are not presently defined as fire hazard areas. The revised Ordinance could also more clearly distinguish what is required of new development located in hazardous areas versus the remainder of the unincorporated area.

The new Ordinance could also address access more comprehensively. The County Fire Ordinance does not currently define the minimum road width requirements necessary to safely accommodate fire vehicles, nor does it address the off-site road improvement problems that are a special problem in remote areas. Existing requirements for secondary access and emergency evacuation are also not defined. The County Fire Ordinance does not require the installation of road improvements for single family dwellings in the rural area. One way of defining the access requirements could be through incorporation of the access requirements of the Fire Safe Guidelines into the County's ordinance. These Guidelines were developed by the by the Department of Forestry and adopted by the County Supervisors Association of California (CSAC) in 1980.

Land use policies of the LCP and Skyline Area General Plan Amendment encourage the concentration of development within existing developed areas where possible. These clustering policies make it easier to provide fire protection services, particularly since most developed areas are located near major roads with good access.

Fire protection considerations are also addressed by the Hazards to Public Safety criterion of the Resource Management (RM) zone and requirements for a preliminary concept plan for major projects proposed in that zone.[139] The Skyline study adopted a key policy requiring a

master land division plan for parcels that have a development potential of more than four dwelling units.[140] This plan could be used to identify road patterns, water distribution systems and means of secondary access that incorporate optional fire protection considerations. Both of these requirements are excellent methods for identifying fire safety problems and developing solutions to them.

At the present time, the County Fire Ordinance does not require the installation of residential sprinkler systems except for buildings other than single family residences that have floors located more than 35 feet above the lowest level of fire protection access or which have a floor area in excess of 2,500 square feet. Other jurisdictions have required the installation of residential sprinkler systems and have found them to be effective in reducing fire hazards.[141] The County could consider adoption of such requirements as part of a revised Fire Ordinance.

For development that occurs in very remote areas, the County could require applicants to contract with alarm companies. These companies are notified by alarm devices that a fire is occurring and, in turn, inform fire protection authorities. This procedure can shorten response times through more rapid detection and notification.

5. Increasing Public Awareness

CDF/County Fire Department has attempted to inform the public of the fire hazards in the unincorporated areas and has promoted fire safety measures through public meetings and educational programs, brochures and outreach to the media. A CDF team is available to conduct fire safety discussions in public schools. These measures have been effective in promoting public safety and could be continued and expanded.

Perhaps the best way of informing the public of the extent of fire hazards is through the distribution of maps which identify fire hazard areas and discuss means of mitigating fire hazards during land development. CDF review of new development proposals also promotes public awareness. However, the best method is to inform the public prior to this stage so that land development decisions can be made with full knowledge of the potential fire hazard.

6. Emergency Response Planning and Procedures

The County has effectively promoted efficient fire protection response in an emergency by participation in the State's Master Mutual Aid Agreement[142] and through mutual aid agreements between fire protection districts, cities and CDF/County Fire.

The County could more effectively promote public awareness on assistance to fire protection agencies during an emergency, fire protection agencies responsible for their area and the location of shelters. Identification of emergency evacuation routes in remote areas could be required at the time of the review of new development. The County could work

with CDF to promote pre-suppression fire planning efforts and to include evaluation plans as part of these efforts.[143]

CDF also has specific procedures for reseeding and landscape maintenance after wildland fires occur. These procedures could be coordinated with any proposal for reconstruction after fires have occurred.

7. Summary of Problems

a. There is general agreement that the Hazardous Fire Areas map referred to by the County Fire Ordinance needs to be updated to more accurately reflect the extent of the fire hazard in the unincorporated area. There is also a need to establish a process to periodically update this map as new information becomes available.

b. The roads serving many of the existing developed areas are inadequate to serve fire protection vehicles, not wide enough to accommodate two-way traffic in emergencies and beset with problems such as on-street parking that blocks two-way access. There have not yet been any successful methods of defining appropriate means for defining the level of needed improvements in these areas, nor have adequate financing methods been defined.

c. The County Fire Ordinance is very difficult to follow and is in need of restructuring so that specific requirements for fire protection can be more easily understood.

d. The current County Fire Ordinance does not define appropriate road width requirements needed to accommodate fire vehicles. It also exempts single family dwelling units from road access requirements and does not address the problem of off-site access requirements.

e. There presently is no authority in the County Fire Ordinance for requiring residential sprinkler systems for new single family dwellings.

f. Existing County ordinances, and particularly the Fire Ordinance, do not specify fire resistant landscape materials.

g. The existing County Fire Ordinance contains no provisions for requiring remote alarm systems to assist in alerting fire protection personnel of fires in remote dwellings.

h. The County presently does not actively promote the preparation of disaster response plans for major fires that specify evacuation routes, identify areas that may be isolated, and define reconstruction policies.

D. ALTERNATIVES

1. Incorporate the Fire Hazard Severity Mapping Information into the Defined Hazardous Fire Areas Map

The County could develop a more precise Hazardous Fire Areas map by coordinating with the California Department of Forestry and using the fire hazard severity zone information that they are presently developing. This would be a valuable information source to inform both the staff and the members of the public of the extent and magnitude of fire hazards in this County.

2. More Clearly Relate Fire Protection Requirements to the Hazardous Fire Areas Map

The County could restructure its fire protection requirements to correspond with the varying degrees of hazard defined on the Hazardous Fire Areas map. Requirements for appropriate access and building and roofing materials could be specified for each fire hazard zone according to the relative degree of hazard.

3. Reorganize the County Fire Ordinance

The County Fire Ordinance is very difficult to use and understand in its present format. There is widespread agreement among staff that it should be reorganized. This could be accomplished at the same time the Hazardous Fire Areas map is amended.

4. Define County Standards for Fire Protection

The County could establish general plan policies which define standards for fire vehicle response times, on-site storage of water supply and other factors. These standards could be reviewed periodically to determine their appropriateness.

5. Avoid Development in Hazardous Fire Areas

The County could make greater efforts to avoid new development in defined Hazardous Fire Areas. This could be accomplished through the lowering of allowable densities, incorporating fire hazard considerations into the calculation of allowable densities and establishing development review criteria that takes fire hazards into consideration in zoning districts outside of the RM.

6. Require Additional On-Site Fire Hazard Mitigation in Remote Areas

The County could require additional fire protection measures for development occurring in remote areas that have long response times for fire vehicles. These measures could include mandatory installation of residential sprinkler systems and contracting with private alarm warning systems.

7. Require Fire Resistant Landscaping

The County could include requirements for the use of fire resistant landscaping materials during a review of the County Fire Ordinance. A list of acceptable materials could be compiled and made available to the public, as well as being listed in the Ordinance.

8. Reorganize Fire Protection Services

The County could consider reorganization and/or reallocation of its fire protection services so that more efficient response times can be achieved. A review of fire protection services in the rural area in conjunction with this could examine the need for new fire stations or relocation of old ones. The County could also support consolidation efforts in the urban area.

9. Do More Pre-Fire Planning

The County could encourage pre-fire planning efforts that are conducted by CDF. This could include identification of vulnerable and potentially isolatable areas, identification of emergency evacuation routes, and estimating the time elapsed before additional fire protection response from other agencies. The County could be especially cognizant of maintaining adequate evacuation routes in consideration of new development.

III. FLOODING HAZARDS

A. THE IMPORTANCE OF PROTECTING PEOPLE FROM FLOODING HAZARDS

For as long as urban development has been occurring, people have built and rebuilt their dwellings and cities in flood hazard areas either knowingly or without knowledge of the potential danger. Historically, development has often occurred close to sources of water supply and conveniently located next to water transportation routes. As development continued, lands in the flood plain[144] became more valuable due to their proximity to the existing pattern of urbanization. In the past, people were often unaware that they were located in a flood plain. Cities could exist for hundreds of years without experiencing a major flood. However, devastating floods throughout history have served as a reminder that certain locations are simply not appropriate for development.

As the knowledge of the potential for flooding continues to expand and the consequences of not properly planning for those effects becomes more clear, many of the past mistakes are not repeated. In spite of this increase in knowledge flooding remains a serious problem in the United States. More than 4,000 persons have lost their lives in flooding events over the past 40 years in this country. From 1973-79, Federal costs related to flood disasters exceeded $4 billion, reaching $1.2 billion in 1979 alone.[145] These costs alone would serve as adequate impetus to develop measures for flood protection. The potential for loss of human life make such measures an even greater imperative.

B. OPPORTUNITIES AND CONSTRAINTS FOR REDUCING FLOODING HAZARDS TO AN ACCEPTABLE LEVEL

1. The Extent and Magnitude of the Hazard

The County is blessed with abundant annual rainfall, scores of natural streams, and miles of shoreline bordering San Francisco Bay and the Pacific Ocean. These water resources provide the County's residents with many beneficial scenic, recreational and consumptive uses. However, their abundance also creates potential hazards from flooding.

The Natural Hazards map illustrates the extent of the flooding hazards in San Mateo County. The areas illustrated on this map include the unincorporated portions of the County that would be inundated during times of intensive storm runoff, areas that would be flooded due to the overflow of inland or tidal waters caused by geotechnical events or major storms, and areas that would be flooded in the event of a catastrophic dam failure. This information is derived from very precise mapping that has recently been completed by Federal and State agencies, so it should present a relatively accurate picture of the flooding hazards in the unincorporated areas.

2. Reducing the Hazard at the Source

Knowing the extent and potential magnitude of the flooding hazard provides the County with an excellent opportunity for reducing risks to the public. The County cannot alter the winter weather pattern that produces surface runoff. The only active method the County can pursue in reducing the flooding hazard resulting from storm runoff would be to use direct physical means to capture and control the floodwaters, such as dams, creek channelization, or other engineering techniques. Studies have been conducted in the past for dams in the rural portion of the County, one focusing on the proposed damming of Pescadero Creek and another for the damming of the Bean Hollow watershed to provide domestic and agricultural water supply for the Town of Pescadero.[146] The studies documented extensive costs, concluding that there was not an adequate population to serve in order to justify the costs. Both proposals are illustrative of the significant financial and environmental costs of providing flood control. Many of the sensitive habitat areas identified in the Vegetative, Water, Fish, and Wildlife Chapter would have been destroyed or seriously damaged by the proposed project for a large scale dam in the Pescadero Creek watershed in 1970. Lesser impacts would have occurred if the 1976 plan for increasing dam capacity in the Bean Hollow watershed had been implemented.

Reducing the hazards of tsunamis, seiches and coastal flooding could also be accomplished through structural methods such as construction of dikes, levees, or breakwaters. Again, however, the costs and potential environmental damage caused by such solutions could only be justified if a large number of people would benefit from their construction.

Reducing the hazards of dam failure could best be accomplished by periodic inspection of the dam's structural integrity and ability to withstand seismic events and by locating new dams in areas that are relatively free of geotechnical hazards. Procedures for warning the public of the threat of dam failure and of the appropriate measures for evacuation in inundation zones could also aid in reducing the hazard.

3. The Existing Pattern of Development

Many of the existing developed areas of San Mateo County are located within areas subject to flood hazard or dam failure inundation zones, as illustrated on the Natural Hazards map. Most of these are located within incorporated areas. There are, however, some major exceptions, the most significant of which is Pescadero. Almost the entire developed area of this rural service center is located within the areas of special flood hazard defined areas on the Floodway and Flood Insurance Rate maps (FIRM) prepared for the National Flood Insurance Program.[147] Portions of San Gregorio, La Honda, Montara, Moss Beach and El Granada are also affected by these flood hazards.

Existing development within identified flood hazard areas creates a dilemma for the County. Significant investment in existing structures makes it impractical for the County to require the relocation of this development elsewhere. The costs of acquisition of such properties for open space would also be significant. Strategies that could be pursued to reduce flooding hazards in existing developed areas include the construction of flood control improvements (particularly the channelization of streams when they pass through developed areas), requiring "flood-proofing" of structures by means of elevating living spaces above expected worst-case flood hazard areas, or requiring adequate insurance coverage for existing dwellings and businesses.

There are constraints to these strategies. The construction of flood control improvements is not only costly, but it has the potential for increasing the flood hazard downstream by increasing the velocity of the channel flow. Any plan for such improvements would need careful engineering evaluations, which would add further to the costs. The County does not presently have the means for requiring flood-proofing of existing structures unless a new building permit is requested. If the County did require flood-proofing of existing development, there could be significant costs to existing residents, many of whom would not have adequate financial resources to make the required improvements.

Insurance coverage is now required of all new construction or sales of property that in any way involve Federal financing and are located within the areas of special flood hazard as defined on FIRM maps. If residents of these areas do not obtain insurance, they risk loss of Federal disaster assistance if a flooding event occurs and they are not eligible for other Federally-sponsored programs including FHA loans.

4. The Location of New Development

In determining the location of new development, the County has its greatest opportunities for the reduction of flooding hazards. The extensive information base contained in the FIRM maps offers guidance to the County, at a fairly precise level of detail, for determining land use and zoning designations for flood hazard areas. Densities and uses in flood hazard areas could be restricted so that the minimal number of potential new residents are exposed to the flooding hazard. Efforts could be made to avoid development altogether in flood hazard areas. This strategy could protect the County from potential liability in the event of flood related losses.

If development is proposed at the lower allowable densities, the County can do much to prevent loss of life and property through its building permit and subdivision review procedures. These procedures could, among other things, require dedication of hazardous portions of properties for open space, require foundation design to be above expected high flood elevations, and require proof of flood insurance coverage. If a proposed project is located within a dam failure inundation zone, the County could disclose this information during review of the project.

Meeting such requirements adds to the cost of development for the County's residents, and can add to the administrative costs and time required for County staff to review development applications. However, when viewed in the perspective of the losses of life and property that were described earlier, they would appear to be justifiable.

5. Providing Public Awareness

Many of the problems created by the flooding hazard can be avoided through public education and awareness. Providing and promoting public awareness can benefit both existing residents and those residents who wish to develop property in flood hazard areas.

There are several ways this could be accomplished. The County can continue and expand its public information programs, disseminating information through the media and distributing maps and pamphlets to the public from County offices. A very effective way of providing information could be through local real estate boards. By making maps available or conducting seminars for realtors, the County could assist in the "early warning" of flood hazards for potential buyers of real estate. This early warning is currently required of realtors for any parcel being sold that is located in an Alquist-Priolo Special Studies Zone.

The public could also be informed through zoning regulations and during the review of building permit and subdivision applications. Overlay zones that define the boundaries of the flood hazard areas could provide valuable information to the public and make it easier for staff to inform an applicant of potential problems with the property. The latest flood hazard information would need to be periodically reflected on the maps in order to clearly illustrate this information to the public.

If flood hazard areas are present on a parcel proposed for development or subdivision, the County could require that some method of disclosure, such as a statement on the subdivision map or a deed restriction, be placed on the parcel as a warning to potential future buyers that caution is necessary.

Perhaps one of the best methods that can be used to increase public awareness would be to publicize the procedures to follow during an emergency, and inform the public of what to do after a disaster. County residents could be informed of where to go to receive assistance if needed, where public shelter areas are located, what supplies to have on hand, and how to evacuate flood prone areas.

Providing public information can be costly and require significant staff time. It can also increase the cost of development by increasing the amount of time necessary to review and process applications. However, establishing an ongoing process to update and disseminate flood hazard information can result in long-term savings for the County by helping to avoid flood-related losses. Periodic review of the general plan is one way that this could be accomplished.

6. Emergency Response Planning and Procedures

The level of preparedness to respond to a flooding emergency greatly determines the extent of damages and the degree of threat to the lives of the County's citizens. The County's emergency response procedures provide an opportunity to warn residents of impending flooding conditions and to inform residents where the flood hazard areas are, where to go if a flood emergency exists, who to contact for information on condition of roads and weather, where to find emergency shelter, and what supplies to have on hand for a flood emergency. The County's ability to quickly communicate this information so that it reaches as many persons as possible in the shortest period of time can be a matter of life or death, particularly if there are threats of flooding from a dam failure.

County emergency response planning could also include the development of contingency plans to direct reconstruction efforts in the event of a flooding disaster. Action would need to be taken quickly after such an event and the County would need to direct the location and type of construction required when rebuilding occurs.

The constraints to improving emergency response are the need to provide funding and staff time to increase public information programs, and to identify a workable organizational structure for the emergency response system. The cost of preparing post-disaster plans has prevented their preparation in the past. The ability to provide "early warning" of potential flooding disasters could be improved through the installation of better monitoring instruments, but these could also involve costs to the County.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING FLOODING HAZARDS

1. Extent and Magnitude Issues

County regulations, programs and policies can either adopt a strategy for avoiding development in areas that are subject to flooding or for constructing public works projects to direct storm runoff more efficiently so that flooding is avoided. To date, more effort in County programs has been directed toward avoidance than toward physical improvements.

The maps prepared in conjunction with past County documents such as the Hazards component of the LCP have been useful in identifying areas which are subject to flooding, including areas subject to flooding from tsunamis and seiches. In addition, the dam failure inundation zone maps prepared pursuant to the requirements of State law have accurately identified the extent of flooding that would result from these unlikely catastrophic events. All of these maps have been useful in identifying areas where the possibility of flooding exists. However, until the preparation of the Flood Insurance Rate Maps, no standardized and accurate source for the evaluation of the hazard's presence has been available. The Uniform Building Code has long required structural measures to mitigate damage from flooding, but the problem has been in defining, as precisely as possible, where the hazard exists. The FIRM maps have solved this problem for all areas except the areas subject to coastal flooding, which are still under study by the Federal Emergency Management Agency (FEMA).

The FIRM maps and the County's Flood Hazard Ordinance should adequately address the past deficiencies and confusion about the extent of the flood hazard area, while meeting the requirements of the National Flood Insurance Program (NFIP). These maps will, in effect, precisely define the extent of the flooding hazard and provide direction for regulating new development proposed within those boundaries. The information contained in the FIRM maps has been reproduced on the Natural Hazards map. Coastal flooding areas illustrated on the Natural Hazards map are derived from the Geotechnical Hazards Synthesis Maps and could be updated when the FEMA Study is completed.

The extent of the flood hazard can be more accurately estimated by monitoring the volume of streamflow. Instruments are available to measure stream flow and to predict downstream flows expected from upstream rainfall. At the present time, only San Vicente, San Gregorio and Pescadero Creeks are being monitored by flow measuring gages installed by U.S.G.S.[148] The U.S. Weather Service maintains several rainfall monitoring stations in San Mateo County, and is able to use data from these stations to issue storm and flood warnings for subareas of the County. This information could be expanded to other watersheds where flooding could be a problem. It could also be more precise in order to identify specific locations where flood damage can be expected.

2. Reducing Flooding Hazards at Their Source

The County's flooding hazards can only be reduced at their source by physically altering the natural drainage pattern and landscape. This could be accomplished by a public agency such as the County or by private parties. If dams, impoundments or stream channel improvements are proposed, a number of regulations, programs and policies would come into play.

County efforts to physically manage the natural drainage have primarily been confined to a few streams on the urban Bayside where the more dense pattern of development requires channelization of streams to address storm runoff volume. The County Flood Control District, staffed by the Department of Public Works, administers four separate flood control zones and maintains the flood control improvements on these streams (see Table 15.7). Numerous other local drainage districts in the urban area have also been created to address the storm runoff problem.[149]

Expansion of the County Flood Control District to serve other portions of the unincorporated area is unlikely. There would need to be an election to set a tax rate for any new zone, requiring a two-thirds majority vote. Individual drainage districts are normally funded through assessment districts but they may also involve contributions from the County and other agencies.[150]

The construction of a dam would be subject to a complex series of regulations.[151] These regulations are established to provide maximum protection of resources and safeguards for environmental protection while also regulating the structural safety of the project. The County encourages the construction of smaller impoundments for agricultural water supplies through policies of the LCP[152] and through efforts to streamline the approval process of the grading ordinance.[153] However, the major obstacle to providing structural solutions to reduce flooding hazards at the source are the cost of the improvements and the absence of funding sources.

The State Government Code requires the preparation of inundation maps for dams whose failure would cause loss of life or personal injury.[154] The dams in San Mateo County that are affected by this requirement are listed in Table 15.2. The State also requires that each dam be inspected for structural defects and ability to withstand seismic events. The State Division of Mines and Geology conducts investigations of dam safety every five years. The Crystal Springs and San Andreas Reservoirs, however, are inspected more frequently by the San Francisco Water Department.[155] These procedures effectively reduce the hazard of dam failure due to structural defects.

3. Protecting the Existing Pattern of Development and Services

The new County Flood Hazard Ordinance effectively addresses many of the opportunities for protecting the existing pattern of development. One of the best methods for protecting the existing pattern of development

in the County is by informing residents where the hazardous areas are located. The new Flood Hazard Ordinance meets the requirements of the National Flood Insurance Program (NFIP) and adopts the FIRM and Floodway maps to precisely define the hazardous area. The FEMA maps are thus an excellent source for County staff to use in informing the public of hazards in developed areas.

The Flood Hazard Ordinance also sets requirements for structural mitigation for development that is allowed to proceed within the defined hazard areas. These requirements discourage new construction in floodways and allow development in areas of special flood hazard only if structures are elevated so that the lowest habitable floor is above the base flood elevation as denoted on the FIRM. They also specify that any development that is permitted must not increase the flooding hazard to downstream areas.[156] These regulations apply to new development or to substantial improvements to existing development located within areas of special flood hazard. There are no mechanisms by which the County can require structural mitigation for existing structures unless owners apply for new permits. Thus, existing structures would need to rely on insurance coverage to repair any damages that might occur.

Experience has also shown that the Federal government's flood insurance program, which requires planning for avoidance of flood hazards in any reconstruction after a flooding event, has significantly reduced flood-related losses.

Like the geotechnical hazards, placing an overlay zone, a deed restriction or a statement on existing parcels in flood hazard areas during review of development proposals could provide an early warning to potential buyers of property.

4. Addressing the Location of New Development

The County has long recognized the potential hazards of flooding during its review of new development, particularly in the rural areas. The development review criteria found in the RM, TPZ and PAD zoning districts has required that areas subject to flooding be identified during review of proposals for new development.[157] The presence of areas subject to flooding has been incorporated as one of the factors of the density matrix for these districts. The problem has been that the areas of flood hazard have never been precisely defined.

The new County Flood Hazard Ordinance should adequately address the issue of precisely defining the extent of flood hazard areas by adopting the FIRM and Floodway maps. Once adopted, it will be very easy to determine if a project is located in a flood hazard zone. New development will be required to take measures to avoid the flood hazard and to demonstrate proof of flood insurance prior to issuance of building permits. The FIRM mapping of Coastal High Hazard Areas could be added to the Natural Hazards data base when completed. This would further improve the precision of defining the flood hazard areas.

The County does not have any formal procedure for determining whether a proposed project is located within dam failure inundation zones, and the new Flood Hazard Ordinance does not apply to these areas.[158] This is related to the lack of centralization of the information base. The County could consider a policy to encourage the avoidance of these zones and to maintain accurate maps of these areas for the use of staff in their review of projects.

5. Providing Public Awareness

The County has made efforts to provide for greater public awareness through preparation of the geotechnical hazards synthesis maps, and other sources of information to guide private decision making about development issues. The Natural Hazards map further synthesizes this information and makes it available for public distribution.

The County could attempt to improve educational programs and outreach to the public. This could be done in the form of public workshops or seminars, frequent meetings with representatives of the Board of Realtors and training sessions at schools. Having a map that can be freely distributed to the public would assist in this process.

The County could also try to improve methods of disclosing flooding hazard information in a similar manner to that used in the GH District, through use of an overlay zone and/or by requiring the filing of a deed restriction prior to issuance of new building permit or subdivision approvals. Federal law now requires such disclosure prior to approval of any Federally insured project. The FIRM and Floodway Maps are available for such disclosure, however, and could serve the same purpose as an overlay zone.

The County could also improve efforts to achieve public awareness for emergency response procedures in a flooding emergency, particularly by identifying more specifically the areas that could be isolated by a flooding hazard and the procedures that individuals should follow in the event of flooding disasters. Improving the "early warning" system for floods, as discussed previously, would be a way of accomplishing this. The National Weather Service has a program for assisting local communities installing rainfall monitoring and streamflow forecasting stations.[159] The local government responsibility in this program is the purchase and ongoing maintenance of the equipment. The Weather Service assists in the engineering and site location for installing the devices and provides the software and forecasting service once installed. The County could investigate participation in the system, since local contributions are relatively small compared to the cost of the services provided by other agencies.

6. Emergency Preparedness

Efforts could be improved at the County level to provide the public with information on how to be prepared for flood emergencies. Existing procedures for County agencies are adequately specified, although more

frequent training sessions for contingencies might be appropriate. Improvements in the early warning system mentioned above would also facilitate emergency preparedness.

Like the geotechnical hazards, there are no policies presently in effect to direct reconstruction after a flooding disaster. These policies could be critical in making decisions in the aftermath of a disaster. The adoption of the Flood Hazard Ordinance is an important step in defining procedures for new construction in flood hazard areas.

7. Summary of Problems

a. Until recently, there was a lack of precise information about the extent of the floodway and flood plain areas of the County. This information gap should be corrected by the adoption of the new FIRM maps. However, this information could be better publicized. There is also presently no process for periodically updating and reviewing new information on flooding hazards for possible incorporation into the General Plan.

b. Improved "early warning" systems are needed for the flooding hazard, particularly in the rural areas west of the Santa Cruz Mountains. At the present time, there are very few instruments installed in the rural area to measure rainfall and streamflow in order to provide early warning of potential hazardous flooding conditions.

c. The County could further pursue both public and private methods to fund public works improvements to mitigate flooding hazards, including means by which existing structures can be flood-proofed.

d. There are presently no specific procedures for the review of development proposals in dam failure inundation zones; the new Flood Hazard Ordinance does not apply to these areas unless they are coterminous with the areas of special flood hazard.

e. There are presently no direct methods of identifying flooding hazard areas by an overlay zoning district or by deed restriction that are similar to the GH zoning district.

f. The County could better inform the public of the extent of the flooding hazard through outreach to the media, public workshops, increased contact with the real estate community and information about how to prepare and respond to emergencies.

g. There is presently no plan or adopted policies for directing reconstruction after a flooding disaster.

D. ALTERNATIVES

1. Monitor the Effectiveness of the Flood Hazard Ordinance

The adoption of the County Flood Hazard Ordinance has greatly clarified the areas where flooding is a potential problem and defines the procedures for review of development within those areas, including requirements for adequate flood insurance. The effectiveness of this ordinance in reducing the flooding hazards could be monitored during future review of the General Plan to investigate whether amendments to the Ordinance are necessary.

2. Adopt Special Policies for the Pescadero Rural Service Center

The rural service center of Pescadero has unique flooding problems due to its location. The Flood Hazard Ordinance adopts special development review standards and policies which address the historic and economic values of the community and allow development to proceed if adequate mitigation is demonstrated. This policy direction could take a different direction by directing development of new structures to safer areas outside the current boundaries of the rural service centers, while allowing improvements on existing structures.

3. Pursue Flood Control Solutions

The County could take a more active role in the actual abatement of the flooding hazard by constructing dams, impoundments, or other drainage improvements to mitigate the flooding hazard, particularly for Pescadero. One method that has been suggested in past planning studies is a watershed management system that would combine flood control with the provision of water for domestic and agricultural use. However, as the Pescadero Water Plan indicated, such solutions may be too costly and benefit too few residents to justify their construction and could result in significant environmental damage.

4. Avoid Development in Flood Hazard Areas

Another strategy would be to accept the flooding hazard as it is and incorporate techniques to avoid human contact with the hazard areas as much as possible. This could be accomplished through land use planning, density requirements, subdivision and building permit regulations and other development review procedures. However, this strategy would be effective in reducing the hazard only in undeveloped areas. There are presently many developed areas that are already affected by flood hazards.

5. Support Early Warning Systems

The County could participate in watershed monitoring programs mentioned earlier that could give early warning of imminent flooding hazards. However, the installation of rain gages streamflow monitoring devices

and ongoing maintenance could result in long-term County costs if this strategy is pursued.

6. Expand Public Awareness

The County could increase public awareness of the flooding hazards by the same mechanisms suggested for the geotechnical hazards. The FIRM maps are available for public distribution. These maps combined with the Natural Hazards map should be excellent sources for delineating hazard areas. Publicity about their availability would improve the awareness of the hazard. Public workshops and seminars for real estate interests could also assist in improving public awareness.

7. Improve Disclosure Requirements

The County could establish flood hazard overlay zones and/or require the filing of deed restrictions where development is proposed on parcels located in flood hazard areas. This disclosure is required by mortgage brokers for any Federally guaranteed financing for applicants located in these zones.

8. Improve Emergency Response Procedures

The emergency response procedures in the aftermath of a flooding event could be clarified and better publicized. Individuals need to know how they can prepare for these hazards and where they can go in case of an emergency. Emergency response could be coordinated with early warning systems and reviewed for efficiency during the General Plan annual review.

NATURAL HAZARDS FOOTNOTES

[1] A lithospheric plate is a very large section of the earth's crust, consisting of both oceanic and continental portions, which is approximately 50 miles thick. Beneath the plate is a viscous layer of substrata on which the entire plate slides. The plates tend to be extremely rigid, interacting mostly at their edges. San Mateo County is located at one of these edges. Further information can be obtained from "Plate Tectonics," California Geology, October 1978.

[2] "Plate Tectonics," p. 226.

[3] Ibid., p. 223.

[4] The County has on file the most updated version of the Alquist-Priolo Special Studies Zones Maps which delineate in very precise detail the known and suspected traces of the active fault zones. The boundaries of the Special Studies Zones are reproduced on the Natural Hazards Map.

[5] The magnitude of an earthquake is measured by instruments known as seismographs which measure the height, also known as amplitude, of seismic waves. The seismograph traces a zigzag path called a seismogram by responding to vibrations of the earth beneath it. Seismograms are standardized by mathematically correcting the measured amplitude to what it would be at 100 kilometers from the epicenter.

[6] Intensity is a function of magnitude, distance from the epicenter and local geologic conditions.

[7] The Richter scale measures magnitude by representing both the amplitude of the seismic waves and the corresponding energy released in an earthquake. Richter magnitudes are expressed in whole numbers and decimals (e.g., the 1906 San Francisco earthquake had a magnitude of 8.3, or M 8.3). Because it is based on a logarithmic scale, magnitude increases very rapidly with increasing wave amplitude as recorded by the seismograph. Each step of 1.0 times in magnitude on the scale represents an increase of ten times in the measured wave amplitude of the earthquake and an increase of 31 times in the amount of energy released. Thus, the amplitude of an M 6.0 earthquake is not twice as large as an M 3.0 quake, but 1,000 times as large; and the 6.0 earthquake correspondingly releases $(31)^3$ or nearly one million times more energy than the 3.0 quake. More detailed information on the Richter scale can be found in "How Earthquakes are Measured," California Division of Mines and Geology, CDMG Notes # 72-23.

[8] The Modified Mercalli is the most commonly used scale for measurement of the subjective effects of earthquake intensity. It is the work of two American Seismologists, Harry O. Wood and Frank Neumann, who in 1931 revised the original Mercalli intensity scale to incorporate modern structured features. More detailed information can also be found in "How Earthquakes are Measured."

[9] County of San Mateo Department of Environmental Management, Planning and Development Division, Seismic and Safety Elements of the General Plan, 1976, Volume II, Table 1, pp. 13-15.

[10] Resonant loads occur on structures when a static load from continuous earthquake waves causes buildings to vibrate with the same oscillation period as the earthquake wave itself. This can be a particular problem in taller buildings, leading to destruction of glazing, walls and, if the vibrations continue for an extensive period of time, the destruction of the structure itself. More information can be obtained in Salvadori's book, Structure in Architecture.

[11] Algermissen, S. T. et al, A Study of Earthquake Losses in the San Francisco Bay Area, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1972.

[12] Seismic and Safety Element, Volume II, p. 32.

[13] Ibid., p. 33.

[14] A. C. Neufeld, County Geologist.

[15] Information on tsunami and seiche runup was derived from Ritter and Dupre, U.S.G.S., B.D.C. 52, 1972.

[16] Seismic and Safety Element, Volume II, pp. 35-36.

[17] A Study of Earthquake Losses in the San Francisco Bay Area, p. 126.

[18] The dam failure inundation zone flood plain maps are prepared by the California Division of Mines and Geology and are on file with the County's Office of Emergency Services. They have been reproduced on the Natural Hazards Map.

[19] A Study of Earthquake Losses in the San Francisco Bay Area, p. 132.

[20] Howard and Remson, Geology in Environmental Planning, p.41.

[21] Smith, Theodore C. et al, "Landslides and Related Storm Damage, San Francisco Bay Region, January 1982," California Geology, July 1982, p. 141.

[22] Ibid.

[23] Ibid.

[24] Ibid.

[25] Ibid., p. 142-143.

[26] Taylor, F. A. and Brabb, E. E., Map Showing Distribution and Cost by Counties of Structurally Damaging Landslides in the San Francisco Bay Region, California Winter of 1968-69, U.S.G.S. Map MF-327, 1972.

[27] Coastal Cliff Stability Mapping for the Natural Hazards Map was derived from the Geotechnical Hazards Synthesis Maps for San Mateo County, an appendix to the 1976 Seismic and Safety Element.

[28] Geotechnical Hazards Synthesis Maps, Legend.

[29] Seismic and Safety Element, p. 40.

[30] California Department of Conservation, Division of Forestry, A Fire Hazard Severity Classification System for California's Wildlands, pp. 10-13.

[31] Crown Density refers to the density of the top of the vegetation (at its crown) in comparison to the density of the ground area. Obviously, the higher the crown density the more potential fuel there is for burning.

[32] A Fire Hazard Severity Classification System for California's Wildlands, pp. 14-17.

[33] Ibid., pp. 35-48.

[34] Conversation with Ted Van Devort, California Division of Forestry, Tower Road, Belmont Station, 1984.

[35] A Fire Hazard Severity Classification System for California's Wildlands, p. 19.

[36] California Department of Forestry, Fire Safety Guides for Residential Development in California, 1980, p. 6.

[37] Many of the roads, both public and private, into interior portions of the rural area do not meet County standards. This is primarily because they were constructed prior to the adoption of modern road standards or were originally built as logging roads intended to serve very small traffic loads. The public roads that do not meet standards were accepted "in like and kind" by the County during the 1950's upon offer of dedication. The nature of these roads complicates the provision of fire protection services.

[38] State Responsibility Areas are the areas where CDF has primary responsibility for preventing and suppressing wildland fires. These are primarily forested lands, watershed lands and lands used for forage.

[39] The CDF/County Fire response time goal is expressed in the County of San Mateo, Final Budget, Fiscal Year 1981-82, p. 41.

[40] International City Managers' Association, Municipal Fire Administration, pp. 15-23.

[41] Conversation with Ted Van Devort, CDF/County Fire, 1984.

[42] San Mateo County Planning Division, Emerald Lake Hills Community Plan, 1977, p. 11.

[43] San Mateo County Planning Division, Skyline-Santa Cruz Mountains Area Study, Table 5.2, p. 5.4.

[44] The Flood Insurance Rate Maps (FIRM) that have been prepared by the Federal government and adopted by the County delineate different zones of flooding hazards. Special Floodway Maps are adopted for specific areas of the County where a large number of residents are potentially affected. They define areas which must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights.

[45] Federal Emergency Management Agency, Flood Insurance Study San Mateo County, California, Unincorporated Areas, October 1983, pp. 6-10.

[46] Ibid., p. 13.

[47] Public Law 95-124, U.S.C.A. Title 42, Chapter 86, Section 7701 et seq.

[48] Public Law 98-288, U.S.C.A. Title 42, Chapter 68, Section 5121 et seq.

[49] U.S.G.S. was originally established by Congress on March 3, 1879. Its powers and duties are defined in 43 U.S.C.A. 31.

[50] California Education Code, Sections 15451-15466.

[51] California Government Code, Division 1, Chapter 7, Section 8550 et seq.

[52] Ibid., Section 8575.

[53] California Public Resources Code, Division 2, Chapter 7.5, Section 2621 et seq.

[54] Ibid., Section 2625.

[55] California Health & Safety Code, Section 15000 et seq.

[56] Ibid., Sections 19100-19150.

[57] California Streets and Highways Code, Chapter 39, Section 5105.

[58] California Health and Safety Code, Division 32, Part 1, Section 55000 et seq.

[59] California Public Resources Code, Division 2, Chapter 7.7, Section 2670 et seq.

[60] Conversation with Ted Smith, California Division of Mines and Geology, March 1984.

[61] Seismic and Safety Element, pp. 47-58.

[62] California Public Resources Code, Section 2621.5.

[63] Local Coastal Program, Chapter 9.

[64] San Mateo County Uniform Construction Administration Code, Section 8112.7.

[65] Conversation with Eric Brown, County Planning staff, March 1984.

[66] Memorandum to Planning Division staff from A. C. Neufeld, County Geologist, February 28, 1980.

[67] Conversation with A. C. Neufeld, County Geologist, October 1983.

[68] San Mateo County Department of Public Works, Minimum Standards for Geotechnical Reports, February 1977.

[69] Conversation with A. C. Neufeld, County Geologist, October 1983.

[70] San Mateo County Office of Emergency Services, San Mateo Operational Area Basic Emergency Plan, September 1982.

[71] The California Emergency Services Act Specifies different procedures for different levels of disaster declarations, including state of war emergencies, states of emergency and local emergencies.

[72] San Mateo County Ordinance Code, Division VI (Planning), Part I (Zoning), Chapter 19.5, Section 6295.

[73] San Mateo County Ordinance Code, Division VI, Part I, Chapter 20.A.2.

[74] Ibid., Chapter 34.B, Section 6760-6783.

[75] Ibid., Chapter 21A, Section 6356.

[76] Ibid., Chapter 35.

[77] San Mateo County Ordinance Code, Chapter 8, Section 8604.1(a)(4).

[78] Conversation with Ted Van Devort, CDF/County Fire Department, March 1984.

[79] California Health and Safety Code, Section 13108.5 and California Public Resources Code, Division 4, Part 2, Chapter 1, Article 9.

[80] California Department of Forestry, Instructions for Zoning Fire Hazard Severity in State Responsibility Areas in California, p. 2.

[81] During the Skyline hearings in 1983, a representative of CDF presented a slide show illustrating the problems that narrow rural roads present for responding fire vehicles. The width of these vehicles would make it impossible for two-way traffic to pass during an emergency on some of these roads. The CDF representative suggested that road widths of at least eighteen feet were necessary for safe two-way passage of vehicles in an emergency.

[82] County road standards are specified in Resolution 36129, adopted in 1976. Various other road improvement policies have been adopted since that time. These are discussed in the Transportation Chapter.

[83] San Mateo County Ordinance No. 2838, Sections 7842 and 7862.

[84] The County entered the "emergency phase" of the Flood Insurance Program on August 5, 1975.

[85] Areas of special flood hazard are defined in Section 6822.2 of Ordinance No. 03002.

[86] County Ordinance No. 03002, Section 6826.2.

[87] Smith, Theodore C. et al, "Landslides and Related Storm Damage, January 1982, San Francisco Bay Region," California Geology, July 1982, pp. 139-152.

[88] California Geology, July 1982, pp. 163-164.

[89] Davis, James F. et al, Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas Fault in the San Francisco Bay Area, California Department of Conservation, Division of Mines and Geology, Special Publication 61, p. 4.

[90] Ibid., pp. 11-28.

[91] California Seismic Safety Commission, Final Report of the Earthquake Preparedness Task Force, June 1983, p. 4.

[92] Earthquake Planning Scenario, p. 4.

[93] Coastal Cliff Stability ratings on the Natural Hazards map were directly transcribed from the County's Geotechnical Hazards Synthesis maps. The original source for this information was an unpublished map prepared by Tinsley and Lajoie of U.S.G.S. for the California Coastal Commission in 1975.

[94] Areas subject to flooding hazards due to tsunamis and seiches are also transcribed from the Geotechnical Hazards Synthesis Maps. The original source was U.S.G.S. map B.D.C. 52 by Ritter and Dupre (1972) and Houston et al. (1975).

[95] Areas susceptible to landsliding are derived from U.S.G.S. map MF-360, prepared by Brabb, Pampeyan and Bonilla (1972). Only the most highly susceptible landslide areas, zones V, VI and L, are shown on the Natural Hazards map.

[96] Alquist-Priolo Zones were transcribed from the most current (1984) version of the Alquist-Priolo Special Studies Zones maps prepared by the California Division of Mines and Geology for San Mateo County. These maps are on file at the Planning Division Office.

[97] The Landslide Hazard Identification Program is being conducted by the State Division of Mines and Geology in order to implement AB 101, adopted in 1983. This legislation grew out of concern for the deaths and property damage that occurred during the winter storms of 1982 and 1983. The Division of Mines and Geology is presently preparing the methodology that will be used in the mapping project and identifying priority areas where mapping should commence.

[98] California Department of Transportation, Devil's Slide: Draft Environmental Impact Statement, November 1983, p. 77.

[100] The Department of Public Works does not currently budget for items such as correction of known geotechnical hazards, unless their correction is related to ongoing road maintenance activities. There is a contingency budget of $500,000 in the 1984-85 fiscal year, but this money must also be shared with other contingencies, such as contributions to drainage maintenance districts.

[100] Although these two dams are located on the San Andreas Fault, they sustained no damage during the 1906 earthquake. Current design and construction practices and ongoing review procedures to inspect structural safety are designed to ensure that the dams will survive a high magnitude earthquake. However, emergency planning authorities assume that a repeat of the 8.3 magnitude 1906 earthquake would result in dam leakage, necessitating evacuation of downstream areas in the dam's inundation zone.

[101] Most of the geotechnically hazardous areas of Seal Cove were subdivided in 1908 in a division known as the "Riviera Ocean Villa Tract." This subdivision and subsequent construction of most of the dwellings in the Seal Cove area occurred many years before any geotechnical review procedures were adopted by the County. Ironically, when the area was originally subdivided, it was advertised as a "safe" haven from the then recently demonstrated earthquake hazards of San Francisco.

[102] The Love Creek landslide resulted in the deaths of ten people, occurring at approximately 1:00 a.m. Apparently, the landslide occurred so suddenly and with such force that most of the victims never had a chance to get out of their beds. Reference: William Cotton, "Love Creek Landslide Disaster, January 5, 1982," California Geology, July 1982.

[103] This subdivision is the San Jose Highlands tract, which was approved by the San Jose City Council in the early 1960's in spite of warnings from geologists of the severe landslide hazards located on the site. This subdivision is used as a classic example of the consequences of ignoring geotechnical hazards when making land use decisions. It has been studied by U.S.G.S. (Neilson and Brabb, Basic Data Contribution No. 43, 1972) and other agencies. The City has incurred several million dollars in maintenance costs for roads and other utilities, and has recently begun to purchase homes in the most hazardous areas.

[104] Draft Environmental Impact Report, City of Foster City Community Development Project Area, November 1981.

[105] The County Geologist, in a May 1984 lecture on landslide problems in San Mateo County, indicated that water introduced into the ground from irrigation, septic system drain fields and swimming pools can be the annual equivalent of 10-15 inches of rainfall. This amount can, in some cases, equal the total annual natural rainfall in some sloping areas. Water is probably the greatest causative factor in surficial slides incorporating the upper weathered layer of natural slope materials.

[106] Conversation with A. C. Neufeld, County Geologist, May 1984.

[107] One problem with these maps is that they can become obsolete as new information is developed. It is important, therefore, to encourage close cooperation between the County and the real estate community so that the most up-to-date information is made available to prospective buyers.

[108] California Public Resources Code, Division 2, Chapter 7.5, Section 2621.9.

[109] U.S.G.S. Map MF-360 is the source used in determining areas of landslide susceptibility in the density matrix analysis.

[110] California Public Resources Code, Division 2, Chapter 8, Section 2700 et seq.

[111] The landslide hazard area maps will not be submitted to the County for some time. AB 101, the legislation which mandates the preparation of the maps, sets July 30, 1985 as the date by which guidelines for the preparation of the maps for urban areas of the State should be completed and priorities for map preparation should be identified.

[112] Section 5105 to the Streets and Highways Code (1980) added geotechnical hazards to the list of conditions that can be corrected through the creation of special assessment districts.

[113] Disaster Relief Act of 1974, Title 42, Chapter 68, Section 5176.

[114] Memorandum to Planning Division staff from A. C. Neufeld, County Geologist, February 28, 1980.

[115] U.S.G.S. has recently completed more detailed mapping of landslide hazards in the La Honda area, which is not reflected on the Geotechnical Hazards Synthesis maps or other maps used by the County in the evaluation of geotechnical hazards. The County has never devised a process for periodically updating its maps. This could be useful, particularly in light of the landslide hazard mapping efforts being prepared by the State Division of Mines and Geology.

[116] San Mateo County Ordinance Code, Division VI, Part I, Chapter 19.5, Section 6295.4.

[117] The County Emergency Services Coordinator is the link between State and Federal disaster relief efforts and the response of local efforts in the 16 local zones into which the County has been divided. More detailed information on the role of the Emergency Services Coordinator is contained in the San Mateo Operational Area Basic Emergency Plan, September 1982.

[118] Conversation with A. C. Neufeld, County Geologist, August 1984.

[119] According to the Damage Report prepared by the Lake-Napa Ranger Unit of the California Department of Forestry, lack of clearance from potentially flammable vegetation was the factor most responsible for loss of structures.

[120] According to Bill Rozar, County Planning staff, the regrowth period for most productive timber is 20-30 years, although this can vary according to individual species.

[121] Ted Van Devort, CDF/County Fire, July 1984.

[122] The State responsibility areas of the County will be divided into fire hazard zones and classified as having low, moderate, high, very high or extreme fire hazard severity. The focus of the mapping efforts is to identify where roof covering and attic opening requirements need to be more stringent in order to lessen the threat of ignition from wildfires. The mapping was mandated by SB 78 (1981) and SB 1916 (1982), which are codified in Public Resources Code Section 4200 et seq.

[123] Conversation with Ted Van Devort, CDF/County Fire, July 1984.

[124] Gage-Babcock & Associates, Fire Protection Study for San Mateo County, January 1975, pp. VII-1 to VII-3.

[125] Conversation with Steve Kroeger, CDF/County Fire, April 1982. Mr. Kroeger cited Devonshire Canyon as the most illustrative example of the road access problems.

[126] This problem is discussed in the Emerald Lake Hills Community Plan, p. 11.

[127] Fire Protection Study for San Mateo County, January 1975, p. II-1.

[128] This information was obtained from California Department of Forestry staff.

[129] County of San Mateo, Proposed Budget 1984-85, p. 37.

[130] Bear Gulch Road, west of Skyline Boulevard is an example of the economic and environmental costs of "retrofit." The Skyline-Santa Cruz Mountains Area Study (1983) estimated that there would be massive grading and removal of vegetation to construct this road to modern standards, and that such improvements would cost between $2.5 and $2.75 million for approximately two miles of road.

[131] Ted Van Devort, CDF/County Fire, July 1984.

[132] The map is more reflective of areas that are located outside of fire district boundaries. Certain areas such as Devonshire Canyon are not mapped as hazardous, even though there is widespread agreement that it is one of the most difficult areas to serve.

[133] Telephone survey of fire districts conducted by County staff, May 1984.

[134] California Department of Forestry, "Chaparral Management Program," 1981.

[135] Ted Van Devort, CDF/County Fire, June 1984.

[136] Skyline Area General Plan Amendment, Policy 4.16, p. 4.5p.

[137] Santa Clara County Center for Urban Analysis, "Governmental Research Council, San Mateo Fire Services Study," December 1983.

[138] Policy 6.1 of the Skyline Study, which encourages the revision and reorganization of the County Fire Ordinance, was approved for consideration during this General Plan update.

[139] County Ordinance Code, Chapter 20A.2, Section 6324.6.

[140] Skyline Area General Plan Amendment, Policy 2.7, p. 2.2p.

[141] One of the best residential sprinkler ordinances is the one adopted by the City of San Clemente in Southern California in 1981.

[142] The Master Mutual Aid Agreement, as defined by Section 8561 of the California Emergency Services Act, is the agreement between the State and its various political subdivisions (including cities and counties) for mutual aid in declared fire emergencies.

[143] According to Ted Van Devort, CDF/County Fire prepares pre-fire suppression plans for some of the more hazardous areas of the County when their staff has time to do so. The plans assume that a fire will proceed in a certain direction, and outline suppression attack strategies and evacuation plans for area residents.

[144] A "floodplain" is defined as the normally dry land area adjoining bodies of water that is likely to be flooded during storms or other adverse natural conditions. Floodplain management practices normally use the flood plain for the "100 year flood" as the standard for worst case flooding. This is the floodplain that could be expected to be inundated by storms that have a one per cent likelihood of occurring in a given year (or, to put it another way, are likely to occur once every 100 years). The "areas of special flood hazard", referred to in the Natural Hazards Chapter, are the one percent flood plain areas that were precisely mapped during preparation of the Flood Insurance Rate Maps (FIRM).

[144] Burby, Raymond J. and French, Steven P., "Coping with Floods: The Land Use Management Paradox," Journal of the American Planning Association, p. 289.

[146] The U.S. Army Corps of Engineers proposed a dam on Pescadero Creek in 1969 as a result of their "Water Resources Development Interim Review Report for Pacific Coastal Streams." The Bean Hollow dam was proposed in the "Community Water Plan for the Town of Pescadero" prepared by Koretsky-King Associates in 1976.

[147] The National Flood Insurance Program (NFIP) resulted in the preparation of official Floodway and Flood Insurance Rate Maps. The floodway maps illustrate the channel of a watercourse plus any adjacent floodplain area that must be kept free of encroachment in order to accommodate the 100-year flood. The Flood Insurance Rate Maps (FIRM) illustrate the flood hazard zones and also identify precise "risk premium zones" to define the insurance rates applicable to the different portions of the floodplain.

[148] The precise location of these measuring stations and detailed statistics on the mean amount of measured streamflow by day, month and year both in cubic feet per second and acre-feet, is summarized in an annual publication of U.S.G.S., titled Water Resources Data for California. This data also includes the amount of peak discharge passing through the station.

[149] Drainage districts can be created through assessment district proceedings or established as special "community facilities districts" pursuant to the State Health and Safety Code, Section 4614.1 et seq.

[150] San Mateo County Department of Public Works, Capital Improvement Program, 1982-83 through 1986-87, p. 13.

[151] These regulations range from the County's grading and environmental review requirements to the State's water rights application process to mandatory approval of dam specifications by the State Division of Dam Safety when proposed storage impoundments are 50 acre-feet or more in volume. The total time necessary to obtain all permits can be up to four years. The process is discussed in more detail in the Water Supply Chapter.

[152] Local Coastal Program, Policies 5.21-5.29, pp. 5.8P-5.10P.

[153] In 1982, the County revised its grading ordinance. Section 8603.16 exempts agricultural impoundments from grading permits if they are smaller than 50 acre-feet (the limitation of the State Dams and Reservoirs Act of 1967) and if approved by the San Mateo County Resource Conservation District (RCD). Plans approved by the RCD must be filed with the Planning Division and Department of Public Works.

[154] California Government Code, Section 8589.5, added by SB 896 in August, 1972.

[155] Conversation with Bob Kinsman, San Mateo County Office of Emergency Services, July 12, 1984.

[156] County Ordinance No. 3002, Sections 6825.1 and 6825.2.

[157] San Mateo County Ordinance Code, Sections 6326.1, 6763 and 6356.

[158] At the present time, the presence of dam failure inundation zones can be evaluated through the County's Initial Study Environmental Evaluation Checklist. However, the checklist does not contain a specific question to directly address this issue. This could be considered during implementation of the general plan.

[159] National Oceanic and Atmospheric Administration, National Weather Service, "Automated Local Evaluation in Real Time: A Cooperative Flood Warning System for your Community," October 1982.

NATURAL HAZARDS APPENDIX

APPENDIX A – SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX A

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on February 27 and March 7, 1985, the following background data was added to the Natural Hazards Chapter.

A. HAZARDOUS MINERALS

Although there are scores of subsurface minerals in San Mateo County that could be considered "hazardous" if inhaled or ingested, two minerals, asbestos and mercury, have recently been the focus of local attention. These two minerals can be present in the serpentine rocks of the Franciscan formation, which underlies much of the hillside area in proximity to the San Andreas Fault Zone. One workshop participant has expressed concern that asbestos particles may be released into the air, and subsequently into the lungs of area residents, as a result of construction related activities. He has expressed similar concern about the possibility of mercury contamination of area creeks.

1. Asbestos

Asbestos was widely used from World War II to the early 1970's as a building material for fireproofing. It was sprayed on ceilings and beams, used to insulate pipes and added to cement in reinforced concrete. It is still used in automobile brake and clutch linings.

Asbestos contains microscopic fibers that have the potential to enter the human body through breathing, skin contact and water consumption. The asbestos associated with the serpentine soils in San Mateo County is the "chrysotile" type. Approximately 90-95% of the world asbestos production is this type of fiber. Although asbestos is common in traces in the serpentine soils of the Bay Area, the few mining operations (mostly in Napa County) ceased operation in 1965. The most significant asbestos mining operations in California are presently located in the Coalinga vicinity.

The chief documented health hazards from asbestos are those related to occupational exposure. These hazards include: (1) asbestosis, an irreversible scarring of lung tissue, (2) lung cancer, and (3) mesothelioma, a rarer cancer of the membranes of the lung and thoracic cavities. A significant incidence of these diseases has been found in asbestos mine workers and workers in asbestos-related trades (installing insulation, brake linings, etc.). Chrysotile asbestos has also been shown to produce lung cancer in tests with laboratory animals. However, studies of residents (non-mineworkers) who live near asbestos mines in Canada and northern Italy have shown no excess incidence of asbestos-related diseases.

2. San Mateo County Issues

Although asbestos is a hazard in occupational settings, the question of the degree of hazard from its release into the atmosphere is more difficult to determine. The issue of construction-related asbestos dust was previously raised during consideration of the proposed Meadow Vista subdivision by the Town of Woodside in 1980. As a result of concerns expressed by owners of neighboring homes, studies were performed by a variety of medical experts, including the County Department of Health Services. These studies concluded that construction related dust generation posed no unusual risks to neighboring residents or construction workers, but recommended that workers exposed to dust should wear protective filtering masks and that measures to wet down the dust during construction be scrupulously followed. Similar precautions were taken by PG & E crews installing underground utility lines in the Woodhills Estates site on the south side of Farm Hill Boulevard across from Canada College, another serpentine site.

Similar concerns have been expressed by Emerald Lake Hills residents regarding the current sewer construction project in that unincorporated community. Soil samples were taken by the Department of Public Works and sent to a lab for analysis. This analysis found no evidence of the presence of asbestos in the sample. However, the County has required that strict adherence to dust control mitigation measures be enforced by the contractors for the project.

Asbestos fibers are naturally occurring in the water supply of the County as well. Staff contacted the San Francisco Water Department (SFWD) which supplies the Emerald Lake Hills area and most of the Bayside. The San Francisco Water Department performs frequent tests for mineral content, giving particular scrutiny to potentially toxic materials (including mercury). Water is also filtered to remove asbestos fibers before distribution from Crystal Springs and San Andreas reservoirs. San Francisco Water Department water far surpasses the EPA standards for purity and mineral content. There is no current medical evidence that asbestos fibers in small concentrations in water supply constitutes a health hazard.

3. Mercury

Recently, concerns have been expressed about naturally occurring mercury in the Emerald Lake Hills area. Like asbestos, mercury occurs in serpentine areas of the Franciscan formation. At one time, over half of the total production of mercury in the United States occurred in Bay Area counties. It is useful in the recovery of gold ore, so it was in very high demand during the gold rush years.

Mercury is highly toxic, particularly when consumed in fish or other foods. Severe birth defects, brain damage and death have been reported in Japan and elsewhere due to ingestion of contaminated fish. The hazard is compounded when mercury is converted to an even more toxic substance, methyl mercury, which can then be stored in the

tissues of fish and shellfish. The hazard, therefore, is more one of the minerals entering the food chain than its presence on a site proposed for development.

In response to concerns expressed about mercury contamination of creeks in the Emerald Lake Hills area, Environmental Health is preparing water and soil sample tests in the area. The Department of Fish and Game has also been requested to take fish samples if they can be found. However, the ephemeral nature of streamflow in the creeks makes it unlikely that they are an attraction to fishermen or that any sizeable fish would be caught and consumed. It would be difficult, if not impossible, to trace contamination of fish caught in the Bay to mercury deposits in Emerald Lake Hills.

3. Role of the General Plan

The General Plan provides guidance for the protection of the community primarily through the channel of regulating land use and development and coordination with various departments and agencies to achieve these goals. The presence of hazardous minerals is a concern that can be addressed at a general policy level. However, detailed and often inconclusive studies to determine the precise extent of natural hazards are more appropriate at the implementation phase and are often the purview of other agencies.

Staff recommends that the Commission: (1) review Policies 1.39 and 1.48 of the Vegetative, Water, Fish and Wildlife Chapter to determine if they adequately address the need for coordination with other agencies in responding to the contamination of fish by hazardous minerals, and (2) include hazardous minerals in a more generalized definition of natural hazards in Policy 15.4 of the revised recommendation so that they can be addressed by the Regulation of Development policies.

B. FLOODING HAZARDS AROUND PESCADERO CREEK ROAD BRIDGE

The Pescadero Creek Road Bridge, which is the focus of flooding problems in the Pescadero vicinity, crosses Butano Creek west of Pescadero near the intersection of Bean Hollow Road and the California Department of Forestry fire station. Originally, there was a 12 foot clearance between the bottom of the bridge and the streambed. However, periodic floods and erosion related siltation have contributed to reducing the clearance to the current five feet.

High velocity streamflow conditions that occur during major storms tend to trap debris under the bridge and cause backup of flood waters. When this occurs, Pescadero Creek Road can be easily inundated, thereby severing the Pescadero community from access to Highway 1. These flooding conditions can also be exacerbated if they occur simultaneously with high tides. Pescadero Creek Road is also often blocked by mudslides or flooding in the mountainous areas between Pescadero and La Honda, thereby further reinforcing the isolation of the community.

Current LCP policies support improvements that are needed to reduce the flooding hazard, balanced with the need to protect the fragile natural resources in the vicinity. These include: (1) Policies 7,8, 7.9 and 7.10 of the "Sensitive Habitats Component," which designate and outline permitted uses and performance standards for riparian corridors, (2) Policies 8.17 and 8.18 of the "Visual Resources Component," which address the alteration of natural land forms and the location of new development in sensitive areas, and (3) Policies 9.9 and 9.15 of the "Hazards Component," which address the regulation of development in flood plains and the provisions for waiver of the requirements for a Coastal Development Permit for emergency repair of public works facilities. Perhaps the most significant obstacle to the mitigation of the flooding hazards of Pescadero Creek Road Bridge is the overlap of jurisdictional responsibility. The County owns the bridge and maintains Pescadero Creek Road. However, the State Parks Department owns the marsh land surrounding the bridge and the streambed. Efforts to address the siltation problems of the creek have been tempered by concern over the sensitivity of surrounding lands.

The General Plan could provide impetus to resolving the jurisdictional obstacles by specifically encouraging coordination between the County and the various State departments. Staff has added Policy 15.51 of the revised recommendation to address this concern.

C. RELATIONSHIP BETWEEN THE COUNTY FLOOD HAZARD ORDINANCE AND FLOOD INSURANCE REQUIREMENTS

As explained in the text of the Natural Hazards Chapter, the National Flood Insurance Program has been designed to protect the public interest by: (1) making available relatively low cost flood insurance coverage in flood hazard areas and (2) minimizing the exposure of future residents to flood hazards through sound planning and flood plain management practices.

The County has complied with this program through adoption of Ordinance No. 3002, which is also known as the County Flood Hazard Ordinance. This ordinance implements the sound flood plain management requirements of the Flood Insurance Program by specifying how development will be regulated in the County's areas of special flood hazard. These areas include the 100-year flood plain and the floodway zones (the areas that need to be kept free of encroachment).

The Ordinance is applied to new construction or to "substantial improvements" to existing structures. Substantial improvements are defined as any repair or improvement that exceeds 50% of the replacement value of the structure. In the case of nonconforming uses (existing development within the floodway), substantial improvements can be defined as 25% of replacement value.

Nowhere in the Ordinance is there a requirement that flood insurance coverage be demonstrated upon issuance of the development permit. It is assumed that an applicant would be required by a lending institution to obtain such coverage as a condition of obtaining a construction-related loan. Any federally insured loan program must comply with the National

Flood Insurance Program. Notification is an important component of the Program. Staff has had further consultations with Ordinance Administration staff concerning the effectiveness of the federal program to ensure compliance. They believe that the existing program guarantees that flood insurance coverage will be obtained in almost all new development proposals, since the overwhelming majority will need some type of federally guaranteed financing.

16

Man-Made Hazards

Background ▪ Issues

MAN-MADE HAZARDS BACKGROUND

I. INTRODUCTION

From the development of the first human settlement to the advent of supersonic transport and complex synthetic chemicals, man has continually created hazards for himself and the community at large. Although capable of creating hazards, man also maintains the ability and wisdom to reduce hazard potential.

A. SCOPE AND ROLE

The Man-Made Hazards Chapter of the General Plan concentrates on noise, hazardous materials, hazardous structures and airport safety, all hazards of local significance due to the County's geographic location and level of urban development. Following a discussion of the existing situation, the issues associated with each type of hazard type are evaluated with the aim of developing effective policies to protect community health and safety.

B. STATE PLANNING LAW

The California Government Code requires local governments to prepare and adopt a comprehensive, long-range plan to guide their future development. This Chapter satisfies the requirement of the Noise Element (Section 65302(g)). The sections of this Chapter relating to Airport Safety, Hazardous Materials, and Hazardous Structures satisfy the intent of the Safety Element (Section 65302(i)). Safety issues related to natural hazards are addressed in Chapter 15.

C. RELATION TO OTHER GENERAL PLAN DOCUMENTS

1. Existing General Plan Documents

a. Noise Element (1978)

In 1978, the County adopted the Noise Element of the General Plan. Much of the background information, issue statements and policies of the Noise Element are still current and have been incorporated into this chapter. Recent noise planning efforts at San Francisco International Airport not previously included and general statistical updating are also contained in this Chapter. The noise section of this Chapter replaces the Noise Element.

b. Seismic and Safety Element (1976)

In 1976, the County adopted the Seismic and Safety Elements of the General Plan. The Seismic and Safety Elements include brief background discussion and policy statements regarding hazardous material and structural conditions, which have been incorporated into this Chapter. The Hazardous Materials and Hazardous Structures sections

of this Chapter will present a more comprehensive analysis of the current situation, and will replace the Seismic and Safety Elements where related to these subjects.

c. Local Coastal Program (1980)

In 1980, the County adopted the Local Coastal Program as an area plan for the Coastside. The LCP Energy and Agricultural Components include several policies relating to hazardous materials disposal which have been incorporated into this Chapter. The hazardous materials section of this Chapter is not intended to alter existing LCP policies, but rather support them in a comprehensive treatment of the subject.

2. Relation to Other Chapters of the General Plan Update

This Chapter discusses the noise impacts of transportation facilities. Existing transportation operations are more comprehensively addressed in the Transportation Chapter. Hazardous material leakage is primarily discussed here; however, it is also addressed in the Soils Chapter when soil contamination is involved, the Water Chapter when drinking water quality is threatened and the Vegetative, Water, Fish and Wildlife Chapter when biotic resources are affected. Hazardous waste may be disposed of several ways, including legal discharge into a sewer system and off-site transport to an approved disposal site. Disposal options will be discussed in both the Man-Made Hazards Chapter and the Solid Waste Chapters, and in the Waste Water Chapter when sewage capacity is impacted.

D. DEFINITIONS

The following are definitions of terminology used in this Chapter:

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) - the average equivalent sound level, in decibels, during a 24 hour day, adjusted to account for the acoustic responses of the human ear, the total number of individual noise events and the greater human sensitivity to noise during the evening and nighttime.

DECIBEL (dB) - The system and unit for measuring sound energy based upon the mathematical scale of logarithms.

HAZARDOUS MATERIAL - A substance which, because of quantity, concentration, physical or chemical characteristics, is capable of injuring humans or the environment. Examples include toxic chemicals and metals, pesticides and explosives.

HAZARDOUS STRUCTURE - A building or structure which is structurally unsafe, without adequate egress, a fire hazard or otherwise dangerous to human life by reason of improper construction, inadequate maintenance, dilapidation, obsolescence or abandonment as specified in the San Mateo County Uniform Construction Code.

HAZARDOUS WASTE - A hazardous material requiring disposal.

NOISE - An annoying, harmful or unwanted sound.

NOISE EXPOSURE CONTOURS - Lines drawn around a noise source connecting points of equal noise level.

NOISE SENSITIVE LAND USES - Land uses most sensitive to noise intrusion, including, but not limited to, residential and the following institutional uses: hospitals, schools and libraries.

II. INVENTORY OF EXISTING MAN-MADE HAZARDS

A. NOISE

In the past several decades, the level of noise in San Mateo County has increased due to urbanization and increased technological development. Because of the County's strategic location in the metropolitan area, transportation sources such as automobiles, trains and commercial aircraft contribute heavily to the local noise experience.

Excessive noise can be annoying and at worst dangerous to human health. At relatively low levels, noise can interfere with speech, sleep and mental concentration. At higher levels and for extended periods of time, noise can cause stress, headaches and a variety of physiological effects, including permanent hearing loss.

All citizens are entitled to a peaceful and quiet environment without the intrusion of noise which may be hazardous to their health and welfare. The intent of this section of the General Plan is to develop policies aimed at providing an environment free from harmful and annoying levels of noise.

1. Noise Characteristics and Effects

An understanding of the physical characteristics of sound and effects of noise on people is necessary for noise protection planning.

a. Characteristics of Sound

All sound propagation involves a source-path-receiver relationship. The source generates sound by releasing energy in the form of sound waves, which then radiate through a path, usually air or other media toward a receiver, the ear. In the ear, the vibrations are converted to nerve impulses, which are interpreted as sound. If sound is unwanted or unpleasant, it is interpreted as noise.

Sound has three basic physical characteristics: intensity (loudness), frequency (pitch) and duration. The intensity is a measure of sound energy technically expressed as sound pressure level (SPL) and measured in decibels (dB). The decibel measure is based upon the mathematical system of logarithms, whereby a small decibel

change represents a large change in sound energy. Generally, a 10 dB increase is approximately equivalent to a doubling in perceived sound level. In the typical urban environment, ordinary street noises average 70-80 decibels, heavy city traffic at rush hours 95 to 110 decibels and a jet aircraft taking off 120 to 150 decibels.[1]

Frequency is the number of sound pulses or waves per second emanating from a sound source. Frequency is measured in cycles per second, technically referred to as "hertz" (Hz). The faster a sound source vibrates, the higher the sound frequency. The human ear is generally capable of hearing frequencies between 20 and 20000 Hz, and most sensitive to sound within the 4000 Hz range. Sound is usually comprised of a mixture of many frequencies.

Noise sources are divided into two categories: (1) point sources where sound emanates from a single point whether stationary or moving, and (2) line sources where sound emanates from steady stream such as traffic on a roadway. As one moves away from a sound source, the sound level gradually decreases or attenuates. Aside from distance, sound may be attenuated by objects which shield a potential receiver from unwanted sound transmission.

The intensity of noise from a passing source gradually rises to a peak and then subsides. This is called a single event. In order to determine the total impact of all single noise events which occur at a given location, an average noise level measure which is equivalent to a steady noise has been developed: the Community Noise Equivalent Level (CNEL). State standards have set 65 CNEL for aircraft sources and 70 CNEL from multiple sources as the maximum external noise level compatible with ordinary residential use.[2]

b. Effects of Noise

Noise affects people in three basic ways: (1) it is detrimental to their health; (2) it interferes with their activities; and (3) it reduces their economic potential.

Hearing loss is the most critical hazard of a noisy environment. High levels of noise and prolonged noise exposure can cause temporary or permanent hearing loss. Temporary effects include ringing of the ears and shifts in hearing sensitivity, with recovery time dependent upon sound level, frequency, duration and individual noise sensitivity.

Permanent hearing loss generally results from high noise exposure coupled with age factors. Most people suffer measurable hearing loss with advancing age, primarily due to routine urban noise exposure. Industrial occupational settings account for the highest percentage of noise-induced hearing loss.[3] The Environmental Protection Agency has identified 75 decibels as the maximum eight-hour equivalent noise exposure to prevent hearing loss.[4]

Besides hearing loss, there are additional physiological and psychological affects associated with noise exposure. Unexpected noise can produce a rise in blood pressure, increased heart and respiratory rates and headaches. Continual exposure leads to body fatigue, diminished reflex action and stress. Excessive exposure may cause symptoms of anxiety, anger and hallucination. The exact correlation between noise and mental condition is difficult to assess. One study near a busy international airport showed significantly higher rates of psychiatric disorders than in quieter outlying areas.[5] Generally, noise is more apt to aggravate rather than induce behavioral disorders.

Noise interferes with most human activities, including sleep, communication and work, which reduces the overall efficiency and enjoyment of life. Noise is capable of disrupting the depth, continuity and duration of sleep, and continuous deprivation of dream sleep may result in severe psychological consequences.

Speech interference is annoying, capable of frustrating mental concentration, and may result in time, material and labor losses. Noise intrusion in the working place can limit one's ability to perceive ideas, perform tasks and retrieve thoughts. Finally, noise can interfere with cultural or leisure activities and detract from appreciation of parklands, historic sites and other outdoor activities.

Sensitivity to noise is subjective as people vary greatly in their general reaction to noise. Noise sensitivity many times is a function of individual attitude and expectation, as well as physiological predisposition.[6] Surveys have shown that approximately 25% of the population is largely disturbed by noise in the environment, while 10% is very sensitive to it.[7] In any given noise environment, a variety of reactions can be expected, ranging from serious annoyance to minimal or no awareness.

2. Noise Sources

The noise experience in San Mateo County is a composite of different noise generating sources including aircraft, railroads, on-and-off road vehicles and stationary sources.

a. Aircraft

(1) San Francisco International Airport (SFIA)

San Francisco International Airport is the largest airport in the County and greatest source of local aviation noise. With over 22 million passengers using the airport and over 370,000 aircraft operations (takeoffs and landings) during 1980, SFIA ranks as one of the most active commercial airports in the world.

The airport is located within approximately 1,700 acres of unincorporated land east of Highway 1 adjacent to San Bruno and Millbrae, and generates substantial noise impacts on the cities of Brisbane, South San Francisco, San Bruno, Millbrae, Burlingame, Foster City and San Mateo, and less significant noise impacts on Daly City, Colma, Pacifica and Hillsborough. The entire affected area comprises about 65 square miles of predominantly residential neighborhoods involving approximately 360,000 people (1980).[8]

The advent of jet aircraft in the 1950's, combined with a rapid increase in the number of passengers and flights and continual residential growth in the 1960's and 1970's, contributed to the existing noise problem. The number of passengers using SFIA between 1980 and 2000 is projected to increase by approximately 41% and air cargo tonnage by 94%,[9] generating an 11% increase in total aircraft operations.[10] Between 1980 and 1983, operations have increased by approximately 2 1/2%.[11]

Aircraft operations over land and "backblast" effects constitute the primary sources of airport-related noise. Existing noise mitigation efforts at SFIA have resulted in approximately 80% use of runways which allow flight over San Francisco Bay rather than populated areas.[12] However, adverse wind conditions often necessitate operations over land, and approximately 22% of annual departures are directed over South San Francisco and the San Bruno Gap.[13] Efforts to direct aircraft over the Bay rather than land have resulted in increased "backblast" noise to areas directly adjacent and west of the airport. Backblast noise is characterized by low frequencies, not always represented on airport noise monitoring equipment.

The area affected by aircraft noise includes two categories: (1) the State defined CNEL Noise Impact Area, the area with homes and schools exposed to noise levels of 70 CNEL (65 in 1985) or greater; and (2) the single event noise exposure area, a larger area with high level individual noise events, although overall noise exposure is less than 65 CNEL.

The Noise Impact Area defined by the 65 CNEL contour (1980 data) is shown on the Community Noise map on Page 16.11 and includes parts of six cities and 19 residential neighborhoods. The single event noise exposure area covers the balance of the affected area. It is estimated that 10 to 30 percent of the residents in these areas of 55-65 CNEL are annoyed by single-event aircraft noise from SFIA.[14] Descriptions of annoyance by residents include interference with sleep, speech and other activities, and concerns of noise effects on health, anxiety and property values.

Between 1976 and 1983, the number of dwelling units within the 65 CNEL contour has decreased by approximately 30% (19% between

1982-1983).[15] Existing noise mitigation measures at SFIA include use of significantly quieter aircraft and operations which avoid residential areas. Despite these actions, a substantial noise impact problem is expected to continue into the future.[16]

(2) San Carlos Airport

Located just east of Highway 101 near the Holly Street interchange, the San Carlos Airport accommodates over 250,000 aircraft operations per year, 82% of estimated Airport capacity.[17]..On busy days, the demand can reach 1,250 operations, many of them "touch and go" operations from training flights.

Due to existing development pattern and zoning, there are no residences within the present 60 CNEL (1995) contour. However, the 55 CNEL area includes the Redwood Shores residential section of Redwood City, plus small residential sections of Foster City and San Mateo. Noise levels in 1995 are not expected to increase substantially.[18] The Community Noise map reflects projected 1995 noise contours for the San Carlos Airport.

(3) Half Moon Bay Airport

Located approximately four miles north of the City of Half Moon Bay on Highway 1, the Half Moon Bay Airport accommodates approximately 70,000 aircraft operations each year. This figure is projected to exceed 100,000 by 1995.[19] The 60 CNEL contour (1978) is mostly within the present airport boundaries, while the projected 1995 contour includes approximately 16 acres of residentially zoned property north of the Airport (see Community Noise map). Aircraft noise is evident due to low ambient noise levels and the high percentage of low altitude training flights.

b. Railroads

There are approximately 29 miles of Southern Pacific (SP) railroad mainline double track in San Mateo County, extending from San Francisco to the Santa Clara County line. One branch runs to the south and west of San Bruno Mountain, terminating in Daly City; the other branch splits off from Redwood City to East Palo Alto and continues across the Bay. Unincorporated areas traversed by the SP line include the Harbor Industrial area, North Fair Oaks, and the Park Forest/Watkins area adjacent to Atherton.

Southern Pacific operates both freight and passenger trains in the County. Current weekday railroad operations involve approximately 26 trains per day (23 passenger, 3 freight) in each direction.[20]

Most noise emanates from freight operations primarily due to the longer, heavier trains and operations at night. Presently, one freight train operates nightly in each direction, a level projected to continue or decrease into the near future (1990).[21]

Diesel-electric locomotives are the primary noise source in a railroad operation, particularly at grade crossings where horns are required to be sounded. Locomotive horns can reach an intensity of 100 dB at a distance of 100 feet.[22]

County noise contour maps representing 1978 and projected 1995 noise contours show unincorporated residential areas proximate to the Southern Pacific line experiencing noise levels of 60 to 75 CNEL, depending on separation distance. Typical noise level relationships along the Peninsula main line may be generalized as follow:[23]

Distance From Near Track	CNEL
100'	76
200'	73
400'	67
800'	61
1,600'	55

The maps project 1995 noise exposures in residential areas to increase by approximately 2-3 CNEL; however, CalTrans is in the process of replacing the entire passenger car and locomotive stock with quieter equipment by 1986.[24]

c. Motor Vehicles

(1) On-Street

Due to a dense network of streets and highways within the urbanized areas of San Mateo County, motor vehicle noise probably affects more people than any other noise source. The major factors which determine level of motor vehicle noise include: noise emissions of individual vehicles, number of vehicles on the roadway at any given time, average vehicle speed, steepness of roadway and road surface condition.

Typical auto noise levels increase considerably with speed and acceleration. The following figures represent the noise level of a moving automobile experienced at a distance of 50 feet:[25]

At 30 mph - 61 dB
40 mph - 66 dB
50 mph - 70 dB
60 mph - 73 dB
70 mph - 75 dB

This information reveals that an increase from 30 to 50 mph would yield a 9 dB noise increase or a perceived doubling in noise level. Compact cars generate an average noise level 4 to 5 dB higher and sports cars generate up to 11 dB additional noise.

Most trucks are significantly louder than automobiles. A relatively small number of trucks in a stream of traffic can add markedly to the overall noise level. For example, one study showed that the noise impact from 4 trucks equals approximately 84 passenger cars.[26]

Roadway grade is also an important noise generating component. For uphill grades, one study found that truck noise increases 2 dB for a 3 to 4% grade, 3 dB for 5 to 6% grades and 5 dB for 7% and greater.[27]

Unincorporated residential areas border each of the major roadway corridors in the County. The most populated noise impact areas occur beside Cabrillo Highway in the Mid-Coast, El Camino Real near Redwood City and Atherton, and Woodside Road near Redwood City. Typical exposures vary between 55 to 75 CNEL, depending on distance and ambient noise levels.[28]

(2) Off-Street

In recent years, there has been an increase in the use of trail motorcycles and "mini-bikes" designed to be operated off paved roads. A 1980 study revealed that approximately 20,000 off-road motorcycles are owned within the County.[29] Off-road vehicles are often extremely loud (up to 105 dB at 50 feet). Unauthorized operation occurs in both undeveloped urban land near residential neighborhoods and open rural areas. The San Mateo County Sheriff's Office reports that San Bruno Mountain, Emerald Lake Hills, the San Francisco Watershed land and areas off Alpine Road are particular problem areas.[30]

d. Stationary Sources

Commercial and industrial activities, especially when adjacent to residential areas, can have a major localized noise impact. Examples include industrial machinery and loud speakers. Identified problem areas include North Fair Oaks and Harbor Industrial area. North Fair Oaks exposure generally involves spillover noises from light industrial activities, particularly metal processing machinery and air conditioning/refrigeration equipment. Harbor Industrial exposure includes machinery noise impacting adjacent office and warehousing uses.[31] Stationary source noise may also emanate from residential uses, including operation of power equipment, lawn mowers, musical instruments, and appliances.

3. Noise Exposure

a. Noise Exposure Contour Maps

The Community Noise map represents County unincorporated areas with 1995 projected noise levels of 60 CNEL or greater, as derived from a composite of noise sources, including State highways, primary arterials, major local streets, Southern Pacific Railroad and County general aviation airports. The map is intended to give a general indication of where high level noise exposure areas exist in the County. More representative detailed maps depicting noise exposure in increments of 5 decibels beyond 60 CNEL from multiple noise sources are maintained at the Planning Division Office. Noise exposure contours were based in part on data derived from a 1978 community field noise survey. The survey consisted of 47 noise measurements within the unincorporated area. Survey results are shown in Appendix A.

b. Estimate of Affected Population

Approximately 23% of the population living in unincorporated San Mateo County are subject to noise impacts of 60-80 CNEL. By 1995, this percentage is projected to increase to 27%; however, nearly half of this population will reside in 60-65 CNEL areas where residential noise insulation is generally adequate to mitigate noise impacts.[32] Table 16.1 represents population impacted by noise within unincorporated San Mateo County in 1980 and 1995.

c. Noise Sensitive Land Uses

As defined in this Chapter, noise sensitive land uses are those uses most sensitive to noise intrusion, and include residential and select institutional uses.

16.1M

SAN MATEO COUNTY GENERAL PLAN

COMMUNITY NOISE

NOISE IMPACT AREAS (UNINCORPORATED)
60 + CNEL (1995 Projection)

AIRPORT NOISE CONTOURS
(CNEL)

SAN FRANCISCO INTERNATIONAL AIRPORT
1980 NOISE CONTOURS

HALF MOON BAY AIRPORT
1995 NOISE CONTOURS

SAN CARLOS AIRPORT
1995 NOISE CONTOURS

SOURCE: Charles M. Salter Associates, Inc, Noise Consultants, 1978; Airport Land Use Commission (ALUC), Airport Land Use Plan, 1981

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA

north

SAN FRANCISCO BAY

PACIFIC OCEAN

SANTA CLARA COUNTY

SANTA CRUZ COUNTY

TABLE 16.1

POPULATION IMPACTED BY NOISE WITHIN UNINCORPORATED SAN MATEO COUNTY

CNEL LEVEL	1980 POPULATION	PERCENTAGE OF 1980 UNINCORP. POPULATION	1995 PROJECTED POPULATION	PERCENTAGE OF 1995 PROJECTED UNINCORP. POPULATION
60-65	6,285	11.8	7,456	12.9
65-70	4,571	8.6	5,995	10.4
70-75	1,009	1.9	1,422	2.5
75-80	511	0.9	635	1.1
Subtotal:				
CNEL 60-80	12,376	23.2	15,508	26.9
Population exposed to less than 60:				
	40,921	76.8	42,081	73.1
Total unincorporated population:				
	53,297	100.0	57,589	100.0

Source: Derived from County Noise Contour Maps (1978, 1995); Census Data (1980); ABAG Population Growth Projections (1995); Land Use Maps and Aerial Photographs (1980-1983)

(1) Residential Areas of High Noise Exposure

The State of California has established an exterior noise exposure of 70 CNEL or greater as unacceptable for residential development. Within unincorporated San Mateo County, the following residentially zoned and developed areas experience or are projected to experience (1995) noise exposures in excess of 70 CNEL: portions of the North Fair Oaks community embracing the Southern Pacific Railway line, portions of the Sequoia Tract adjacent to Woodside Road, portions of Colma bordering El Camino Real, portions of the Mid-Coast adjacent to Highway 1 and the Country Club Park area of South San Francisco, as shown on the Community Noise Map and Noise Exposure Control Maps.[33]

(2) Institutional Noise Exposure

The unincorporated area is host to 19 schools, one hospital, two rest homes (20 bed minimum) and two public libraries. A 1984 field survey of these facilities determined average daytime noise exposure as shown on Table 16.2. The majority of facilities incur exposures between 50 and 60 decibels, which is considered normally acceptable for institutional noise sensitive uses.[34] Identified exceptions include Garfield Elementary School and Fair Oaks Branch Library, both proximate to Middlefield Road, and Ponderosa Elementary School (Country Club Park) incurring aircraft noise from SFIA.

B. AIRPORT SAFETY

In addition to noise impacts, general airport safety, especially near airport runways, is recognized as a hazard concern.

1. Approach and Clear Zones

Areas of high accident potential usually occur at the ends of runways, in aircraft approach and departure zones, where forced landings are most likely to occur. The Airport Land Use Commission (ALUC) has designated these high risk areas as approach zones at San Carlos and Half Moon Bay Airports. The FAA has similarly designated clear zones at each of the County's three airports. The approach zone is rectangular in shape, covering 2,000,000 square feet (1,000' x 2,000'), located 200 feet off each end of the runway.[35] The clear zone is trapezoidal in shape, 1,000 feet long, with area varying according to runway and aircraft size, also located 200 feet off each end of the runway.[36]

ALUC and FAA policy is to keep approach and clear zones free of structures. Nonstructural uses, motor vehicle parking and open storage may be permitted in approach zones provided certain maximum density requirements are not exceeded.[37] The FAA defines structural development in a clear zone as an "obstruction to air navigation" and, pending required study, could result in modification of airport operation to ensure safety.[38]

TABLE 16.2

AVERAGE DAYTIME NOISE EXPOSURE FOR
NOISE SENSITIVE LAND USES WITHIN UNINCORPORATED SAN MATEO COUNTY

FACILITY	Leq in Dba
SCHOOLS	
Ben Franklin Elementary	59.3
Bethany Lutheran Elementary	56.7
Charles Armstrong Elementary	55.7
Clifford Elementary	58.2
El Granada Elementary	59.4
Fair Oaks Elementary	55.0
Farallone Elementary	57.7
Garden Village Elementary	58.9
Garfield Elementary	65.3
Highlands Elementary	59.8
Holy Angels Elementary	58.4
Kings Mountain Elementary	51.2
La Entrada Elementary	55.4
La Honda Elementary	49.3
Peninsula Elementary	40.0
Pescadero Elementary	58.3
Pescadero High	54.4
Ponderosa Elementary	67.9
Woodside High	61.7
HOSPITALS	
Saint Catherines	63.2
LIBRARIES	
Fair Oaks Branch	69.4
San Mateo County Main	54.4
REST HOMES	
Convalescent Hospital-University Branch	58.6
Lakeview Lodge Convalescent Hospital[1]	62.3

Note: 1. Noise exposure exaggerated due to local construction activities.

Source: San Mateo Planning Division field measurement - May 1984.

In past years, the County has been actively purchasing private property in designated risk areas surrounding both general aviation airports. At Half Moon Bay Airport, all clear zone and the majority of the approach zone land is publicly owned and absent of structural development. On remaining privately owned land in the approach zone, several buildings exist along the periphery, where they are least apt to pose a hazard risk.[39]

2. Approach Surfaces

Building height beyond the approach and clear zone is also a safety concern, as tall structures can be hazardous to flight operations. Accordingly, the FAA and ALUC have defined height limits for buildings near airports. The specific height limit is based upon an imaginary flat plane, sloping upward and outward from the runway (representative of flight paths), known as an "approach surface." The slope of an approach surface varies with aircraft requirements. The typical general aviation approach surface maintains a 34:1 slope, while large commercial (SFIA) approach surfaces involve slopes between 40:1 and 50:1.[40] Approach surfaces and resultant height restrictions are based primarily on FAA standards. Currently, there are no structures encroaching into designated approach surfaces at County operated airports. At SFIA, additional surfaces known as "SID" (Standard Instrument Departure) and "TERPS" (Terminal and Enroute Procedure Standards) establish height restrictions, subject to case-by-case development review by ALUC.[41]

Although the FAA sets obstruction criteria in terms of maximum height, actual legal authority to control height rests with the ALUC and the local government where the structure is situated.[42] If a structure or object exceeds the defined height, the FAA would require preparation of an aeronautical study to determine the effect on navigable airspace and whether a hazard to air navigation is present. As with clear zones, the FAA can modify airport operations to ensure safety.

C. HAZARDOUS MATERIALS

Contemporary society has come to depend upon chemical products to enhance the quality of life. One consequence of increased chemical use and production, however, has been extensive and increasing exposure to hazardous materials. Hazardous materials are found almost everywhere in potentially dangerous quantities.[43] Some are known to produce serious adverse human health and environmental effects. Little is known about others, particularly the long term effect of low level exposure.

With the evolution of high technology industries in the Bay Area and the general proliferation of toxics in the environment, local governments are becoming more involved in the management of hazardous materials. Public recognition of the hazards and level of risk involved in the use of hazardous materials has increased interest and pressure for effective regulations.

As defined in this Chapter, hazardous materials occur in all physical forms, as gases, liquids or solids, and pose a health hazard when improperly used, stored, transported and disposed. For regulatory purposes, Federal and State governments have developed lists designating materials which are considered hazardous. More than 55,000 commercially produced substances have been listed, of which approximately 14,000 are designated hazardous.[44] Only a few of these have been studied in depth, and there is little information on effects which may pose significant harm to human health or the environment.

1. Characteristics and Effects of Hazardous Materials

An understanding of the characteristics and harmful effects of hazardous materials is necessary as a basis for effective risk prevention planning.

a. Characteristics

Hazardous materials may be divided into six basic categories according to characteristics:

(1) Explosives - Substances which under pressure or upon reaction with heat, shock, air, water or other chemicals result in explosion.

(2) Flammable Materials - Substances which ignite easily under routine conditions due to a low thermal threshold or "flashpoint."

(3) Oxidizing Agents - Substances which generate oxygen upon reaction with other chemicals and can induce fire or explosion.

(4) Heat Generating Materials - Substances which evolve heat upon reaction with air, water or other chemicals and can induce fire or explosion.

(5) Corrosive Materials - Substances which are capable of dissolving other materials when placed in direct contact, particularly acids and alkalies.

(6) Toxic Materials - Substances which when exposed to living organisms are injurious to human health or the environment. Toxic materials may include substances in any or all of the above categories.

b. Effects

The effects of flammable, explosive, and corrosive hazardous materials tend to be immediate and obvious, usually identified through distinct and observable events. The effects of toxic materials, on the other hand, are generally much more difficult to assess and may not be manifested for many years after contact with the substance.

The relative toxicity of a substance can be a function of many variables, including quantity or concentration, duration of exposure and tissue solubility.[45] Toxic materials can cause impaired health and mortality through mechanisms such as cancer, liver damage, nerve damage, birth defects and chromosome damage. It is usually difficult to isolate the particular toxic effect of a material since the health problems also will occur in an unexposed population. No clear consensus of methods has been developed for determining the effects resulting from the release of specified amounts of toxic materials or for deciding the level of risk from hazardous materials release that is appropriate and acceptable.

Toxic effects are not limited to human health; some hazardous materials accumulate in the environment. Many plants and animals have been shown to concentrate pollutants to levels many times greater than their exposure. Relatively low levels of environmental contamination, concentrated through the food chain, may result in significant environmental harm. Also, environmental effects may be accumulative or "synergistic," where exposure to several different pollutants aggravates the overall impact.

Wastes improperly disposed on land can contaminate surface and groundwater as well as the immediate soil. Toxic materials often can leach through soil and reach groundwater aquifers. Once contaminated, the productive use of the aquifer may be lost. Groundwater contamination also may go undetected presenting an unknown health risk for domestic and agricultural use.

2. Use of Hazardous Materials Use

Throughout the developed Bayside urban corridor, there are approximately 3,000 industrial and commercial facilities which either manufacture, use, store or transport hazardous materials or generate hazardous waste.[46] The predominant industry types include metal fabrication, manufacture of electrical and electronic equipment, chemicals, paints, varnishes, lacquers, enamels and allied products.[47]

Hazardous materials are also commonly found in residential and rural areas of the County. Typical residential substances include pesticides, cleaning fluids and household solvents, which require special storage and disposal practices. Table 16.3 identifies common household substances classified as hazardous materials.[48] In rural areas of the County, pesticide and herbicide application is used in conjunction with agriculture and forestry operations. San Mateo County ranks 36th out of the 58 counties in Statewide use of restricted pesticides, including both urban and rural application.[49]

A map has been prepared which reflects areas of hazardous material concentration within San Mateo County, as derived from data compiled from public and private sources listing major hazardous material industries.[50] The map is not intended to represent all firms utilizing

TABLE 16.3

HOUSEHOLD SUBSTANCES CLASSIFIED AS HAZARDOUS MATERIALS

Hazardous in Any Quantity:

Pesticides (e.g., insecticides, herbicides, fungicides and rodenticides)
Waste Oil (e.g., crankcase oil)
Flammables:
- Solvents (e.g., turpentine)
- Paint Thinners (e.g., naphtha)
- Fuel Wastes (e.g., kerosene, charcoal starter)

Hazardous in Large Quantities:

Chemical Cleaners (e.g., driveway cleaners)
Anti-Freeze
Acids (e.g., battery acids, swimming pool acids)
Alkaline Caustics (e.g., drain cleaners)
Liquid Cement (e.g. contact cement)
Cleaning Compounds (e.g., ammonia, organic solvents)
Bleaches

Source: San Mateo County Solid Waste Management Plan 1984; VIII - 11

hazardous materials in the County, but rather hazardous material concentration and associated spill risk based upon clustering of key industries and other major users.

The unincorporated North Fair Oaks and Harbor Industrial areas are identified as hazardous material concentration areas, supporting various electronics, plastics and paint manufacturing firms. An inventory of key hazardous material firms within these areas is shown on Table 16.4.

3. Spill and Leakage Incidents

Incidents of toxic material spill and accidental discharge within the County are occurring with increasing regularity.[51] Although statistics are lower than the majority of Bay Area counties, there are an estimated 250 major hazardous material spill incidents annually Countywide.[52] The majority of recorded spills occur within the urban developed area, particularly along the Bayfront, with a group of spill sites clustered near Highway 101. The Highway 92 crossing at Crystal Springs Reservoir is used for transport of gasoline and agricultural chemicals to the Coastside and has been identified as a potential hazardous material spill location which could seriously affect a major water supply.[53]

Approximately 90% of the hazardous material spills in San Mateo County occur on-site, while the balance occur during truck transit.[54] The vast majority of local spills are contained and cleaned up by company personnel without being reported to local officials. Generally, 10% of the spills occurring on-site are considered significant and reported to fire departments, of which approximately half require response by outside agencies and one-tenth result in injury requiring immediate medical attention.[55] Fatalities associated with hazardous material releases have occurred in the County, primarily resulting from fire and explosion. Petroleum products constitute the largest category of spill substances (57% regionally), with corrosives, acids, pesticides, PCB and other chemicals making up the balance.[56]

The most serious recent hazardous materials spill in the County occurred at a South San Francisco chemical plant in 1981, when a tank containing 4,000 gallons of a highly toxic agent ruptured, releasing the entire contents plus caustic acid vapors into the environment.[57] Other major spills include leakage from defective storage tanks at a Belmont bus repair yard in 1982, which discharged a mixture of 15,000 gallons of oil and waste water into storm drains and a nearby creek.[58] In 1983, another incident involved several hundred gallons of pesticide spilling onto farmland near Pigeon Point as the result of an overturned tractor.[59]

a. Underground Leakage

The growth of the electronics industry on the Peninsula has led to increased storage of toxic chemicals in underground tanks. In Santa Clara County, leakage from underground storage tanks has contaminated domestic groundwater sources and, in one case, persisted

The Hazardous Materials Concentrations Map is Located in the Map Component on Page 16.2M.

TABLE 16.4

KEY FIRMS UTILIZING HAZARDOUS MATERIALS OR GENERATING HAZARDOUS WASTE WITHIN UNINCORPORATED SAN MATEO COUNTY

Varian Corporation Eimac Division 301 Industrial Way Harbor Industrial	GTE Products Corporation Wesgo Division 477 Harbor Boulevard Harbor Industrial
Raychem Corporation Oakside/Northside Streets North Fair Oaks	Pacific Gas and Electric Company 1970 Industrial Way Harbor Industrial
Symtron Corporation 2701 Spring Street North Fair Oaks	Hughes Plastic Company, Inc. 2501 Spring Street North Fair Oaks
Circuits Eleven, Inc. 641 Quarry Road Harbor Industrial	Tronic Corporation Bragato Road Harbor Industrial
Metal Finishers Associates 1561 Old County Road Harbor Industrial	Advanced Components Technology 2865 Spring Street North Fair Oaks
SMAC Industries 2700 Spring Street North Fair Oaks	Harris Enameling 2740 Bay Road North Fair Oaks
Peterson Products of San Mateo, Inc. 1325 Old County Road Harbor Industrial	Peninsula Laboratories, Inc. 611 Taylor Way Harbor Industrial
Famet, Inc. 745 Second Avenue North Fair Oaks	CAMSCO Mushroom Company, Inc. 6150 Cabrillo Highway Pescadero

Source: Association of Bay Area Governments (ABAG), Hazardous Spill Prevention Plan, "Key Industries - San Mateo County," December, 1982, Volume II, p. C-22;

State Department of Health Services, EPA Notifiers of Hazardous Waste Activity - San Mateo County, September, 1983;

Citizens For A Better Environment, On-Site Hazardous Waste Management in the San Francisco Bay Area, "Hazardous Waste Treatment Storage, and Disposal Facilities - San Mateo County," September, 1981, p. A20.

undetected for over a year.[60] Within San Mateo County, there are an estimated 1,500-2,000 underground storage tanks, used primarily for petroleum products.[61] Further, the general issue of contamination from underground storage is less critical locally than the South Bay due to a smaller developed electronics industry, limited reliance on shallow groundwater sources in urban areas, and a less permeable geologic subsurface.[62]

b. PCB Contamination

The group of compounds known as polychlorinated bypheyls (PCB) have for many years been used in the manufacture of electrical transformers, including those found on power poles and transmission lines in the County. PCB is an extremely hazardous substance which, when ingested in small quantities, has been linked to cancer and numerous health disorders. Cases of PCB leakage from utility structures frequently occur in San Mateo County. Concerns over PCB leakage led the Board of Supervisors in 1983 to require the Pacific Gas and Electric Company to report all incidents to the County Health Department. Review of Health Department files indicates that approximately 150 cases have been reported annually between 1981-1983. PG&E states, however, that presently all PCB bearing capacitors have been replaced and corresponding transformers are being phased out.[63]

4. Hazardous Waste Generation

Many toxic substances are safely manufactured, used, and stored; only a few become hazardous waste. Approximately 125-130 firms (14 in the unincorporated area) are known to generate hazardous waste Countywide, disposing of 223,000 tons annually.[64] This figure is only an approximation, as it does not include numerous small generators and is based solely on data from State sources.[65] It is estimated that 1,500-2,000 small commercial businesses also generate hazardous waste Countywide, including dry cleaners, electroplating firms, print shops, photoprocessing labs, and gas stations.[66] The majority of waste generators are not involved in on-site treatment, extended storage or disposal and therefore do not require a State Hazardous Waste Facilities Permit. Presently, 19 firms have applied for a permit; however, until State and local enforcement measures are more complete, one cannot determine the extent of compliance.[67]

a. Transportation of Hazardous Wastes

Transportation of hazardous waste is limited under the State law to registered haulers. A monitoring system, known as the "manifest system," is used to track all hazardous wastes transported off-site to storage, treatment, or disposal facilities. The manifest accompanies the shipment, with copies sent to the State from both generator and receiving facility to ensure that the designated waste is received by an appropriate facility. There are ten State licensed hazardous waste haulers based in San Mateo County, as identified on Table 16.5.

TABLE 16.5

SAN MATEO COUNTY HAZARDOUS WASTE HAULERS
REGISTERED WITH CALIFORNIA DEPARTMENT OF HEALTH SERVICES,
HAZARDOUS MATERIALS MANAGEMENT SECTION

Bayshore Oil Company 44 Flower Street Redwood City, CA 94063 (415) 365-6146	N. Price & Co., Inc. 614 San Mateo Avenue, #3 San Bruno, CA 94066 (415) 589-0291
Builders Debris Box 225 Shoreway Road San Carlos, CA 94070 (415) 591-2025	Rogers Trucks & Equipment, Inc. 1265 Mission South San Francisco, CA 94080 (415) 589-7015
California Oil Recyclers, Inc. 977-A Bransten Road San Carlos, CA 94070 (415) 591-2603	Romic Chemical Corporation 2081 Bay Road East Palo Alto, CA 94303 (415) 324-1638
California Solvent Recycling Co. 2081 Bay Road East Palo Alto, CA 94303 (415) 856-7577	Sorgdrager Trucking 1024 So. Claremont Street San Mateo, CA 94402 (415) 573-1211
Eimac Division/Varian 301 Industrial Way San Carlos, CA 94070 (415) 592-1221	Western Drums 166 Harbor Way South San Francisco, CA 94080 (415) 952-6892

Source: Solid Waste Management Plan, 1984; VIII - 6.

b. Hazardous Waste Disposal

The volume and variety of hazardous wastes generated is increasing amidst reduction in the number of legal disposal sites within the Bay Area. No hazardous waste landfills have opened in California since 1979, and those presently in operation are under public pressure to close.[68]

Land disposal facilities accepting hazardous waste are classified either as Class I or Class II-1. Class I facilities may accept all types of hazardous waste (with few exceptions), while Class II-1 facilities are allowed to accept only marginally hazardous waste, such as sewer sludge with low concentrations of hazardous material. There are seven operating Class I facilities in California (three in the Bay Area), all of which are located off-site, as listed in Appendix B.[69] In addition, five off-site Class II-1 facilities are located within the region.

There are presently no authorized public hazardous waste disposal (Class I or II-1) facilities or transfer stations within San Mateo County.[70] ABAG studies have concluded that no area within the County would be suitable for a hazardous waste landfill; however, major process and disposal facilities, such as incinerators and chemical treatment plants, could be considered.[71]

San Mateo County ranks sixth out of the nine Bay Area Counties in hazardous waste tonnage generated for off-site disposal and third in the amount for on-site disposal.[72] Approximately seven percent (16,500 tons) of the hazardous waste generated in the County is transported off-site to approved treatment and disposal sites throughout the State.[73] The balance is disposed of onsite through methods including use of evaporation ponds, incineration, pre-treatment and sewer discharge, and recycling. Pre-treatment and sewage disposal is the predominant form of authorized hazardous waste disposal within the County, requiring permit approval by the sewage treatment agency. Recycling comprises much of the balance and primarily involves redistillation of industrial solvents. Approximately 184,000-188,000 tons (83-84%) of County-generated hazardous waste is diluted to sewer agency standards upon disposal into the public sewer system, 3,100-3,750 tons (1-2%) evaporated and 15,000-18,500 tons (7-8%) recycled.[74] There are presently two commercial firms which recycle hazardous wastes locally, the Romic Chemical Company in East Palo Alto which recovers industrial solvents, and Ekotek Lube, Inc., in San Carlos which re-refines oil.[75]

Evidence suggests that illegal disposal of hazardous waste is occurring with increasing regularity throughout the State.[76] In general, the larger County industries are acting responsibly in management and disposal of hazardous wastes, while smaller businesses tend to be unaware of State regulations applying to them.[77] The extent of illegal disposal, a potential public health hazard, is

unknown, but numerous incidents have been investigated in the County.[78] There is particularly a growing number of roadside illegal dumping incidents within the County rural areas.[79] Other forms of illegal disposal include unlawful sewer discharge and municipal landfill disposal. It is projected that approximately 26,000 tons per year of Bay Area generated hazardous waste are disposed of at municipal landfills, representing 6% of the regional hazardous waste stream.[80]

State and regional agencies have identified eight contaminated waste sites in San Mateo County which potentially pose a threat to public health. The sites as designated by the State Department of Health Services or Regional Waste Quality Control Board include abandoned or uncontrolled waste sites, or locations where the waste materials have potential for endangering the water supply. The majority involve disposal prior to the enactment of regulatory controls. Hazards include soil contamination, primarily from former evaporation ponds. Four of the sites have been designated as eligible for State clean-up funds.[81] (See Table 16.6 for a summary description of each of the waste sites.)

D. HAZARDOUS STRUCTURES

The unincorporated area of San Mateo County supports a variety of land uses, each requiring different types of buildings and structures to accommodate particular needs. Although building design may vary according to function and aesthetic desire, a public concern common to all is the need for safe construction. It has long been County policy to protect human health and avoid injury by guaranteeing safe structures through regulating construction practice and abatement of known hazardous structures. As defined in this Chapter, hazardous structures are considered to include all buildings or structures which do not conform with the County Uniform Construction Administration Code.

1. Types and Distribution

Hazards associated with structures are related to several factors: age, type of construction (both material and technique), and use. Buildings in the County constructed before 1933, when earthquake protective provisions were added to the building code, present significant potential hazards, as do unreinforced masonry buildings.[82] Certain other types of structures, built between 1933 and 1948, may also present hazards since they were built before anti-seismic design was incorporated uniformly throughout the building code.

Hazardous structures in San Mateo County typically fall into two categories: (1) new construction involving substandard materials and specifications, or (2) inadequately maintained older buildings, many times abandoned. Generally, public schools and 1-2 story wood-frame, single family residences present the least risks to individual safety.[83]

TABLE 16.6

CONTAMINATED TOXIC CHEMICAL SITES IN SAN MATEO COUNTY

ZOECON CORPORATION-CHIPMAN CHEMICAL COMPANY East Palo Alto	A former sludge pond near San Francisco Bay is contaminated with arsenic, heavy metals and pesticides, including cadmium, lead, mercury, and selenium. Ranked 58th worst Statewide--eligible for clean-up funds.
SUN CHEMICAL CORPORATION/RENTAL CITY TRUCKS South San Francisco	Soil contaminated with lead, zinc, and cyanide from former printing operations located 200 feet from San Francisco Bay. Ranked 70th worst Statewide--eligible for clean-up funds.
HEALLY TIBBITTS/WILDBERG BROTHERS SMELTING AND REFINING COMPANY South San Francisco	Surface runoff contaminated with heavy metals from refinery operation on the site. Ranked 84th worst Statewide--eligible for clean-up funds.
PACIFIC GAS AND ELECTRIC COMPANY, MARTIN SERVICE CENTER Daly City	Soil contaminated with naphthalene, anthracene, and benzene at electrical sub-station and transformer site; potential ground water and surface water contamination. Ranked 87th worst Statewide--eligible for clean-up funds.
HOMART DEVELOPMENT COMPANY South San Francisco	Soil contaminated with heavy metals including metallic slag and acid pickling waste deposits, submerged acid waste slumps and solvent storage tanks from former steel manufacturing operation.
CAL MAC TRANSPORTATION COMPANY East Palo Alto	Surface waste solvent and resin contamination has been removed; however, subsurface investigation is continuing.
BAYSHORE EXECUTIVE PARK San Mateo	Abandoned site contaminated by lead and other heavy metals.
MARSH ROAD LANDFILL Menlo Park	Site has been used to dispose of hazardous wastes--no clean-up is planned.

Source: State Department of Health Services, Priority Ranking of Hazardous Sites in California, 1984; San Mateo Times, October 19, 1983; IV-I.

It is difficult to develop a specific inventory of hazardous structures in the County as the situation is very dynamic and data is limited. Substandard construction and code violation cases are continually being discovered and abated. Existing inventory information may only be derived from the following sources: complaints filed, field observation and building permit application. The Building Official reports that approximately five notices to stop work are issued per week for unsafe construction within the unincorporated area.

In 1970, less than one percent of the existing housing lacked plumbing, kitchens or standard heating.[84] A 1982 survey revealed that approximately 700-860 housing units require rehabilitation, and 69-72 units require replacement.[85] Generally, required rehabilitation involves repairs to basically sound structures. The highest concentrations of these units are located within the unincorporated communities of North Fair Oaks and Pescadero.

Generally, hazardous new structures are built within rural areas of the County, where, due to remoteness, they go undetected for extended periods of time. In contrast, hazardous structures resulting from inadequate maintenance and general obsolescence are primarily found in the higher density urban communities of the unincorporated County, including North Fair Oaks, West Menlo Park, Colma and Broadmoor.[86] Cases also occur in the rural South Coast and involve occupation of abandoned farm buildings. Hazardous new construction many times also involves conversion of single family garages or detached buildings into illegal second units for residential occupancy. Typically, hazards include inadequate wiring, gas ventilation, unsuitable building materials and unsanitary plumbing. Building Inspection records reveal that during a one-year period between 1982 and 1983 at least 14 dangerous second units were cited in the unincorporated areas, primarily on the urban Bayside.

III. EXISTING PLANS, POLICIES AND REGULATIONS AFFECTING MAN-MADE HAZARDS

Protection against man-made hazards are the legitimate concern of many public agencies. As part of the County's General Plan, this Chapter focuses primarily on policies and regulations within the County jurisdiction. Realizing, however, that other levels of government have been delegated primary responsibility for specific hazardous situations, the Chapter will also summarize the role of major Federal, State and regional agencies involved in hazards protection.

A. NOISE AND AIRPORT SAFETY

1. Federal

a. Noise Control Act (1972)

The Noise Control Act of 1972 requires the Environmental Protection Agency (EPA) to establish and enforce noise emission standards for newly manufactured products identified as major noise sources. In 1976, EPA developed railroad noise emission standards which apply to

all locomotive and rail cars engaged in interstate commerce. EPA has also proposed aircraft noise regulations to the Federal Aviation Administration.

b. Federal Aviation Regulations - Part 36 (1969)/Federal Aviation Administration (FAA) Noise Abatement Policies

The Federal Aviation Administration (FAA) is charged with responsibility for aviation noise control, including regulation of source emissions and control of flight operational procedures. The principal regulation governing aviation noise is Part 36 of the Federal Aviation Regulations, which establishes maximum noise level standards for all aircraft manufactured after 1973. Federal policy requires that domestic aircraft comply with Part 36 noise standards by 1985. Conformance may be accomplished by "retrofitting" existing aircraft with quieter engines or replacement of aircraft with new models. Other FAA noise abatement policies include: (1) the Airport Development Aid Program, which utilizes aircraft fuel tax revenues in part to fund land acquisition of noise-impacted land near airports, reduced noise suppressant equipment and construction of noise barriers, (2) assistance to airports in attaining noise abatement goals, and (3) aircraft operating procedures which promote operational measures to decrease noise emissions.

2. State

a. Noise Control Act (1973)/Office of Noise Control Noise-Land Use Standards

The Noise Control Act of 1973 establishes the Office of Noise Control to develop a Statewide noise control program. Program requirements include: (1) noise monitoring, (2) development of noise exposure standards, and (3) assistance to local agencies in developing noise ordinances and implementing noise abatement procedures.

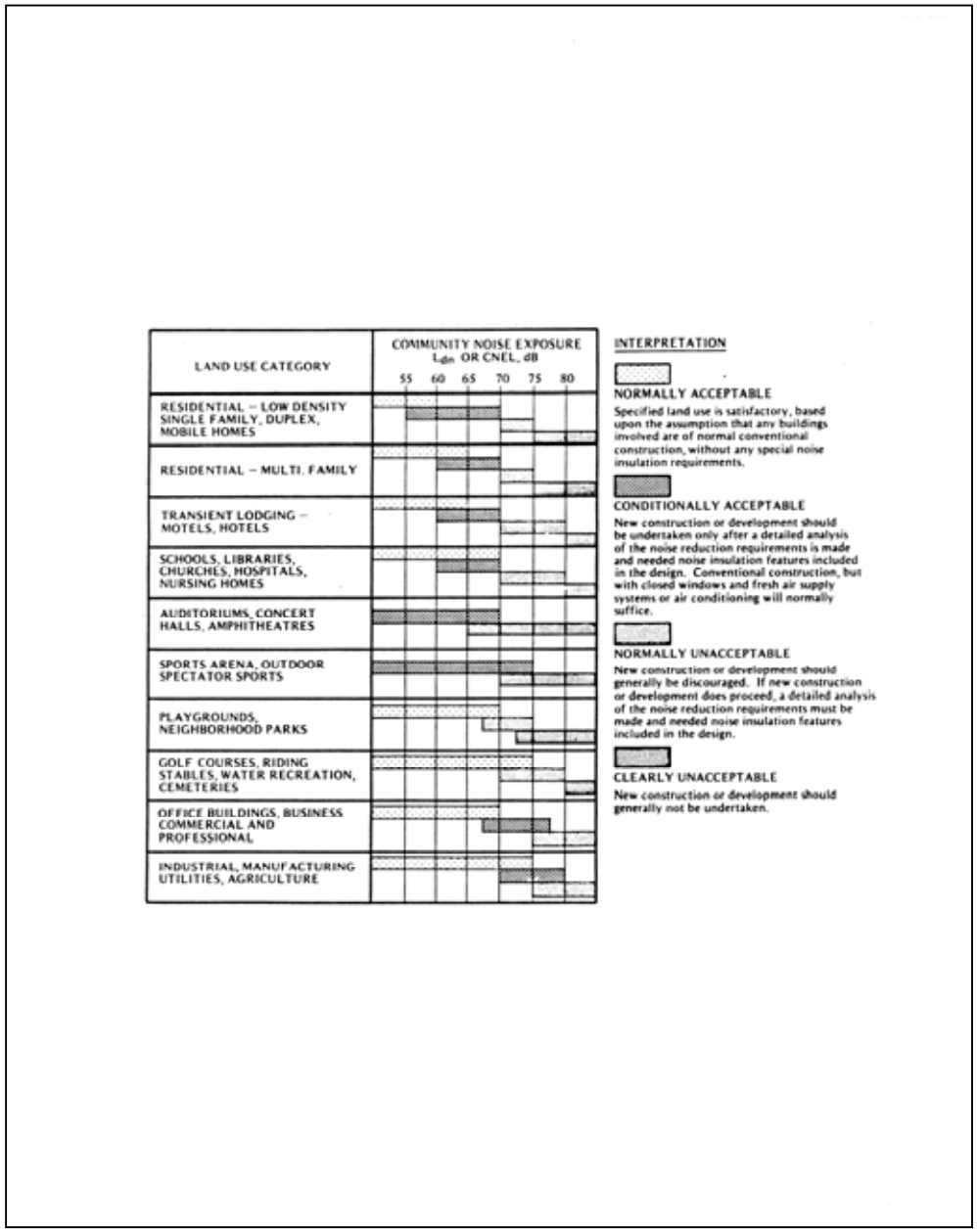
The Office of Noise Control has developed guidelines for land use compatibility based upon a sliding scale of acceptable noise thresholds (Table 16.7). Noise levels are paired with compatible land use activities, and the effects of standard noise attenuation are considered. In particular, the standards establish an exterior noise exposure of 70 CNEL or greater as unacceptable for residential development.

b. Aviation Noise Standards (1970)

Title 21 of the California Administrative Code sets aviation noise standards to regulate aircraft noise in the vicinity of airports. The legislation establishes a noise limit of 70 CNEL (65 by 1985) as the maximum permitted noise level compatible with residential areas, and defines a "noise impact area" as covering the geographic area where the standard is exceeded. Airports are required to have a noise impact area "no greater than zero," although a variance

TABLE 16.7

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Source: California Office of Noise Control, Department of Health Services, Guides for Preparation and Content of Noise Elements of the General Plan, February 1976, p. 26.

procedures is provided subject to approval by the State Department of Aeronautics. To monitor compliance, continuous noise monitoring is required at large airports.

At San Francisco International Airport (SFIA), noise exposures in residential areas exceed the 70 CNEL limit, and a variance has been issued subject to annual renewal and compliance with a number of noise mitigation conditions. The airport maintains a noise monitoring system, and the County Planning Division validates data every three months before submittal to the State.

c. Requirement for Airport Land Use Commission (1970)

The State Legislature amended the Public Utilities Code in 1970 to require the establishment of an Airport Land Use Commission (ALUC) within each county with the purpose of preparing a land use plan to provide for orderly development of airports and surrounding areas. ALUC's are given authority to: (1) specify how land near airports is to be used based on safety and noise considerations; (2) develop height restrictions for new construction; and (3) set construction standards for building new airports, including soundproofing requirements. The ALUC is given no authority over airport operations. A recently added provision requires that local general plans in areas surrounding airports be consistent with the ALUC Airport Land Use Plan.

d. Noise Insulation Standards (1975)

In 1975, the State Legislature amended Title 25 of the State Government Code establishing uniform minimum noise insulation standards applicable to new construction of hotels, motels and multi-family dwellings. The legislation requires that all buildings experiencing noise levels of 60 CNEL be subject to an acoustical analysis and be designed such that interior noise levels do not exceed 45 CNEL. The Building Inspection Section administers this requirement.

e. California Motor Vehicle Code

The California Motor Vehicle Code requires that noise emission levels for all highway vehicles and motorcycles be reduced to 80 dB by 1988, and off-road vehicles manufactured after 1975 to 86 dB. This section of the code is enforced by State and local police agencies.

f. California Streets and Highway Code

The California Streets and Highway Code requires that noise experienced by schools located near state highways not exceed 50 dB as measured in the classroom. The Department of Transportation administers this section of the code and, under certain situations, is required to provide noise abatement when the standard is exceeded.

g. California State Department of Transportation (CalTrans)

The State Department of Transportation (CalTrans) maintains a program to install noise barriers beside State highways within noise sensitive areas. Noise barrier installation decisions are based upon established criteria which consider noise generation, development densities, and building age. Public requests for noise abatement are investigated and may result in construction pending available funding and the basic criteria are met. New roads which increase noise exposure by 12 dB require noise mitigation, with intent to reduce average exposure to a maximum of 67 dB.

h. Occupational Noise Exposure Standards

Group 15 of the Administrative Code establishes standards for control of and exposure to industrial noise. The Division of Industrial Safety is charged with enforcement responsibilities.

3. County

a. Noise Element (1978)

The Noise Element of the General Plan presents a comprehensive assessment of noise exposure within the unincorporated area, setting objectives and management policies to improve the County noise environment. The Noise Element identifies local noise sources and problem areas, as well as relevant State and Federal legislation. The Element adopts State land use-noise compatibility standards to guide unincorporated development and extends State law to require an acoustical analysis for all new residential development, including single family dwellings, experiencing noise levels of 60 CNEL or greater it requires that structural design reduce internal exposure to 45 CNEL.

The Planning Division maintains detailed composite noise contour maps at a scale of 1" = 800 feet with contour increments of 5 CNEL derived from varied noise sources in the unincorporated area. The maps were prepared as a component of the Noise Element and are used for County development review purposes.

b. Other County Policies and Programs

(1) Airport Land Use Commission (ALUC)

The San Mateo County Airport Land Use Commission (ALUC) is charged with developing a land use plan for the area surrounding the County's three airports to protect the public from aviation hazards. This function has been assigned to the Regional Planning Committee of San Mateo County (RPC), which established a Subcommittee to carry it out. In March 1981, the ALUC adopted its Airport Land Use Plan, establishing policies

for noise compatibility, height of buildings and airport approach zones.

(a) Noise

The ALUC Plan establishes criteria to determine the appropriateness of new land uses according to CNEL noise impact levels. Residential uses are considered more noise sensitive than commercial or industrial uses. The ALUC policy allows development near SFIA without noise insulation in areas up to 65 CNEL. Within areas of 65 to 70 CNEL, residential land uses require special noise insulation, and beyond 70 CNEL, new residential development is prohibited. At the two County general aviation airports, residential development is only permitted where the noise level does not exceed 60 CNEL. A noise analysis is required between 55 and 60 CNEL. The plan provides for special exceptions to restricted uses, subject to ALUC hearing.

(b) Airport Safety

The ALUC Plan requires that "approach zones" be kept free of structures. Non-structural uses may be permitted in approach zones if they do not cause a concentration of more than ten people per acre on a regular basis. Other public or private uses may be considered appropriate by the ALUC based on an evaluation of the impact of the proposed use on public safety. ALUC height restrictions prohibit structures from penetrating, "approach surfaces", as defined by Federal law.

(2) City of San Francisco-San Mateo County Joint Powers Board/Airport Community Roundtable

In June 1976, the City and County of San Francisco and San Mateo County entered into a joint powers agreement which established a six member Joint Powers Board (JPB) to conduct a land use study and prepare an action plan aimed at improving compatibility between San Francisco International Airport and San Mateo County affected areas. In April 1980, the JPB approved the Land Use Study and Joint Action Plan for the abatement of aircraft noise at SFIA.

A primary objective of the Plan is to maintain compliance with the State airport noise standard through implementation of mitigation measures, both on-site and away from the Airport. Recommended actions include: (1) improved airport noise monitoring and management capability; (2) changes in flight procedures to better utilize runways and flight paths to reduce noise from operations which impact populated areas; (3) development of regulatory and economic incentive programs to reduce

aircraft noise, such as nighttime restrictions, noise budgeting and noise based landing fees; (4) installation of noise insulation affected buildings; and (5) noise preventive land use planning. In the aggregate, the recommended actions are expected to reduce the State defined "Noise Impact Area" from the projected 15,500 homes in 1980 to 7,550 in 1987 or beyond.[87]

A key element of the Plan is to continue cooperation between the Airport and local governments without losing recognition of local government autonomy over planning, zoning and building decisions and Airport authority over airport land use and management. To facilitate this end, in January 1982, the Joint Powers Board recommended establishment of an Airport/Community Roundtable to continue a cooperative approach to resolving airport/community problems and to monitor implementation of Study recommendations. A memorandum of understanding establishing the Roundtable was signed by the San Francisco Airports Commission, ten northern San Mateo County cities, the County Board of Supervisors and Airport Land Use Commission. The Roundtable maintains a two tier structure, consisting of a Coordinating Committee comprised of a representative from each local agency and a larger Integrative Group composed of the Coordinating Committee and a broad base of community and industry representatives. The Coordinating Committee meets on a monthly basis, with records and minutes of proceedings available through the County Planning Division.

(3) City and County of San Francisco Airport Commission/Airport Noise Mitigation Action Plan (ANMAP) (1981)

The City and County of San Francisco, through its Airport Commission, is the owner and operator of San Francisco International Airport. In 1981, the Airports Commission developed the Airport Noise Mitigation Action Plan (ANMAP) to implement the noise mitigation actions recommended by the Joint Land Use Study. Current noise reduction efforts at SFIA include restriction of noisy engine ground tests, prohibition of training flights, limited FAA financed installation of soundproofing insulation, and prohibition of aircraft which generate noise in excess of Federal limits.[88]

(4) Sheriff's Department Noise Enforcement

The County Sheriff's Department currently uses the "disturbing the peace" provisions of the State Penal Code for control of neighborhood nuisances such as barking dogs and loud music. Inordinately loud vehicles may be cited under the California Motor Vehicle Code, which requires a properly maintained, adequate muffler.

(5) Off-Road Vehicle Task Force (1979)

In 1979, the Board of Supervisors established the Off-Road Vehicle Task Force to explore and recommend alternative sites for an off-road vehicle facility. After analysis by a private consultant, the Task Force recommended two sites within the unincorporated area: San Francisco International Airport and Knob Hill Ranch on the Coastside.[89] The Task Force has disbanded, and County efforts toward development of a facility are in abeyance.

c. County Ordinances

(1) Zoning Ordinance

(a) Airport Overlay (A-O) Zone (1980)

Section 6288 of the County Zoning Ordinance establishes the Airport Overlay (A-O) District to provide a margin of safety at the end of airport runways where the hazard potential is the greatest. The Overlay District: (1) includes aircraft sensitive areas in Moss Beach and Princeton beyond the designated approach zone of Half Moon Bay Airport, (2) requires a use permit approval for all development, (3) restricts building height to 36 feet, and (4) prohibits new residential construction.

(b) Use Permit Provision

The County Zoning Ordinance designates land uses which are permitted within the unincorporated area. Some uses are unconditionally permitted, such as a single family residence in an R-1 District, while others, because of possible compatibility problems, require conditional use permit approval. The current Zoning Ordinance requires conditional use permit approval for care homes, churches, and schools in residential areas due in part to their noise generating potential. The purpose of use permit review is to develop mitigation requirements which will ensure land use compatibility.

(2) County Ordinances and Review Criteria

(a) Noise Ordinance (1982)

Chapter 10, Part Two, of the County Ordinance Code establishes the County Noise Ordinance, a comprehensive set of noise control standards applicable to the unincorporated area. The Ordinance establishes noise limitations which vary according to hour of the day and noise duration, and a general noise regulation making it unlawful for any person to produce an unusually loud, uncommon noise which

would disturb the neighborhood peace. Violation of any Ordinance provision is a misdemeanor. The County Health Officer is primarily charged with enforcement responsibility. The Ordinance provides for certain exemptions, including temporary and emergency noise sources, and allows for variance consideration by a Noise Board of Review comprised of the County Planning Commission.

(b) County CEQA Guidelines

Environmental evaluation of development requests include assessment of noise impacts. According to County California Environmental Quality Act (CEQA) Guidelines, preparation of an initial study requires determination whether a project will, "be subject to an unusually high noise level" or will, "generate unusually high noise levels." Such information is utilized to determine whether significant impacts will result and further environmental review is necessary.

B. HAZARDOUS MATERIALS

1. Federal

a. Toxic Substances Control Act (TSCA) (1976)

The Toxic Substances Control Act empowers the Environmental Protection Agency (EPA) to adopt rules requiring pre-manufacture and testing of all chemical products, and to restrict or prohibit the manufacture of toxic chemical substances determined to present an "unreasonable" risk. Existing products may be seized and recalled at any time.

b. Resource Conservation and Recovery Act (RCRA) (1976)

The principal Federal legislation affecting hazardous waste management is the Resource Conservation and Recovery Act of 1976 (RCRA). RCRA directs the Environmental Protection Agency (EPA) to: (1) formulate regulations identifying the characteristics of hazardous waste; (2) prepare a list of hazardous wastes subject to regulation; (3) establish a hazardous waste program, developing standards and permit requirements applicable to the generation, transportation, storage and disposal of hazardous waste; and (4) enforce permit controls over hazardous waste storage and disposal facilities. The EPA is further authorized to sue to stop any hazardous waste activity which may present an, "imminent and substantial" danger to public health or the environment. The states are directed to inventory all prior or existing waste disposal sites and assess potential health hazards.

A key element of RCRA allows the states to develop individual hazardous waste programs in lieu of the Federally mandated

requirements subject to authorization from the EPA. California's Hazardous Waste Management Program has been authorized by the EPA to implement the RCRA.

c. Environmental Pesticide Control Act (1972)

The Environmental Pesticide Control Act directs the Environmental Protection Agency (EPA) to: (1) classify pesticides for, "general" or, "restricted" use; (2) require registration of pesticide manufacturing plants; and (3) develop procedures and regulations for storage or disposal of pesticide containers. The states are required to certify pesticide applicators for use of restricted pesticides.

d. Hazardous Materials Transportation Act (1974)

The Federal Hazardous Materials Transportation Act directs the Department of Transportation to: (1) prepare a list of materials which, when transported, pose an, "unreasonable risk" to health and safety or property; (2) establish criteria and regulations for the safe transportation of hazardous materials; and (3) issue orders directing compliance. Manufacture of hazardous material containers and transporters of hazardous materials may be required to register with the Department of Transportation every two years. The Department is authorized to obtain a court order suspending or restricting any transportation of hazardous material which creates an "imminent hazard."

e. Comprehensive Environmental Response, Compensation and Liability Act (1980)

The Comprehensive Environmental Response Compensation and Liability Act, also known as the, "Federal Superfund," provides for hazardous waste clean-up and management, supplementing RCRA requirements. The Act provides: (1) funds to clean up abandoned hazardous waste sites and compensate damaged parties, (2) post closure liability from disposal facilities, (3) emergency response to and clean up of hazardous material spills, and (4) reimbursement of funds from responsible parties.

2. State

a. Hazardous Waste Control Act (1972)

The Hazardous Waste Control Act was adopted to establish a program for the safe handling, storage, use and disposal of hazardous wastes. The Department of Health Services is delegated primary authority over hazardous waste management, being directed to: (1) develop a list identifying hazardous and extremely hazardous waste; (2) establish standards for the use and operation of facilities maintaining hazardous waste; (3) issue a Hazardous Waste Facilities Permit to operations complying with established standards; and

(4) adopt regulations applying to hazardous waste transport, including hauler registration.

b. Hazardous Substances Act

The California Hazardous Substances Act establishes a classification system for defining, "hazardous substances," and prohibits the manufacture and sale of mislabeled and banned hazardous substances. The State Department of Health or an appointed agent is vested with enforcement allowing free access to inspect facilities and vehicles in which hazardous substances are manufactured or transported. The statute may be considered complementary to the Hazardous Waste Control Act by providing for regulation of toxic materials not defined as waste.[90]

c. Minimum Standards for Management of Hazardous and Extremely Hazardous Waste (1977)/Hazardous Waste Management Program

The State Department of Health Services maintains a comprehensive program to control transportation and disposal of hazardous waste. A chief component of the program is Title 22 of the State Administrative Code, "Minimum Standards for Management of Hazardous and Extremely Hazardous Waste," which establishes: (1) definitions and criteria for the identification of hazardous and extremely hazardous wastes, (2) a Hazardous Waste Facilities Permit program for regulating all facilities which store, treat or dispose of hazardous wastes, (3) a manifest system for the identification and tracking of each load of hazardous wastes transported in the State, and (4) a registration program for the identification of waste haulers and their vehicles. The State program also involves: (1) field surveillance and enforcement teams to ensure compliance, (2) procedures for clean up of abandoned sites and (3) a program for stimulating resource recovery and encouraging development of hazardous waste treatment facilities. Hazardous waste inventory data is primarily gathered through the following program activities: (1) manifests, (2) required reporting by treatment, storage and disposal facilities transportation and (3) facility inspections.

Although the Department maintains primary responsibility for enforcement of hazardous waste requirements, enforcement may be transferred to local health officers, including right to enter and inspect facilities, obtain samples, stop vehicles suspected of transporting hazardous and inspect records without appointment. The County recently entered into a Memorandum of Understanding with the Department establishing local responsibilities, as described in a separate section of this report.

d. Hazardous Substance Information and Training Act (Worker Right-To-Know) (1980) Occupational Health and Safety Act (1973) Department of Industrial Relations Cal OSHA Program

The Worker Right-to-Know Act requires that an informational disclosure of all hazardous materials present in the work place be posted and available for employee review. The Occupational Health and Safety Act authorizes the Department of Industrial Relations to set standards for health and safety in the workplace. The Department, through its Cal OSHA program: (1) identifies and regulates the use of carcinogens in the workplace, (2) enforces the Worker Right-to-Know law, and (3) provides 24-hour emergency information to clean-up personnel.

e. Hazardous Substances Highway Spill Containment Act (1980)/California Highway Patrol and Cal Trans Hazardous Material Transportation Responsibilities

The California Highway Patrol (CHP) is responsible for enforcing Federal and State regulations controlling transportation of hazardous chemicals, with authority to inspect vehicles, cargo and containers. In the event of a hazardous substance spill, the Highway Spill Containment Act empowers the CHP with scene management responsibility, while CalTrans is charged with clean-up authority.

f. State Hazardous Materials Incident Contingency Plan/Office of Emergency Services

The State Hazardous Materials Incident Contingency Plan, implemented by the Office of Emergency Services, establishes response actions and responsibilities in the event of a hazardous material spill. In addition, the Office of Emergency Services: (1) arranges State and regional mutual aid support during disasters, (2) reports incidents which involve hazardous chemicals to State agencies having emergency functions, and (3) provides assistance to local agencies in planning and preparing for emergency services.

g. Food and Agricultural Code/Department of Food and Agriculture Pesticide Regulatory Program

The Food and Agricultural Code empowers the Department of Food and Agriculture with responsibility for: (1) registration of new pesticides, (2) regulation of pesticide labeling use and disposal, (3) licensing pesticide applicators, and (4) monitoring pesticide residues on produce and in the environment. Enforcement of pesticide application laws and regulations are primarily carried out by the County Agricultural Commissioner.

h. Hazardous Waste Management Plan (1984)

The Hazardous Waste Management Plan was prepared by the State Hazardous Waste Management Council to improve the siting and permitting process for hazardous waste facilities. Based upon the principle that hazardous waste management is a burden which must be shared by all communities, the Plan recommends that: (1) a comprehensive planning effort be undertaken at the local level to identify the need for and location of feasible sites for hazardous waste facilities; and (2) State be granted limited appeal authority to consider projects rejected at the local level. Legislation (AB 3119) has been introduced to implement this concept.

The plan also recommends comprehensive local level hazardous waste management planning, a streamlined permit issuing system, better coordination between State and local permitting agencies and development of alternative technologies stressing less reliance on traditional land disposal.

i. Land Disposal Restrictions - Assembly Bill 1543 (1981)

To reduce the amount of hazardous waste requiring landfill disposal, the Department of Health Services has adopted regulations which prohibit certain types of hazardous waste from landfill disposal and establish a phased implementation schedule contingent upon availability of alternative treatment capacity.

j. State Superfund - Senate Bill 618 (1981)

The State Superfund provides: (1) funds to clean up abandoned contaminated hazardous waste sites, (2) ten percent matching funds to meet Federal Superfund requirements, and (3) up to $1 million annually to assist local agencies in hazardous material spill response. Existing law prohibits the expenditure of public funds until it is determined that responsible parties will not take the proper remedial action or that they will not respond in a timely manner. State funds may be immediately applied should a real or potential threat to public health exist.[91]

3. County

a. General Plan Policies

(1) Seismic and Safety Element (1976)

The Seismic and Safety Element of the General Plan includes the following policies which pertain to hazardous materials management: (1) reexamine local regulations regarding manufacturing, storage and use of hazardous materials and modify as necessary to minimize risk and (2) encourage the appropriate Federal agency to establish more stringent regulations for transportation of hazardous materials, especially near residential areas.

(2) Local Coastal Program (1980)

(a) Agriculture Component

The Agriculture Component includes a policy requiring that runoff containing pesticides associated with floricultural operations not be released into any stream and be disposed of in accordance with established Federal and State standards.

(b) Energy Component

The Energy Component includes a policy prohibiting disposal of oil field wastes into surface and subsurface water sources.

b. Other County Policies and Programs

(1) Solid Waste Management Plan (1984)

The 1984 Solid Waste Management Plan, a countywide document, includes a Hazardous Waste Chapter. The Chapter summarizes hazardous waste activity in the County, existing regulatory structure and local responsibilities. Recognizing the State's leadership role in hazardous waste management, the Plan establishes the following policies: (1) the County shall be committed to advising its citizens of hazardous wastes and to support State efforts in directing hazardous wastes to approved disposal sites and (2) the County shall seek assurance from the State that hazardous waste disposal facilities are available for the County as required to protect the environment and public interest.

(2) Memorandum of Understanding to Enforce Hazardous Waste Regulations (1983)

In August 1983, the San Mateo County Board of Supervisors adopted a resolution authorizing a Memorandum of Understanding between the State Department of Health Services and the County Health Department on matters concerning hazardous waste enforcement authority.[92] Under the terms of the Memorandum, the County Health Officer is designated a State agent to enforce certain minimum standards and regulations controlling hazardous waste facilities, including monitoring facilities where hazardous waste is stored for less than 90 days. The County maintains authority to enter and inspect a factory, plant, construction site or other areas where wastes are handled, and gather evidence to determine whether the waste is hazardous. The State, on the other hand, retains authority for the issuance of Hazardous Waste Facility Permits, registration of hazardous waste transporters and surveillance and enforcement relating to facilities where hazardous wastes are stored

greater than 90 days, processed or disposed. The County and State are jointly responsible for: (1) declaring an emergency in the event of accidental release of a toxic substance, (2) responding to citizens' complaints relating to their respective responsibilities, and (3) informing other legally responsible agencies of relevant hazardous material or waste conditions. The intent of the agreement is to ensure a high level of cooperation and coordination in the enforcement of State regulation, and ensure that limited public resources are utilized in the most effective manner.

(3) Proposed Hazardous Materials Management Program (1984)

The County Health Department has proposed a Hazardous Materials Management Program aimed at monitoring hazardous waste generators, prevention of illegal dumping, improved emergency spill response and preparation of a hazardous waste management plan. To achieve these ends, the program proposes that: (1) a survey be undertaken to identify all hazardous waste generators countywide by 1984, with annual inspections thereafter; (2) all citizen complaints regarding illegal dumping be investigated and incidents abated where necessary; (3) a public education program will be undertaken to discourage illegal dumping, and a small volume hazardous waste transfer station be established for disposal of household and small business generated chemicals; and (4) a multi-agency committee be established to develop an emergency response plan. Finally, a Countywide plan for source reduction, disposal and resource recovery is proposed.

(4) Agricultural Commissioner

The Agricultural Commissioner regulates pesticides and herbicide use within the County, administering Federal, State, and local legislation. This involves issuance of pesticide application permits, monitoring pesticide storage, application and disposal, and crop inspection. State law provides the Commissioner with enforcement authority and power to establish regulations appropriate to the County.

(5) Area Emergency Services Council Hazardous Materials Incident Contingency Plan (1984)/Area Office of Emergency Services

Area Emergency Services Council was established by a joint powers agreement between the County and its cities and is responsible for preparing for and responding to all major emergencies in the County. The Council oversees the Area Office of Emergency Services which is staffed by emergency services personnel, and has the authority to command and coordinate local emergency forces during a state of emergency. A Countywide mutual aid agreement is currently in effect for general disaster preparedness and response services. The

County has adopted a Hazardous Materials Incident Contingency Plan which establishes responsibilities and actions required to provide coordinated response to hazardous material incidents within the County. In the event of an emergency, the Area Office will coordinate requests for outside assistance and provide a mobile command post with driver, if required.

(6) County Fire Chiefs' Association

The County Fire Chiefs' Association includes the Chief of each operating fire agency in the County, including the San Francisco International Airport Fire Department and the California Department of Forestry. The Chiefs meet monthly, have established a special committee to review and implement hazardous materials plans and programs, and have agreed to develop a specialized mutual aid arrangement covering County wide emergency response to hazardous materials spills and incidents.

(7) Industrial-Emergency Council

The Industrial-Emergency Council was formed in 1979 as a private/public partnership between industry and government agencies in San Mateo County aimed at reducing risk from the production, use, and transporting of large quantities of hazardous materials through emergency preparedness and response. The Council has proposed a three-phased hazardous material incident response system involving: (1) establishment of a hazardous material resource center with library and computer data bank; (2) acquisition of two emergency equipped hazardous material response vans; and (3) development of a hazardous material emergency response training program for local industry and government employees. Implementation is proceeding with public and private funding sources.

c. County Ordinance

(1) County Zoning Ordinance

(a) Resource Management (RM) District Ordinance (1974)/ Resource Management/Coastal Zone (RM/CZ) District Ordinance (1980)

The Development Review criteria of the RM and RM/CZ Zoning Ordinances require that the use of pesticides and other chemicals does not have significant or persistent adverse effects on the environment, and that use of chemical agents which concentrate in the food chain be prohibited.

(b) Timberland Preserve Zone (TPZ) District Ordinance (1977)/Timberland Preserve/Coastal Zone (TPZ/CZ) District Ordinance (1980)

The Development Design criteria of the TPZ and TPZ/CZ Ordinances require that all development be designed to use only biocides having no significant adverse environmental effects.

(c) Coastal Development (CD) District Ordinance (1980)

The CD Ordinance prohibits use of herbicides and soil sterilants under asphalt or concrete paving, and requires that pesticides be disposed of in accordance with established Federal and State standards. Disposal of oil field wastes into surface and subsurface waters is prohibited.

(2) Other County Ordinances

(a) Storage of Hazardous Substances in Underground Tanks Ordinance (1983)

Chapter II, Part Two, Division V, of the County Ordinance Code establishes an ordinance regulating storage of hazardous substances in underground tanks to protect against unauthorized discharge. Modeled after AB 1362, the Ordinance applies to the unincorporated areas, requiring: (1) local permit approval for new underground storage tanks to ensure maximum containment; (2) installation of the monitoring system for existing tanks; and (3) mandatory reporting of unauthorized leaks. The County Health Officer is charged with enforcement, and a variance procedure is provided.

(b) Hazardous Waste Producers Fee Ordinance (1983)

Chapter 17, Part Two, Division V of the San Mateo County Ordinance Code establishes a fee collection requirement for persons who produce, handle, store or dispose of hazardous waste to offset County expenses when enforcing State standards. The Ordinance is administered by the Environment Health Division.

C. HAZARDOUS STRUCTURES

1. State

a. Uniform Construction Standards

Title 24 and 25 of the California Administrative Code provide statewide construction standards reflective of the Uniform Building, Plumbing, Mechanical, Housing and Abatement of Dangerous Building

Codes as published by the International Conference of Building Official and the National Electrical Code as published by the National Fire Protection Association. The legislation requires mandatory implementation after one year unless the local agency adopts a conforming ordinance within that time.

2. County

a. General Plan Policies

(1) Elements

(a) Seismic and Safety Element (1976)

The Seismic and Safety Elements of the General Plan include several policies which pertain to hazardous structures management. In particular, the County is directed to investigate the feasibility of a program to renovate or selectively eliminate hazardous structures and improve code requirements where needed.

(b) Housing Element (1982)

The Housing Element of the General Plan directs the County to: (1) cooperate with organizations to inform housing buyers that Building Inspection services are available to inspect properties and describe existing code violations and (2) target areas of the community with detrimental housing conditions for concentrated code enforcement activities.

b. Other Policies and Programs

(1) County Residential and Commercial Rehabilitation Program (1978)

The Residential and Commercial Rehabilitation Program, administered by the County's Housing and Community Development Division, offers financial as well as technical assistance toward rehabilitating housing and small commercial structures in a number of eligible unincorporated neighborhoods including North Fair Oaks. While the program is an integral part of the County's attempt to conserve affordable housing, it also offers means to eliminate hazardous structures. Between 1975 and 1982, approximately 200 rehabilitation loans were made within the unincorporated area. Historically, loans have only been available for owner occupied properties; however, rental properties are now included.[93]

c. County Ordinances

(1) Uniform Construction Administration Code

Chapter 1.5 of Division VII of the County Ordinance Code establishes the, "Uniform Construction Administration Code of San Mateo County," consolidating the Uniform Building, Plumbing, Mechanical, Electrical and Abatement of Dangerous Building Codes in accordance with State law to regulate construction within the unincorporated area. The County Building Official is directed to administer the Code and to enter and inspect any building suspected to be unsafe, dangerous or hazardous. Whenever any construction or installation work is being done contrary to the provisions of the Code, the Building Official may order the work stopped. The Code defines "unsafe buildings" and directs that they be abated through repair, rehabilitation, demolition or removal for protection of life, health and property.

Code enforcement presently occurs when: (1) new construction or alterations are made which require a building permit, and (2) a complaint is lodged and a field inspection verifies code violation. In the first case, the new work must comply with existing codes. If the valuation of structural additions consists of 50% of existing building valuation, the entire structure must be brought into compliance with existing building codes.[94] In the second case, only those violations directly affecting health and safety must be remedied.[95]

MAN-MADE HAZARDS ISSUES

I. NOISE

A. IMPORTANCE OF REDUCING NOISE

All citizens are entitled to a peaceful and quiet environment, free from unnecessary and annoying levels of noise which may be hazardous to public health and welfare. Noise has been shown to interfere with speech, sleep and mental concentration, induce stress, headaches and a variety of physiological disorders, and disrupt overall efficiency and enjoyment of life. Therefore, it is in the public interest that the County evaluate techniques and develop policies which provide for an environment free from unnecessary, annoying, and injurious noise.

B. OPPORTUNITIES AND CONSTRAINTS TO REDUCE NOISE

Noise reduction involves analysis of land use compatibility and mitigation techniques. There are four basic approaches to reducing noise: (1) reduce the noise at its source; (2) reduce the noise along its path; (3) reduce the noise at the receiver; and (4) separate the source from the receiver.

1. Noise Control at the Source

Source noise control is generally a preferred method of noise reduction as it is less expensive and more equitable to build mitigation into the source than providing for it at the receiver. Controlling noise at its source involves reducing the level of noise emissions and/or the duration, number and timing of noise events. A summary of alternate strategies to reduce source noise is included in Table 16.8.

a. Aviation Noise Sources

(1) San Francisco International Airport

(a) Limiting Airport Growth

Limiting Airport growth is one method to reduce noise exposure. However, reducing operations to significantly reduce noise exposure would result in extreme economic, financial, air service impacts upon local, regional and international markets.[96] Further, neither San Mateo County nor the City of San Francisco maintains authority over the number of flights using San Francisco International Airport.[97] Both agencies could, however, utilize their influence to encourage routing flights to another, less noise sensitive Bay Area airports, e.g., Oakland or San Jose International Airport.

TABLE 16.8

SOURCE NOISE REDUCTION TECHNIQUES

SOURCE GENERAL	SPECIFIC	MITIGATION AT SOURCE	IMPLEMENTATION AUTHORITY	POTENTIAL DECIBEL REDUCTION (dBA)
AIRCRAFT (Airports)	Engines, exhaust systems, acceleration/deceleration devices	Design modifications, use of sound-absorbent linings and muffling	Federal	5-25
	Operational activities	Modify takeoff, approach and cruise procedures	Local	Variable
		Modify takeoff, approach and cruise routes	Federal/Local	Variable
		Redirect runways away from noise-sensitive uses	Local	Variable
		Limit hours of operation	Local	Variable
		Restrict use of airport by excessively noisy aircraft	Local/Federal	Variable
		Limit total number of operations	Local/Federal	Variable
RAILROADS	Rail/wheel interactions	Equipment and rail design modifications and parts material changes	Federal	5-10
	Propulsion system	Muffle exhaust	Federal	10-20
		Enclose with sound-absorbent material	Federal	
		Modify cooling fans	Federal	
	Warning devices	Require bells instead of air horns and whistles	Local	10-30
	Operational activities	Limit number of cars and/or locomotives in urban areas	Federal/State	10-15
		Limit number of night operations	Federal/State	Variable
		Limit speed through urban areas	State/local	5-15

TABLE 16.8 (continued)

SOURCE NOISE REDUCTION TECHNIQUES

SOURCE GENERAL	SPECIFIC	MITIGATION AT SOURCE	IMPLEMENTATION AUTHORITY	POTENTIAL DECIBEL REDUCTION (dBA)
VEHICLES (Streets/ highways/ freeways)	Tire/pavement interface	Require quieter designs (tread compounds/patterns)	Federal	5-25
		Modify type of road surface	Federal/State/Local	
		Maintain roads in good repair	Federal/State/Local	
	Aerodynamic forces	Design modifications	Federal	10-20
	Transmission and brake systems	Materials changes and design modifications (enclosure of systems)	Federal	5-15
	Engine and exhaust systems	Design modifications (better muffler systems and sound absorptive enclosures)	Federal	10-30
	Chassis and body noise	Design modifications	Federal	Variable
	Operational activities	Lower speed limits, especially at night	State (fwys)/Local	Variable
		Sequence-time traffic lights to reduce stop-and-go traffic flow	Local	Variable
		Design roads with levelest grades possible	Local	3-5
		Restrict truck routes to noise-tolerant areas	Local	Variable
		Design bus routes around noise-sensitive uses	Local	Variable
		Rigidly enforce existing operations equipment standards for noise control	Local/State (hwys)	Variable

TABLE 16.8 (continued)

SOURCE NOISE REDUCTION TECHNIQUES

SOURCE GENERAL	SPECIFIC	MITIGATION AT SOURCE	IMPLEMENTATION AUTHORITY	POTENTIAL DECIBEL REDUCTION (dBA)
STATIONARY SOURCES	Fans	Design modification and shielding	Federal	
	Transformers	Design modifications and shielding	Local	5-20
	Compressors	Relocate indoors, muffle or enclose		
	Steam discharge	Install muffler or acoustical dispersal unit		
	Heating/Ventilating/Air Conditioning	Design modification	Federal	Variable
		Muffle or limit hours of operation	Local	Variable
	Construction compressors, Earth-moving equipment, Pile drivers, Jack hammers, etc.	Limit hours and duration of operation	Federal/Local	
		Muffle or provide sound-proof enclosures	Local	10-40
		Muffle (use air exhaust system)	Local	
		Use sonic pile drivers in noise-sensitive areas)	Local	
	Outdoor operations	Structural enclosures	Local	Variable
		Limit hours of operation	Local	Variable
	Indoor operations	Insulated walk, closed windows	Local	Variable

Source: Adapted from Noise Element of the General Plan, City of Hayward, May 1977

(b) Aircraft Engine Design

Noise exposure may be reduced through aircraft engine design modification. This can involve "retrofit" of existing aircraft with quieter engines or replacement with newer models.

(c) Flight Procedures

Flight procedures, i.e. selection of runways, flight paths and scheduling significantly influence noise exposure. Construction of a new noise abatement runway or extension of existing runways would reduce residential noise exposure. However, this approach would necessitate additional Bay fill and result in severe environmental impacts on San Francisco Bay.[98] Further, the Bay Conservation and Development Commission (BCDC) firmly opposes Bay fill for purposes of Airport noise mitigation.[99]

Other methods to reduce exposure include: (1) rerouting flights away from populated areas (preferential use of designated noise abatement runways, avoiding takeoffs directed toward the San Bruno Gap and veering away from land as early as possible), (2) reducing the number of noise sensitive nighttime operations, (3) increasing flight altitude, (4) decreasing engine thrust during aircraft approaches and departures, and (5) restricting noisy engine ground tests. Economic incentives could also be developed to encourage airlines to reduce noise such as a revised formula for the calculation of aircraft "landing fees" based upon aircraft noise level and hour of operation.[100]

(2) General Aviation Airports

Noise exposure from the County general aviation airports is primarily attributed to a high percentage of training flights, characterized by low altitude flight and repeated "touch and go" passes at the runway. Source noise control measures include limiting the number of training flight operations and use of quieter aircraft.

b. Railroad Noise Sources

Approaches to control railway noise at the source include reducing the level and hours of service and replacement with quieter equipment. Reducing the level of operation, however, is not advisable, since the County encourages increased mass transit use and rail over truck freight is generally more desirable for energy efficiency reasons.

Most noise emanates from freight operations due to longer, heavier trains and operations at night. Restricting freight operations to daytime hours would require cooperation and coordination with all municipalities and users along the rail line and concurrence from the California Public Utilities Commission.

c. Motor Vehicles

(1) On-Street Vehicles

Opportunities for source noise control include use of quieter vehicles, road construction which minimizes vehicle noise and restriction of heavy trucks, buses and other major noise generators in noise sensitive areas. Local government maintains authority to regulate use and construction on local streets and roads; however, this authority does not extend to State and Federal highways.

(2) Off-Road Vehicles

Off-road vehicle noise impacts may be reduced through vehicle design changes or establishment of a facility exclusively for off-road vehicle use. Facility site selection, however, is constrained by numerous other environmental impacts associated with off-road vehicle use, including soil erosion, vegetative loss, increased stream siltation, disruption of wildlife habitats, and visual degradation.

d. Stationary Source Noise

Stationary source noise is more amenable to control measures than transportation noise. Often sources, e.g. machinery, fans and compressors, can be retrofitted with mufflers, relocated or enclosed. Facility operating hours can also be modified to provide necessary noise reduction. Stationary source noise control may also be attained through local agency regulation which sets maximum noise emission standards for fixed operations and provides authority to regulate nuisance noise.

2. Noise Control Along the Path and at the Receiver

a. Noise Control Techniques

There are a number of techniques to control noise along its path and at the receiver, including site planning, architectural design, use of noise barriers and construction practices.

(1) Site Planning

Acoustic site planning involves incorporating noise reduction techniques into the design of new development. This approach is most effective when applied to large development, such as a

planned unit development, where substantial land area is available. Techniques include locating noise sensitive buildings away from the noise source and use of the natural topography and intervening buildings to shield noise sensitive uses.

(2) Architectural Layout

Architectural layout involves careful attention to arrangement of noise sensitive spaces within a building. Techniques include: (1) grouping noise sensitive rooms, e.g. bedroom and study rooms, together and as far from noise sources as possible, (2) avoidance of windows, vents and other openings facing noise sources, and (3) avoidance of structural features which deflect noise into interior spaces. Proper architectural layout may often eliminate need for later more costly construction modifications.

(3) Noise Barriers

Noise barriers involve use of solid structures, including earth berms, walls and fencing to reduce noise exposure from ground noise sources. Effective attenuation is a function of the barrier density to insulate significant noise transmission and height to shield the receiver from the noise source. When adequately constructed, a solid wall or fence is capable of reducing noise by as much as 15 decibels.[101] Within urban settings, limiting height to six to eight feet is generally preferred to offset possible safety or aesthetic constraints. Trees, shrubs and other landscape buffering provide little noise reduction, unless very dense and of significant depth.

(4) Construction Techniques

Although all buildings provide some insulation against outside noise, exposure can be further controlled utilizing acoustic construction techniques. The roof, walls, ceilings, doors and windows are all vulnerable points for noise passage, with particular emphasis on windows and doors. Typical residential construction generally provides 12 to 18 decibel noise reduction with windows partially open. The table below reflects general noise reduction possibilities through varying building type and window condition.[102]

Building Type	Window Condition	From Outside Sources
All	Open	10 decibels
Light	Ordinary sash, closed	20 decibels
Masonry	Single pane, closed	25 debibels
Masonry	Double pane, closed	35 decibels

The average residence can be acoustically improved either during construction or "retrofitted" afterwards. Construction

modifications are generally cost effective when maximum desired reduction is limited to 30 decibels. Alternate building techniques for residential noise reduction of 25 to 30 decibels are available.[103]

A regulatory means to assure noise control can involve requiring that noise insulation standards be applied to new construction in high noise impact areas. Compliance may entail preparation of an acoustical report. Possible contents of acoustical report and criteria for selecting an acoustical consultant are included in Appendix C. Construction techniques applied to airport noise impacted areas could further involve airport-financed installation of soundproofing insulation in exchange for easements protecting the airport from liability due to aircraft noise exposure.

b. Public Education

Local education programs addressing identified path receiver noise control techniques and costs of noise mitigation could be instituted. Property owners often fail to install desired noise control measures because of a general misunderstanding of: (1) what can be done, (2) what the costs are, (3) how to undertake the project, or (4) how to select cost-effective methods or materials.

3. Land Use Compatibility for Noise Control (Source-Receiver Separation)

The ideal is complete separation of noise sensitive uses from noise generating sources. This approach is most effective in new town planning, where a noise problem has not been allowed to develop, and has limited application in developed areas where traditional urban patterns have been established. The existing Bay Area urban system evolved from a need to have residential areas within proximity to industry and commerce, connected by transportation facilities. Transportation and industry each generate noise while residential use is sensitive to it. Given that all types of land uses must integrally exist within an urban framework, the planning challenge is not complete noise exclusion, but achieving adequate noise compatibility.

Planning for noise compatibility involves determining what levels of noise exposure are acceptable for differing land uses. Although noise sensitivity is a personal judgment, the State Office of Noise Control has suggested guidelines for land use compatibility based upon a sliding scale of acceptable noise thresholds. Noise standards such as these may be used as a base in land use planning, directing noise sensitive development away from significant noise sources. In areas where general plan and zoning ordinance land use designations are not consistent with an accepted set of land use compatibility standards, redesignation and rezoning could be considered. Any revision ought to be weighed against other community needs and goals, and should be considered when alternate mitigation measures are shown unfeasible or impractical.

Condemnation through eminent domain authority would be a last resort in an attempt to reduce community noise. In most cases, this option is not recommended due to fiscal constraints, as well as irreversible social and physical impacts to existing viable neighborhoods. As a variant approach, a "transfer of development rights" compensation strategy could be considered for critical noise areas.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS FOR NOISE CONTROL

1. Airport Noise Impacts

a. Noise Control at San Francisco International (SFIA)

The noise control measures incorporated within the Joint Land Use Study and the Airport's Noise Mitigation Action Plan can effectively reduce noise exposure from SFIA. However, local implementation of both Plans is complicated by: (1) the autonomy of the Federal Aviation Administration and airline industry in making decisions regarding aircraft flight operations, particularly flight path and runway selection, and (2) the absence of local authority to regulate volume and hours of aircraft operation.

The Airport Community Roundtable provides a valuable communication link between the Airport and the surrounding communities, while monitoring implementation of the Joint Land Use Study. Although the Roundtable has spent much of its first three years on organizational and financial issues, it is working with the FAA and airlines to promote noise abatement procedures. Although the Roundtable has not yet been able to resolve many of the difficult and complex noise compatibility issues, it does serve a valuable function as a forum and vehicle for cooperation among all factions involved.

b. Airport Land Use Compatibility

The Airport Land Use Commission has been generally effective in implementing the noise compatibility criteria of the ALUC Plan for each of the County's three airports.[104] The required standards and appeal provisions contained in the Plan are adequate to facilitate noise compatible development.[105] State law also requires consistency between local general plans and the ALUC Plan. There are two specific unincorporated areas where the present County General Plan is not consistent with the ALUC Airport Land Use Plan:

(1) Country Club Park

The existing General Plan designates parcels within 70-75 CNEL contour for residential use, while ALUC standards prohibit residential use. The ALUC Land Use Plan provides an exception to allow residential use subject to demonstration of "infill."[106] The existing General Plan does not require demonstration of "infill."

(2) Moss Beach (Marine Boulevard/Cypress Avenue)

The Local Coastal Program designates parcels within 60-65 CNEL contour for residential use, while ALUC standards prohibit residential use in these areas.

The Urban Land Use Chapter will discuss this issue.

2. Stationary Source Noise Control

The County Noise Ordinance has also been effective in reducing residentially impacted noise from stationary sources and nuisance situations.[107] Within its first year, the County noise enforcement program has established a very successful record in responding to complaints and abatement of identified noise impacts.[108] However, more noise violations are known to exist than are being reported, due primarily to lack of community awareness of available relief and general acceptance or existing noise levels. Although generally very effective, the Health Department notes the Noise Ordinance as weak in three areas:

a. inability to limit commercially impacted noise;

b. lack of consideration of vibrational impacts; and

c. lack of clarification of exempted agricultural sources.[109]

Further, the Ordinance does not consider the effect of low ambient noise when determining acceptable noise levels.

While the Ordinance may be adequate within its defined scope, it is not considered the proper vehicle for land use planning decisions, as standards which are appropriate for nuisance control may be too permissive for desired noise compatibility.[110]

3. Noise Control Along Path/Receiver

The Noise Element of the General Plan establishes policy to require an acoustical analysis and noise reduction measures for all residential development, including single family dwellings, experiencing noise levels of 60 CNEL. This requirement has never been formalized as an implementing ordinance for incorporation into the development review process, an approach which is recommended.

4. Noise Land Use Compatibility

Existing Noise Element policy adopts the land use compatibility standards developed by the State as criteria to guide development within the unincorporated area. However, this approach has never been incorporated by ordinance into the development review process.

This Chapter has identified five residentially developed areas within noise exposures deemed unacceptable by the adopted Noise Element standards. Further discussion of the land use implications associated with this inconsistency is included within the Urban Land Use Chapter.

5. Summary of Noise Problems

Local noise reduction efforts at SFIA are complicated by external operational decisions of FAA and the airlines. Continued involvement by these groups in Airport Roundtable proceedings would be beneficial. Inconsistency between the current County General Plan and the ALUC Airport Land Use Plan has been identified in Country Club Park and Moss Beach.

Although considered generally adequate, identified weaknesses of the County's Noise Ordinance include inability to limit commercially impacted noise or consider low ambient noise when determining acceptable noise levels. The ordinance is also not considered the proper vehicle for land use planning decisions, as standards may be too permissive for desired noise compatibility.

Existing General Plan policy to require acoustical analysis and noise reduction measures for all residential dwellings in high noise areas has never been formalized as implemented ordinance.

Existing General Plan policy which adopts land use compatibility standards as criteria to guide new development has never been formalized through an implemented ordinance. Also, five residential unincorporated areas have been identified with noise exposures deemed unacceptable by adopted Noise Element standards.

D. ALTERNATIVES

1. Stationary Source Noise Control

As principal custodians of the Noise Ordinance, the County Health Department may pursue revising the regulations to: (1) address commercially impacted noise, (2) consider vibrational impacts, (3) clarify exempted agricultural sources, and (4) consider ambient noise levels. The Planning Division may consider establishing noise performance standards for proposed land uses (e.g., commercial and industrial activities).

2. Noise Control Along Path-Receiver

The County could consider adopting standards and criteria which require that path-receiver noise control be incorporated into the development review process. In addition to requirements for acoustical report review of all residential development in high noise exposure areas, considerations might include standards for orienting buildings, structures and landscaping, or required construction of acoustic barriers.

3. Noise/Land Use Compatibility

The County could develop and adopt regulations which establish land use compatibility standards and criteria for evaluating land use requests (e.g., development review and rezoning). The regulations could consider both exterior and interior exposures absorbed by or generated from a proposed land use. This approach is widely used by other jurisdictions in the development review process. Pending subsequent analysis, the approved standards may reflect or deviate from the State criteria adopted in the Noise Element.

The County could also resume efforts to establish an off-road vehicle facility at a site which is: (1) sufficiently large enough to attenuate noise impacts and (2) amenable to on-site containment or mitigation of identified environmental impacts.

II. AIRPORT SAFETY

A. IMPORTANCE OF AIRPORT SAFETY

Although aircraft accidents can occur anywhere, incidents which affect life and property on the ground are more likely to occur in areas immediately surrounding the airport. Residences, schools, and other occupied buildings in these areas are subject to an ever present risk from crashes or collisions, especially during take-off and landing. As San Mateo County hosts three active airports adjacent to urban land, it is essential that the County develop techniques which protect people and property from aircraft accidents.

B. OPPORTUNITIES AND CONSTRAINTS TO ACHIEVE AIRPORT SAFETY

Airport safety involves establishing measures to prevent buildings and other structures from obstructing airspace required for aircraft takeoff and landings. Techniques include application of the following concepts: (1) approach zone, (2) clear zone, and (3) approach surface.

1. Approach and Clear Zone Concept

Areas of high accident potential occur at the end of runways, in aircraft approach and departure zones, where forced landings are most likely to occur. One means to reduce accident risk in these areas is to assure that they remain free of structural development. This is the intent underlying the "approach zone" and "clear zone" concept, an integral part of current airport safety efforts. The effectiveness of this approach can be enhanced through public land acquisition measures.

2. Approach Surface Concept and Height Control

Another means to reduce accident potential is to ensure that building height not interfere with aircraft operations beyond the ends of the runway. Safe building height may be determined through developing an imaginary flat plane, sloping upward and outward from the runway,

representative of flight paths. Such a plane has been locally termed an "approach surface," and is the basis for current height control efforts.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS TO ACHIEVE AIRPORT SAFETY

1. ALUC Approach Zone and Height Control

ALUC airport safety protections applied at the County's three airports reflect current standards established by the Federal Aviation Administration. In the majority of cases, the restrictions are considered adequate and effective to avoid aircraft accident. However, groups including the Airline Pilots Association, believe that existing standards provide protection for only "straight in and straight out" flight paths and do not adequately address the "real world problems" associated with tall structures in the path of aircraft required to make an early turn departure.[111] This view has been particularly voiced at SFIA, where airport officials, airlines, and airline pilots have challenged height standards as applied to recent hotel development. ALUC's position is to rely on FAA safety standards.

2. Zoning Techniques

The "A-O" Ordinance is considered an effective mechanism to provide an extra margin of safety at Half Moon Bay Airport. The overlay district use requirements are consistent with the intent of the ALUC approach zone concept, while the height limit is more restrictive than a standard based upon actual flight path or approach surface. It should be noted, however, that while adequately providing for airport safety, the Ordinance is in conflict with the permitted uses of the underlying "R-1" District, the primary zoning for this area of the Coastside. In particular, the "R-1" Ordinance provides for single family residential development, while the "A-O" district prohibits it.

3. Summary of Airport Safety Problems

ALUC airport safety protections have been criticized by the airline profession, although existing regulations are reflective of current Federal standards.

While adequately providing for airport safety, the "A-O" Ordinance is in conflict with the underlying "R-1" district use provisions.

D. ALTERNATIVES

The County should reconcile existing ordinance conflicts discussed above during revision and updating of the Zoning Ordinance.

III. HAZARDOUS MATERIALS

A. IMPORTANCE OF REDUCING RISKS FROM HAZARDOUS MATERIALS

Safe and responsible management of hazardous materials, particularly hazardous waste, is one of the most important environmental issues facing the region, State, and nation. As society continues to depend upon chemical products and processes to enhance the quality of life, the potential for human exposure to hazardous materials increases. Some hazardous materials are known to produce serious adverse human health and environmental effects, while little is known about others. With the evolution of high technology industries in the Bay Area and the general proliferation of toxics in the environment, it is essential that local government become more involved in the management of hazardous materials, particularly through development of techniques which protect public health and safety from hazardous materials exposure.

B. OPPORTUNITIES AND CONSTRAINTS TO REDUCE RISKS FROM HAZARDOUS MATERIALS

1. Awareness of Risk Present in the Community/Inventory Data

Basic information concerning the types and amount of hazardous materials being stored and used in a community is an essential tool toward minimizing and preventing possible exposure. Advance knowledge and timely identification of hazardous materials in an emergency situation, including chemical properties, quantities present, and potential hazards, are particularly vital to effective response. Community awareness can benefit a variety of interests including fire, health, and emergency response officials, urban planners, and the general public. Health officials can benefit from advance knowledge to evaluate whether a community health risk is present and effectively and expeditiously determine the proper medical treatment to administer. Likewise, fire and emergency personnel can accurately select a fire suppression and spill containment strategy. Urban planners can utilize hazardous material data and associated risk assessment information when making land use compatibility decisions. Many also believe that there is an inherent "right" for the general public to be cognizant of the potential hazards in their community. Public awareness can prevent unnecessary panic in the event of an emergency and help alleviate concern regarding local usage. In general, once a knowledge of where, what, and how much material is present has been obtained, planning for response to incidents and upgraded prevention programs can be effectively focused at identified hazards.

No well-researched data is available which represents the exact amount of hazardous materials being stored or used in San Mateo County.[112] This is one constraint to local risk awareness. The existing regulatory structure focuses on monitoring the hazardous waste flow rather than hazardous material use and storage in general. Data is not considered reliable and does not include the numerous small generators producing less than 1,000 kg./month of wastes.[113]

One approach toward community awareness and overcoming this impediment is through public disclosure. This concept involves requiring businesses to publicly disclose the identity, nature, location, and health risks of hazardous materials being manufactured, stored, processed or disposed of on the property. Public disclosure is an extension of the "worker-right-to-know" principle currently applied to occupational safety, and has become very controversial, due to industry's reluctance to reveal detailed operational information, particularly trade secrets, to the public. Disclosure, on the other hand, can be an essential first step in a community's effort to evaluate the risks associated with hazardous materials.

2. Transportation of Hazardous Materials

Truck transport is the primary form of hazardous material movement within San Mateo County. Safe transport requires hauler registration and regular vehicle inspection for proper packaging, container integrity, placarding and documentation. Risk reduction also involves ability to monitor waste transportation from point of generation to disposal, i.e., "cradle-to-grave."

Alternate approaches to reduce hazard risk include regulating hours of hazardous material transport and roadway routing. Generally, the State has not attempted to control the routes over which hazardous materials or the periods of the day when such shipments may pass through urban areas.[114] Local governments have the authority to regulate hazardous material transport on local streets and roads. They do not have the authority to regulate transport on State and Federal highways (except bridges and tunnels). Thus, while some routing can be done at the local level, it is severely restricted.[115]

3. Spill Prevention and Incident Response

Incidents of toxic spills or emergencies involving hazardous substances are occurring with increasing regularity.[116] Accidental discharge of hazardous materials may occur either at fixed facilities, e.g., business or industries, or during transport.

Effective spill prevention and incident response is enhanced by advance knowledge of the types and quantities of hazardous material present on-site. Regular fire agency inspection to ensure for proper storage and use, in addition to providing necessary inventory information, is recognized as an effective and preferred approach.[117]

Many hazardous substances, particularly industrial solvents, are stored in underground tanks. Tanks can corrode and develop cracks, allowing leakage into the soil and groundwater basin. Alternate spill prevention techniques include controlling the design of underground tanks and requiring leak detection devices prior to installation.

When hazardous spills occur, responses such as traffic control, source identification, technical assistance, decontamination, and cleanup of

the site may be required. Often these spills cannot be handled by an individual or any single government agency acting alone, but require the services and coordinated efforts of many agencies. In order to respond quickly and efficiently to hazardous spills, pre-spill planning is essential. This may involve establishing notification requirements, identifying lines of authority, and defining scene management responsibility. Prompt notification of proper agencies and adequate scene management are essential to successful hazardous spill response. Since response to major incidents may involve multiple agencies and possibly multiple jurisdictions, it is necessary that the lines of authority are clearly defined and agreed upon.

4. Hazardous Waste Disposal

a. Disposal Processes

(1) Legal Disposal

Legal disposal of hazardous wastes may involve either discharge into sewer system or treatment, storage and disposal at an on-site or off-site facility.

(a) Discharge Into a Sewer System

The most widely practiced form of hazardous waste disposal involves legal discharge into sewer systems or surface waters.[118] These wastes are generally of high volume and low toxicity, such as rinse waters.

Sewer systems are considered appropriate for disposal of many toxic wastes, as volumes involved are generally insignificant when compared to normal sewage flow.[119] Provided industrial dischargers do not exceed required limits, sewage will normally dilute and neutralize many acid and alkaline wastes rendering them less hazardous. Under existing water quality control requirements, sewer districts regulate the amount and the type of hazardous wastes which industry may discharge into the local system. Sewer districts are further required to comply with discharge standards, including maximum toxic concentration of processed effluent. Waste pretreatment is often necessary before discharge to remain within specified limits.

Certain hazardous materials, e.g., cyanides and highly concentrated heavy metals, are unsafe for discharge into a sewer system. Illegal discharges of these materials into a sewer system can disrupt the treatment process and cause severe contamination of the surface water receiving effluent. Cases of chemical contamination at sewage treatment plants are well documented.[120]

(b) On-Site/Off-Site Treatment, Storage and Disposal

Alternate methods of disposal include on-site or off-site treatment, storage, and land disposal. On-site refers to activities at the point of generation, while off-site refers to disposal activities away from the generating site.

Hazardous waste land disposal generally involves treatment and evaporation of liquids in surface ponds followed by deposit of residual solids in a landfill. Wastes may also be packaged in drums and buried by type.

Hazardous waste landfills are quite expensive to locate, design, develop and operate as they must provide complete protection of ground and surface waters against hazards to public health and environmental resources. Landfill disposal has not been shown to offer an effective means of controlling all types of hazardous waste for long periods of time. Health hazards may exist longer than the period of containment, coupled with the increasing potential for migration of waste into groundwater reserves.[121]

On-site treatment, disposal and storage (excluding sewer discharge) typically involves chemical processing to reduce toxicity, solar evaporation using surface impoundments, incineration, land disposal, or recycling. Alternative technologies include chemical, physical and biological processes to neutralize wastes and/or reduce waste volume. The vast majority of on-site facilities are those temporarily storing hazardous waste before transfer to an appropriate landfill, or recycling or treatment/disposal facility.[122] Storage areas can be as small as 55 gallon drums or as substantial as underground tanks, lined or unlined pits, ponds and lagoons. Problem areas associated with on-site waste management include inadequately constructed and lined ponds which allow seepage of waste material.[123]

(2) Illegal Disposal/Small Waste Generators

Safe and responsible management of hazardous materials is constrained by increasing incidents of illegal disposal. Three general categories of illegal disposal include:

(a) Illegal Disposal Into Sewer Systems

Illegal disposal in sewers can cause rapid deterioration of the sewer system, potential human health hazards, and contamination in receiving waters. Very few local agencies have sufficient regulatory staff assigned to

identify and prosecute violators. The extent of this form of illegal disposal is unknown.

(b) Disposal at Nonhazardous Landfill Sites

Illegal dumping occurs at nonhazardous landfill sites (Class II and III), which are authorized to accept only domestic and other refuse. Hazardous wastes have been concealed within residential and commercial waste, precluding detection until disposal.[124]

(c) Other Illegal Disposal

Other illegal disposal includes disposal of hazardous wastes directly into streams or beside roadways. Most "midnight dumping" occurs in sparsely populated areas, posing potential threat of soil or stream contamination, as well as, human health through accidental exposure.

Incidents of illegal disposal will continue to increase as operating costs for authorized disposal sites rise. Generally, industry recognizes the importance of proper management and disposal of hazardous wastes and is acting responsibly.[125] Small generators (small business and households) on the other hand, are largely unaware of the hazardous waste problem and tend to view current regulations as not pertaining to them. Small generators are also less able to incur the costs of proper disposal, and may attempt to cut operating costs by illegally dumping.[126]

Major hazardous waste problems currently faced by small generators include: (1) a lack of knowledge regarding hazardous waste disposal regulations, proper disposal and recycling methods, the threat posed by hazardous waste, and processes to reduce waste generation; (2) the costs of legal disposal and recycling options; and (3) lack of incentives, both positive and negative, to encourage proper disposal, recycling or reduction in waste generation.[127]

Local government can be effective in providing hazardous material management for small generators. Opportunities include curbside collection for domestic and commercial users or provision of a small volume hazardous waste transfer station. Curbside collection has the advantage of requiring minimal effort on the part of the small generator but demands expensive trained collection personnel and special equipment. A drop off transfer station has the advantage of allowing storage until sufficient quantities are collected for economically practical transfer to a major disposal or recycling facility. Both, however, demand trained personnel and special equipment.

b. Contaminated Sites

The prevalence and ongoing discovery of numerous contaminated sites from past hazardous waste disposal activities pose a potential threat to public health and safety. The laws regulating operation and closure of hazardous waste disposal sites have changed markedly over the last few years; past sites which were legally operated and closed now present potential public health threats.[128] Problems can be caused by: (1) leaching as a result of inadequate liners and/or collection systems; (2) improper closure to prevent air emissions and erosion; (3) sites which were not geologically sound; and (4) residential development occurring near the sites.

No comprehensive record is readily available identifying sites with existing problems from improper hazardous waste disposal.[129] The State, therefore, is presently conducting an extensive survey project to locate abandoned hazardous waste sites Statewide. As of 1983, 22,000 potential sites had been identified, characterized by: (1) inactive ponds, tank pits, landfills, and other past disposal sites, (2) contamination resulting from poor industrial processes, and (3) illegal disposal sites.[130]

Funding for the cleanup of closed and abandoned sites may be obtained from the waste generator, waste processor, or through expenditure of public funds. The prevailing approach places primary financial responsibility on waste generators and processors, with secondary emphasis on public subsidy.

c. Siting Hazardous Waste Facilities

Siting hazardous waste facilities has become a constraint to effective waste management, due primarily to vigorous popular opposition and ability for local governments to reject needed facilities for reasons other than technical safety. The local land use review process has been considered an "insurmountable" barrier to attaining necessary hazardous waste management sites,[131] primarily due to popular opposition based upon fears of health risks associated with proposed hazardous waste processing or disposal activities. Other contributing factors are that public involvement in site selection, project design, and permitting does not occur early enough, and that local facility siting decisions do not adequately consider the waste management needs of the region or the State.[132]

Approaches toward overcoming existing siting constraints involved acceptance of the principle that hazardous waste management is a burden which must be shared by all communities, and that comprehensive planning must be undertaken at the local level to identify the need for and location of feasible sites for hazardous waste facilities. Planning efforts can involve raising the community's awareness of safe waste management techniques and providing for early public involvement in the development review process.

d. Alternate Technologies/Landfill Reduction

Modification of existing production, treatment and disposal technologies offer a means to reduce the amount, hazardous nature, and need for ultimate safe disposition of hazardous waste. Alternative technologies are capable of reducing the amount and nature of wastes produced, limiting the flow of wastes to landfills, increasing existing landfill life expectancy and reducing siting demand.

(1) Treatment and Disposal Options

Treatment and disposal options include waste incineration, neutralization, precipitation, recycling, and waste-to-energy processes.[133] Application of these have been extremely limited in the past because of high costs when compared with inexpensive landfills. However, the commitment to reducing the amount of waste requiring landfill disposal has provided an impetus for developing and implementing alternative treatment and disposal technologies. Alternative technologies are becoming more attractive and economically competitive due to the following factors: (a) the State has prohibited landfill disposal of specified priority wastes; (b) disposal fees have increased markedly (from $1 to more than $18 per ton in two years); (c) the increasing cost of fuel enhances the economic viability of waste-to-energy; and (d) waste generators are now liable for future problems which may occur at landfills.[134]

Development and installation of incineration techniques is encouraged as preferred alternative to landfilling.[135] Air pollution emissions constitute the primary constraint to incineration, however, this can be reduced significantly through available control methods coupled with proper operating procedures.[136]

Recycling is another desirable approach which can serve to reduce the waste stream and demand for source materials. The growing expense of providing raw material and disposal of hazardous waste encourages increased recycling. Recycling opportunities include requiring that specific hazardous wastes determined to be recyclable be recycled and promoting efforts toward bringing waste generators and recyclers into closer contact with each other.

(2) Reduction in Waste Generated

The ideal approach to waste management is to reduce the amount of hazardous waste generated. This may involve changing consumer preference, revising production technology, and "end product substitution."[137] End product substitution involves replacing a product whose manufacture or use requires the generation of significant quantities of hazardous waste with products or processes that reduce or eliminate hazardous waste

generation. For example, some pesticide use may be eliminated through integrated pest management techniques such as crop rotation and pest resistant crop varieties. In general, as disposal costs and liability for improper disposal increase, generators will hopefully seek processes which produce less toxic materials.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS TO REDUCE RISKS FROM HAZARDOUS MATERIALS

The following is a summary evaluation of existing programs and policies which respond to identified risk reduction issues. As the State has been designated the leadership role for hazardous material management in California, the evaluation primarily focuses on State efforts, with emphasis on hazardous waste disposal.

California is generally regarded to have a substantial and adequate body of law authorizing the control of hazardous materials.[138] However, the adequacy of past administration and enforcement efforts has been sharply criticized. This has lead to recent and proposed program changes aimed at improving overall effectiveness.

1. Transportation

Existing regulations governing transport of hazardous materials are considered adequate, as are the existing licensing and inspection activities for hazardous material shipments.[139] The existing manifest system has been criticized as inadequately enforced and requiring significant monitoring to assure compliance. However, the State reports that manifests are presently being checked on a computerized system which is working well,[140] and new legislation has been established which extends enforcement authority to local police officers.[141]

2. Spill Prevention and Incident Response

Existing Fire Code regulations which authorize fire agencies to require and issue permits for hazardous materials storage has been identified as an effective approach toward developing a comprehensive hazardous material inventory necessary for spill prevention planning. However, only 15% of the Bay Area fire agencies actively enforce this provision.[142] Further, the County has not adopted a disclosure mechanism to broaden existing incident prevention and response capability.

State and local legislation which require registration and licensing of underground tanks storing hazardous materials is also considered an effective means for spill prevention planning. Key features contributing to adequacy include regular monitoring and required leak detection device installation. However, the State presently has no authority over tank design control and existing regulations only extend to underground, rather than also above ground, tanks and storage.

Finally, State Hazardous Material Incident Contingency Plan is recognized as an effective step in providing a statewide system to protect the public from hazardous material spill situations,[143] and the County Office of Emergency Service's and Industrial Emergency Council's efforts towards emergency preparedness planning and incident response appear effective. However, most spills have historically been responded to by local fire departments, usually ill-equipped and untrained to confront hazardous material situations.[144] This has led to gaps in knowledge and inadequate training and preparedness of local personnel responsible for responding to such emergency incidents.[145] Additional training is needed to prepare local police and fire agencies for potential hazardous materials spills and to provide them with clean-up methods that better protect the public and environment.[146]

3. Hazardous Waste Disposal

a. Regulatory Enforcement

Implementation of the State Hazardous Waste Program, in particular, has been characterized as having been extremely slow, and still incomplete, particularly for licensing existing on-site treatment, storage and disposal facilities.[147] Inadequate enforcement of procedural requirements has resulted in incomplete waste generation and disposal data, insufficient inspection and control of existing operations, and restricted program support due in part to a failure to collect on-site disposal fees.[148]

The exact number of existing hazardous waste generators and facilities Statewide remains unknown, and progress toward licensing ongoing treatment, storage, and disposal facilities has been undertaken at a rate that would require 200 years to complete.[149] In the meantime, illegal or inadequate hazardous waste operations may continue undetected pending compliance inspections.

The performance of the State's enforcement efforts has been marred by a lack of funding and personnel, poor coordination among agencies, improper management of priorities and the absence of a clear set of guidelines for effective enforcement actions.[150] Alternate explanations include untrained staff with little knowledge of existing policies and procedures, inability to conduct and report proper field investigations,[151] or manage data in an efficient and usable manner.[152]

The State Department of Health Services has recently begun to develop and implement what are considered adequate policy guidelines and procedures to improve the effectiveness of their surveillance and enforcement programs.[153] Generally, the State is pursuing vigorous action against violators of hazardous waste control laws, including criminal and civil prosecution.[154] There have been gains in the number and formal training of staff (including a 34% personnel increase for fiscal year 1984-85) and quarterly inspection goals are currently being met.[155] The State has also recently made

significant improvements in licensing of existing facilities, with estimated project completion at five years.[156]

The recent establishment of memorandums of understanding between State and counties should improve existing enforcement inadequacies. Local hazardous waste management programs, like that proposed by the County Health Department, are recognized as an efficient means to identify violations and provide effective monitoring of numerous generators throughout the State.[157] The State estimates that within the 1984-85 fiscal year, approximately 40% of all generators will be covered by a local inspection program.[158] Efforts at the local level should effectively result in a more representative hazardous waste data base. To further improve data management abilities, the State has recently established a new computerized information system which is considered adequate, subject to increased staffing.[159]

b. Illegal Disposal/Small Generators

Existing State regulations do not adequately provide for the small generator of hazardous waste. Neither an established program nor economic incentives are provided to encourage legal and responsible small volume waste disposal. To partially offset inadequacies, however, the County Health Department's proposed Hazardous Materials Management Program includes establishment of a small volume hazardous waste transfer station and a public education program to discourage illegal dumping.

c. Facility Siting

The existing hazardous waste facility planning and siting process is criticized as not fully capable of providing necessary treatment and disposal facilities.[160] In response, the Hazardous Waste Management Plan is regarded as laying excellent ground work for future successful siting of environmentally sound and needed hazardous waste management facilities. However, the proposal for State preemption over local decisions in facility siting is not considered the adequate approach, as any appeal of a local government's land use decisions is more appropriately handled by the courts, rather than by a State agency.[161] In addition, the County Health Department's proposed Hazardous Materials Management Program provides an effective means toward development of a plan to determine need and location of possible transfer, treatment, and resource recovery facilities within the County.

d. Waste Reduction/Alternative Technologies

Critics argue that overall policy guidance for the State Hazardous Waste Program has hindered development of aggressive programs to promote waste reduction, increased recycling, and alternatives to land disposal of hazardous waste.[162] The State, in particular, is considered to have failed to promote the need and cost effectiveness

of alternative technology facilities and recycling programs.[163] Existing landfill ban requirements and Waste Exchange Program, however, are essential first steps toward development and implementing alternative treatment and disposal technologies.

e. Contaminated Sites

Existing survey efforts to locate contaminated sites are comprehensive and should effectively identify existing areas Statewide.[164] However, funding to clean up known contaminated sites is considered inadequate in relation to required costs; at present, funding Statewide clean-up will take at least thirty years.[165]

4. Summary of Hazardous Materials Problems

Generally, past State administration and enforcement of hazardous materials legislation has been characterized as slow and incomplete. However, this has led to recent and proposed program changes aimed at improving overall effectiveness.

Existing Fire Code regulations to require permitting and allow inspection and inventory of hazardous material storage is only modestly enforced regionally. Further, the County has not developed a comprehensive disclosure mechanism to broaden existing incident prevention and response capability, and additional training is needed to prepare local police and fire agencies for potential hazardous materials spills.

In the area of hazardous waste disposal, recent personnel increases and local agency cooperative enforcement efforts should allow for safe disposal practices in the future. Funding for clean-up of past contaminated sites is considered insufficient in relation to required costs. In addition, existing State regulations do not adequately provide for disposal of small volume generation of hazardous waste.

D. ALTERNATIVES

1. Spill Prevention and Incident Response

The County may desire developing a hazardous material disclosure ordinance and encourage fire districts serving the unincorporated area to adopt existing Fire Code provisions which require issuance hazardous material storage permits. Both measures can be effective in providing necessary inventory information, beneficial to preventing accidental discharge or spills and facilitating efficient accident response and containment.

The Governor's Office for Toxic Substances Control has drafted a model "Hazardous Materials Disclosure Ordinance." The model ordinance requires that disclosure forms be filed as a condition of business license renewal and provides for exemption of consumer products and amounts less than 500 pounds or 55 gallons. Required information includes types of materials, quantity present, location and method of

storage, handling procedures, as well as acute and chronic health effects. Primary responsibility for maintaining disclosure files is assigned to the local health officer and files are open to the public. A provision for protection of trade secrets is included and modeled from the existing law.

Within Santa Clara County, twelve cities and the County have adopted a standardized hazardous materials disclosure ordinance.[166] The ordinance, which is similar to the Governors' model ordinance, requires any business storing hazardous substances to secure a permit from the city in which it operates, including submittal of hazardous materials inventory statements and building plans identifying the exact location of storage areas. With computer assistance, the ordinance is providing emergency personnel necessary data to quickly identify the nature and scope of any hazardous materials incident occurring within their jurisdiction.

Alternate approaches to improve emergency response recommended by the County Health Department, include providing: (1) 24-hour response capability with two fully equipped and manned hazardous material response vans, (2) safety training covering proper handling and storage techniques, and incident response procedures for both emergency personnel and workers who handle hazardous materials, and (3) coordination for control, clean-up, and disposal.[167]

2. Hazardous Waste Disposal

The County can be effective in providing hazardous waste management for small generators. Alternate approaches discussed include curbside collection from domestic and commercial users or provision of a small volume transfer station. Adoption of the Health Department's proposal to establish a transfer station for disposal of wastes produced by households, small businesses, and other small generators, as well as a mass education program to discourage illegal disposal is encouraged. In 1983, the City of Palo Alto sponsored a pilot program offering free drop-off of residential hazardous materials for consolidation, transport, and disposal at an approved hazardous waste site. Overall, the project was considered a success, although only 1 to 1-1/2% residential participation was achieved.[168]

Recognizing that local government must share in the regional responsibility for hazardous waste management, adoption of the Health Department's proposal to develop a plan which would inventory local hazardous waste generation, determine needs for transfer, treatment, and resource recovery facilities, and develop criteria to identify acceptable sites within the County is also encouraged. This approach is consistent with recommendations of the State Hazardous Waste Management Council and pending legislation.

IV. HAZARDOUS STRUCTURES

A. IMPORTANCE OF ELIMINATING HAZARDOUS STRUCTURES

Unsafe construction can and has been responsible for human injury and death. At the same time, unsafe construction is a man-made hazard which is most amenable to control and elimination. It is, therefore, within the County's fundamental purpose to ensure that human health is protected and injury avoided through guarantee of safe and adequate structures.

B. OPPORTUNITIES AND CONSTRAINTS TO ELIMINATE HAZARDOUS STRUCTURES

Providing safe structures involves development of techniques which address both existing building stock and new building construction.

1. New Development

Regulating new development to conform with accepted set of construction standards is one approach toward obtaining safe structures. This technique can involve adoption of a building code to assure uniform building practice and local agency administration.

2. Existing Buildings

a. Inventory Information

Comprehensive identification of existing hazardous structural conditions is necessary as an initial step towards abatement. Conventional approaches rely upon complaint data, field observation, and building permit application. Alternate methods could involve initiating a comprehensive inspection effort or required inspection when a building transfers ownership.

b. Rehabilitation Strategies

Rehabilitation of existing building stock is another method toward safe structures and may involve voluntary or mandatory approaches. Mandatory approaches include requiring complete structural rehabilitation when building improvements are proposed or complaints filed.

Voluntary rehabilitation efforts often are constrained by construction costs, including local agency approval. Public financial rehabilitation assistance can often offset this constraint. In high market value areas, rehabilitation of substandard structures is usually economically feasible and may result as a response to market incentives.

c. Demolition

Demolition of unsafe buildings is another method to eliminate hazard risk. Many times, however, demolition can result in reducing the

housing supply, particularly affordable housing, and removal of older structures with redeeming architectural features. These effects can be offset by zoning techniques, such as provision of density bonuses to incorporate affordable housing when replacement building are constructed, as discussed in the Housing Chapter.

C. EVALUATION OF EXISTING PLANS, POLICIES AND REGULATIONS TO ELIMINATE HAZARDOUS STRUCTURES

Existing Building Inspection efforts to ensure safe new construction and to abate existing hazardous structure situations are considered adequate with sufficient personnel and resources to effectively administer Code requirements. Approximately 80-90% of citations issued are resolved prior to referral to the District Attorney's Office for legal action. Between 160-170 notices are presently pending before the District Attorney, although very few will ultimately result in litigation.[169]

Existing code enforcement and rehabilitation programs use the Uniform Building Code as a basis for determining substandard condition and necessary improvements. It has been contended that code regulations exceed those necessary to ensure basic health and safety.[170]

Inventory information of hazardous structures conditions within the unincorporated area is not considered comprehensive, being primarily derived from complaints filed, field observation, and building permit application. Existing Housing Element inventory data is based upon surveys and omits hazardous nonresidential buildings.

Although the demand for rehabilitation assistance is greater than available funding, County efforts are considered adequate, with sufficient personnel and organization to implement existing programs. An inherent shortcoming which thwarts project effectiveness, however, is its voluntary nature.[171] As costs required to rehabilitate a structure for code compliance escalate because of building conditions, property owners many times are reluctant to participate in loan programs.

1. Summary of Inadequacies

Although current efforts to administer code requirements are considered adequate and effective, violations are not remedied in a timely manner and existing enforcement authority limits development of a comprehensive hazardous structure inventory. In addition, code regulations have been considered to exceed the standard necessary for basic health and safety. Finally, the County Rehabilitation Program is considered adequate, although voluntary involvement may serve as a disincentive for participation.

D. ALTERNATIVES

As a means to expedite remedy of outstanding violations, the County may establish authority to record citations through a public disclosure process similar to a lien. Such an approach would openly inform all prospective buyers of violations on the property, encouraging prompt resolution. The strategy would also eliminate much staff time presently spent researching permit histories for real estate agents.

Among alternate approaches to develop a more complete hazardous structures inventory, the County could consider either: (1) undertaking a program of comprehensive inspection of all existing structures to assess hazard risk, or (2) requiring inspection each time a building transfer ownership, as has been instituted in other jurisdictions. Presently, however, inspection authority is limited to demonstration of reasonable cause and both options would require a considerable increase in fiscal resources.

MAN-MADE HAZARDS FOOTNOTES

[1] Charles H. Southwich, Ecology and the Quality of Our Environment, Van Nostrand Reinhold Company, (1977) p. 24.

[2] Title 21 of the California Administrative Code sets 65 CNEL as the maximum permissible noise external exposure from aircraft sources on residential land uses. The State Office of Noise Control sets 70 CNEL as the maximum acceptable noise level for new residential construction providing necessary noise insulation features are included in the design. See San Mateo County Airport Land Use Commission (ALUC) Airport Land Use Plan, March 26, 1981, p. A-1; San Mateo County Noise Element of the General Plan, 1978; p. 3, Appendix E; Joint Powers Board, Joint Action Plan to Improve Compatibility Between San Francisco International Airport and Environs Area, (1980) p. 3.

[3] Karl Kryter, The Effects of Noise on Man, 1970: p. 161.

[4] U.S. Environmental Protection Agency, "Levels Document", March, 1974; p. 40. A maximum eight hour exposure of 75 decibels has been identified providing the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24 hour average, i.e. no greater than 60 dB.

[5] Noise Element, p. 28.

[6] Joint Action Plan, p. F-3 - F-6.

[7] Noise Element, p. 28.

[8] Joint Action Plan, p. 3.

[9] Ibid., p. 6.

[10] Ibid.

[11] Noise Monitoring Reports (1980-1983) as submitted to satisfy State Airport Standards, available from County Planning Division.

[12] Joint Action Plan, p. 5.

[13] Ibid.

[14] Ibid., p. 3.

[15] Adapted from Joint Action Plan, p. II D-38, Ibid., p. 12.

[16] Ibid., p. 12.

[17] Conversation with Ray Burdick, Airport Manager, San Carlos Airport, November 16, 1983.

[18] Noise Element, p. 34.

[19] Ibid.

[20] Conversation with Don Thomas, Office Engineer, Southern Pacific Railroad Company; March 7, 1984.

[21] Ibid.

[22] Noise Element, p. 48.

[23] Noise Element, p. 49.

[24] Conversation with H. F. Cavanaugh, CalTrans Railroad Consultant, March 7, 1984.

[25] Noise Element, p. 44.

[26] Noise Element, p. 45.

[27] Ibid.

[28] Review of composite Noise Exposure Maps, prepared by Charles M. Salter and Associates, maintained at the Planning Division office.

[29] William Spangle and Associates, Site Evaluation For Off-Road Recreational Vehicle Park, prepared for San Mateo County Planning Director, June, 1980: p. 2.

[30] Conversation with Sergeant Bentley, County Sheriff's Department, March 11, 1984.

[31] Conversation with Tom Rivard, Noise Ordinance Enforcement Section, Environmental Health Division, December 21, 1983.

[32] Noise Element, p. 61.

[33] Noise Exposure Contour Maps maintained at Planning Division Office.

[34] Adapted from State Office of Noise Control Land Use Compatibility Standards.

[35] ALUC Airport Land Use Plan, p. 3.

[36] Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, (1971) p. 4-7.

[37] ALUC Airport Land Use Plan, p. 3.

[38] FAR Part 77; p. 5, Joint Action Plan, p. D-1.

[39] Conversation with Larry Siders, ALUC staff, April 5, 1983.

[40] ALUC Airport Land Use Plan, p. 9.

[41] Ibid.

[42] Joint Action Plan, p. II G-13.

[43] Association of Bay Area Governments, Hazardous Spill Prevention and Response Plan, December, 1982: Volume I, p. III-1.

[44] General Accounting Office, EPA is Slow to Carry Out its Responsibility to Control Harmful Chemicals (Doc. no. CED-82-43, 1980).

[45] N. Irving Sax, Dangerous Properties of Industrial Materials, 1968, p. 3.

[46] San Mateo County Department of Health Services, Proposed Hazardous Materials Management Program For San Mateo County, January, 1984, Attachment XIII.

[47] ABAG, Hazardous Spill Prevention and Response Plan, p. IV-10, San Mateo County Solid Waste Management Plan (Hearing Draft), 1983, p. VIII-3.

[48] Solid Waste Management Plan, p. VIII-11.

[49] California Department of Food and Agriculture, Report on Environment Assessment of Pesticide Regulatory Programs San Francisco County Component, (1978) p. 6-3.

[50] ABAG, Hazardous Spill Prevention and Response Plan; Volume II, Industrial Emergency Council, Proposal For Hazardous Material Incident Response System; p. 7-11, San Mateo County Area Emergency Services Council, Hazardous Materials Incident Contingency Plan, 1983, p. 3. Map available for public review at County Planning Division Office.

[51] San Mateo County Department of Health Services, p. 3.

[52] ABAG, Hazardous Spill Prevention and Response Plan, Volume I, p. IV-10; Ibid., p. 2.

[53] ABAG, Ibid.

[54] Conversation with Jim O'Donnell, Director - Industrial Emergency Council, January 23, 1984.

[55] Ibid.

[56] ABAG, Hazardous Spill Prevention and Response Plan, Volume II: p. 8.

[57] Industrial Emergency Council, The Industry and Fire Service Tie Line (newsletter), October, 1981, p. 1-2.

[58] Ibid., January, 1983, p. 1.

[59] Half Moon Bay Review, October 6, 1983, p. 1.

[60] Peninsula Times Tribune, February 3, 1982, p. B-1.

[61] Presentation by Mark Kosteiney, Director, San Mateo County Environmental Health Division, April 11, 1984.

[62] Conversation with Paul Dana, Hazardous Waste Specialist, San Mateo County Environmental Health Division, January 3, 1984.

[63] Letter from Pacific Gas and Electric Company to Phillip Duffy, Director of Environmental Health, October, 1983.

[64] State Department of Health Services, EPA Notifiers of Hazardous Waste Activity - San Mateo County, September, 1983; San Mateo County Department of Health Services, Proposed Hazardous Materials Management Program for San Mateo County: p. 2; Hazardous Waste Management Council, Hazardous Waste Management Plan, January 1984: p. 77.

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[66] Presentation by Mark Kosteiney, April 11, 1984.

[67] Ibid., Conversation with Paul Dana, January 18, 1984.

[68] State Hazardous Substance Task Force, Toxics Management in California, 1983: p.10.

[69] ABAG, Hazardous Waste Management, p. 78.

[70] San Mateo County Department of Health Services: p. 2.

[71] Association of Bay Area Governments, Environmentally Dangerous Waste in the San Francisco Bay Area, December, 1977; Letter from ABAG, to Robert Sans, Director of Public Works, December 27, 1983: p. 5.

[72] San Mateo Times, October 19, 1983, p. IV-I.

[73] Adapted from information provided by State Hazardous Waste Management Plan: p. 77, San Mateo County Department of Health Services: p. 2, Solid Waste Management Plan, p. VIII-4.

[74] Ibid.

[75] Solid Waste Management Plan, p. VIII-7.

[76] Ibid., p. 43.

[77] Solid Waste Management Plan; p. VIII-13, San Mateo County Department of Health Services, p. 3.

[78] San Mateo County Department of Health Services, p. 2.

[79] Ibid., Attachment XIII.

[80] Presentation by Lorene Jackson-Russell, Association of Bay Area Governments; April 26, 1984.

[81] San Mateo Times, October 19, 1983, p. IV-I, Peninsula Times Tribune, January 13, 1984, p. A-1, A-10.

[82] San Mateo County, Seismic and Safety Elements of the General Plan, December, 1976, p. 12.

[83] Ibid.

[84] San Mateo County, Housing Element of the General Plan, December, 1982, p. 44.

[85] Ibid., adapted from p. 45.

[86] Conversation with Paul Schmidt, County Building Official, December 5, 1983.

[87] Joint Powers Board, p. 13.

[88] San Francisco Airports Commission, Airport Noise Mitigation Plan, April 7, 1981: p. 8; San Francisco Examiner, October 13, 1983: p. B-1.

[89] Spangle, p. 2-3.

[90] Opinion by Michael Murphy, Deputy District Attorney, August 1, 1983.

[91] State Hazardous Substance Task Force, p. 21.

[92] Resolution 44785.

[93] Housing Element, p. 76-77.

[94] Conversation with Paul Schmidt, Building Official, April 18, 1984.

[95] Ibid.

[96] Joint Action Plan, p. 22.

[97] Opinion of P. J. Doyle, Administrative Law Judge, in Variance issued by State of California to San Francisco Airports Commission, June 7, 1983: p. 13.

[98] Joint Action Plan, p. IVB-22.

[99] Ibid., p. IVB-121.

[100] Ibid., p. 18.

[101] City of Hayward; Noise Element, "Draft Technical Supplement", May 1977: p. 39.

[102] Federal Highway Administration, Policy and Procedure Memorandum 90-2, February 8, 1973.

[103] Techniques to reduce residential noise 25-30 decibels may be obtained from Planning Division office.

[104] Conversation with Larry Siders, ALUC Staff, April 3, 1983.

[105] Ibid.

[106] ALUC Airport Land Use Plan, p. 13

[107] Conversation with Tom Rivard, County Noise Officer, April 6, 1984.

[108] Ibid.

[109] Ibid.

[110] Ibid.

[111] Letter from Airline Pilots Association to City of Millbrae, March 29, 1983.

[112] Conversation with Mark Kostielney, Director, County Environmental Health Division, April 11, 1984.

[113] State Hazardous Substance Task Force, p. 1.

[114] Ibid., p. 41.

[115] ABAG, Hazardous Waste Management, p. 28.

[116] State Hazardous Substance Task Force, p. 44; San Mateo County Department of Health Services, p. 3.

[117] ABAG, Hazardous Spill Prevention and Response Plan, Volume I, p. V-3.

[118] Hazardous Substance Task Force, p. 3.

[119] Ibid., p. 4.

[120] Ibid.

[121] ABAG, Hazardous Waste Management, p. 13-16, State Hazardous Substance Task Force, p. 28-29.

[122] State Hazardous Substance Task Force, p. 7.

[123] Michael Belliveau/Citizens for a Better Environment (CBE), On-Site Hazardous Waste Management in the San Francisco Bay Area, September 1981, p. 4-5.

[124] ABAG, Hazardous Waste Management, p. 8-9.

[125] Solid Waste Management Plan, p. VIII - 13, San Mateo County Department of Health Services, p. 3.

[126] State Hazardous Substance Task Force, p. 10.

[127] ABAG, Hazardous Waste Management, p. 26.

[128] State Hazardous Substance Task Force, p. 18.

[129] ABAG, Hazardous Waste Management, p. 21.

[130] State Hazardous Substance Task Force, p. 21-11.

[131] Hazardous Waste Management Council, p. 56-57, 164, 229.

[132] Ibid.

[133] State Hazardous Substance Task Force, p. 14.

[134] Ibid.

[135] Hazardous Waste Management Council, p. 28.

[136] Ibid., p. 122-123.

[137] ABAG Hazardous Waste Management, p. 19.

[138] State Hazardous Substance Task Force, p. iii.

[139] Ibid., p.42

[140] Presentation by Dwight Hoenig, State Department of Health Services; April 24, 1984.

[141] Ibid., ABAG, Hazardous Waste Management, p. 15.

[142] ABAG, Hazardous Spill Prevention and Response Plan, Volume I, p. V-1.

[143] State Hazardous Substance Task Force, p. 45.

[144] ABAG, Hazardous Waste Management, p. 28.

[145] San Mateo County Department of Health Services, p. 2.

[146] State Hazardous Substance Task Force, p. 43

[147] Michael Belliveau/CBE, p. 39.

[148] Ibid., Hazardous Waste Management Council, p. 216-217.

[149] State Hazardous Substance Task Force, p. 7.

[150] Hazardous Waste Management Council, p. 216-217, 132-133.

[151] State Hazardous Substance Task Force, p. 17.

[152] Belliveau, p. 42.

[153] State Hazardous Substance Task Force, p. 17.

[154] Hazardous Waste Management Council, p. 132-133.

[155] Hazardous Substance Task Force, p. 17.

[156] Ibid., p. 7.

[157] Hazardous Waste Management Council, p. 217.

[158] State Hazardous Substance Task Force, p. 18.

[159] Belliveau, p. 43; Hazardous Waste Management Council, p. 116.

[160] Hazardous Waste Management Council, p. 56.

[161] Letter from Chairman, San Mateo County Board of Supervisors, to Hazardous Waste Management Council, March 21, 1984.

[162] Belliveau, p. 43.

[163] State Hazardous Substance Task Force, p. 16.

[164] State Hazardous Substance Task Force, p. 20-22.

[165] Presentation by Joel Moskowitz, State Department of Health Services; April 24, 1984.

[166] Presentation by Peter W. Jones, Hazardous Materials Program Manager, City of San Jose; April 25, 1984.

[167] San Mateo County Department of Health Services, p. 6-7.

[168] Peter A. Burnes, Residential Hazardous Waste Disposal Pilot Program - City of Palo Alto, "Summary Report", March 1984.

[169] Conversation with Paul Schmidt, Building Official; April 18, 1984.

[170] Housing Element, p. 101.

[171] Conversation with Samuel Williams, Rehabilitation Specialist, Housing and Community Development Division, April 18, 1984.

MAN-MADE HAZARDS APPENDICES

APPENDIX A - COMMUNITY NOISE SURVEY

APPENDIX B - HAZARDOUS WASTE DISPOSAL FACILITIES IN CALIFORNIA

APPENDIX C - CONTENTS OF AN ACOUSTICAL REPORT

APPENDIX D - SUPPLEMENTAL BACKGROUND INFORMATION

APPENDIX A

COMMUNITY NOISE SURVEY

1. Twenty-Four Hour Measurement

Location	CNEL
End of Larchmont Drive, Broadmoor	60
252 Alta Vista Drive, Country Club Park	67
102 Fey Drive, Burlingame Hills	60
625 Vue DeMar, Moss Beach	54
End of Hillsdale Way, Emerald Lake Hills	52
End of Durazno Way, Ladera	51
Recreation Drive, La Honda	52
9th Avenue and Lorne Lane, North Fair Oaks	59
End of Stage Road South of Pescadero Road	54

2. Multiple Fifteen Minute Measurements

Portola & Francisco Street, El Granada	55
6th & Farallone Avenues, Montara	56
Vermont Avenue & Etheldore Street, Moss Beach	56
140 Tiptoe Lane, Burlingame Hills	59
2918 Adeline Drive, Burlingame Hills	60
Coyote Point, Near Castaway Restaurant, San Mateo	61
863 Larchmont Drive, Broadmoor	60
1535 Sweetwood Drive, Broadmoor	59
Grove & Randolph Avenues, South San Francisco	60
248 Alta Vista Drive, Country Club Park	72
East End of Avalon Drive, Country Club Park	68
End of Park Avenue, Moss Beach	50
California & Ellendale, Moss Beach	59
End of Bridgeport Drive, El Granada	52
Yale between Columbia & Vassar, Princeton	59
End of Baranca Road, El Granada Mobile Home Park	54
Allegheny Way & Lexington Avenue, San Mateo Highlands	51
End of Lundy Lane, San Mateo Highlands	42
End of Rainbow Drive, San Mateo Highlands	46
351 Chesham Avenue, Devonshire	49
End of Hubbard Avenue, Palomar Park	52
End of Summit Way, Emerald Lake Hills	51
2670 Marlborough Avenue, North Fair Oaks	58
Sequoia Trailer Park, Redwood City	54
Entrada Way near Berkeley, Menlo Oaks	53
End of Marion Drive, Sequoia Track	52
End of Trudy Lane, West Menlo Park	50
End of Andeta Way, Ladera	54
Swett Road, School Parking Lot, off Skyline Blvd.	45
County & Ridge Roads, off Skyline Blvd.	47

Location	CNEL
1044 Los Trancos Road, Portola Valley	48
Sears Ranch Road, Church Parking Lot, La Honda	44
230 Portola State Park Road	43
Tunitas Creek Road, 2 miles East of Highway 1	44
La Honda & Stage Roads, San Gregorio	56
North Street, next to high school, Pescadero	46
Butano Road, near Pescadero	46
Canyon Road, near Butano State Park	42

Source: Adapted from San Mateo County Noise Element of the General Plan 1978, p.62

APPENDIX B

HAZARDOUS WASTE DISPOSAL FACILITIES IN CALIFORNIA

CLASS I DISPOSAL FACILITIES

IT Environmental, Benicia, Solano County
IT Environmental, Martinez, Contra Costa County
WCCC Sanitary Landfill, Richmond, Contra Costa County
Casmalia Disposal Compnay, Casmalia, Santa Barbara County
Liquid Waste Disposal, Kettleman Hills, Kings County
BKK Landfill, West Covina, Los Angeles County
Big Blue Hills, Fresno County (open 4 weeks a year)

CLASS II-I DISPOSAL FACILITIES (BAY AREA)

Altamont Sanitary Landfill, Alameda County
WCC Sanitary Landfill, Richmond, Contra Costa County
ACME Fill, Martinez, Contra Costa County
Flannery Road Disposal Site, Flannery, Solano County
IT Environmental, Montezuma Hills, Solano County

Source: Association of Bay Area Government (ABAG), Hazardous Waste Management - A Guide for Community Involvement in the San Francisco Bay Area, September 1983, p. 8.

APPENDIX C

CONTENTS OF AN ACOUSTICAL REPORT

An acoustical report for residential development shall, at a minimum, contain the following information:

1. A brief description of the project, especially in terms of its noise sensitivity or noise-generating capabilities.

2. A scale map showing the existing setting and the proposed project, with land use and noise sources identified.

3. A quantitative description of the existing noise environment.

A noise survey should be undertaken and the details included in the report. This survey should be made in the immediate proximity of the proposed project and must include all the noise sensitive areas. For example, if the proposed development is multi-story, the measurements should cover the noise exposure of the upper stories. If it is not possible to measure there, an estimate should be based on measurements at lower levels.

The noise survey should cover the time periods during which the noise environment for the proposed project would be affected. For residential use, of course, it normally would be 24 hours/day all year round. Since it is not economically feasible or necessary to do 365 days of noise measurements to determine an annual average CNEL, the survey should therefore encompass enough days to be representative of the existing "normal" noise environment. A discussion of the similarity or dissimilarity of the measurement period compared to the rest of the year should be included. If it is known that the future noise environment will be significantly different from the existing noise environment, then the acoustical report should discuss the future noise environment.

The data obtained in the noise survey should be reported in terms of the Ldn. In addition, however, the maximum level from the major noise source and the L^{1}, L^{10}, L^{50}, and L^{50} during the measurements should be given. The maximum level from a transportation source or stationary source that can be identified is particularly important because the noise insulation standards for San Mateo County require that peak levels in bedrooms not exceed 50 dBA and peak levels in other interior spaces do not exceed 55 dBA. Because the standards speak to transportation and fixed noise sources, occasional noises such as barking dogs or children playing are not of interest. The measurements that are taken will show peak noise levels which must be insulated against.

Selection of an acoustical consultant should be limited to an acoustical engineer with a degree in engineering, architecture, physics or allied technical discipline from an accredited college or university; able to demonstrate

a minimum of two years full time experience in the following area of acoustics: transportation noise forecasting, building acoustics including party wall detailing, field measurement of environmental noise and reduction of environmental noise data.

Source: San Mateo County, Noise Element of the General Plan, 1978, p. 23.

APPENDIX D

SUPPLEMENTAL BACKGROUND INFORMATION

In response to requests by the San Mateo County Planning Commission on February 27 and March 7, 1985, the following background data was added to the Man-Made Hazards Chapter.

A. EFFECTS OF BACKBLAST NOISE

Backblast noise is characterized by predominantly low frequency noise (rumble) emanating from the rear of departing aircraft. The areas affected by backblast noise are primarily those adjacent to and west of the Airport, notably Millbrae, Burlingame and Hillsborough, related to departures over San Francisco Bay. The noise, which is vibrational as much as audible, decays very little over distance and is more capable of penetrating walls and other structures than higher frequency noise. Of the aircraft utilizing San Francisco International Airport, the Boeing 727 generates greatest backblast noise.

Existing State noise standards (CNEL and dBA) concentrate on frequencies most associated with human hearing (1,000-10,000 Hz), and deemphasizes low frequency noise (30-500 Hz). This has resulted in a situation where communities annoyed by backblast noise are not considered "Impact Areas." Though regulatory standards for low frequency noise do not exist, international standards are being considered.

Recent mitigation efforts at San Francisco International Airport include: (1) decreased use of backblast-related departure runways during noise sensitive early morning hours, and (2) prohibition of early model noise generating aircraft (Boeing 707 and DC-8). For remaining aircraft, additional routing modification has been recommended. Measures also discussed include construction of attenuating walls or screens adjacent to the airport, as well as landscaping and earth berms.

B. HAZARDOUS MATERIAL MANAGEMENT WITHIN SAN MATEO COUNTY - SUMMARY UPDATE

In August 1984, the County Health Department initiated its program toward comprehensive identification and licensing of hazardous waste generators within San Mateo County. As authorized through a memorandum of understanding with the State, the program is intended to monitor and ensure legal disposal of hazardous waste Countywide. Through survey and inspection efforts, the Department has identified and issued permits to 300-400 commercial and industrial hazardous waste generators (March 1985) with projections of 800-1,000 by project completion. The program also provides extensive hazardous material inventory information to fire and related agencies for emergency response use. In addition, on October 27, 1984, the Department, in conjunction with the County League of Women Voters, sponsored a Household Hazardous Waste Clean Out, to provide waste drop-off facilities for peninsula residents. Over five tons of hazardous wastes were collected for proper disposal.

In conformance with State and local legislation, the County Health Department has also been actively identifying and registering underground tanks presently storing hazardous materials. Approximately 800 tanks (March 1985) associated with 300 facilities have been registered with projections of 1,200-1,500 tanks by project completion.

On March 9, 1985, the County Office of Emergency Services sponsored a hazardous material response drill involving Countywide emergency and fire fighting personnel. The drill, designed to improve the County's ability to handle emergencies involving hazardous materials, was considered a success. It also provided an opportunity to utilize a specialized hazardous materials response van, acquired from the State in late 1984, for Countywide emergency response use.

C. HAZARDOUS WASTE DISPOSAL FACILITY UPDATE

1. Hazardous Waste Disposal Facilities in California

a. Class I Disposal Facilities

IT Environmental, Benicia, Solano County
IT Environmental, Martinez, Contra Coast County
WCCC Sanitary Landfill, Richmond, Contra Costa County
Casmalia Disposal Company, Casmalia, Santa Barbara County
Liquid Waste Disposal, Kettleman Hills, Kings County
Big Blue Hills, Fresno County (open 4 weeks a year)

b. Class II-I Disposal Facilities (Bay Area)

Altamont Sanitary Landfill, Alameda County
WCC Sanitary Landfill, Richmond, Contra Costa County
ACME Fill, Martinez, Contra Costa County
Flannery Road Disposal Site, Flannery, Solano County
IT Environmental, Montezuma Hills, Solano County

D. HAZARDOUS WASTE DISPOSAL FOR SMALL QUANTITY GENERATORS

The Man-Made Hazards Chapter identifies two preferred approaches for providing hazardous waste management capability to small quantity generators. Two techniques discussed include establishment of a small quantity transfer station or a curbside collection system. Through the hearing process, the Health Department clarified that the County should encourage use of private collection services which specialize in hazardous waste from commercial/industrial establishments rather than establishment of a curbside collection system.