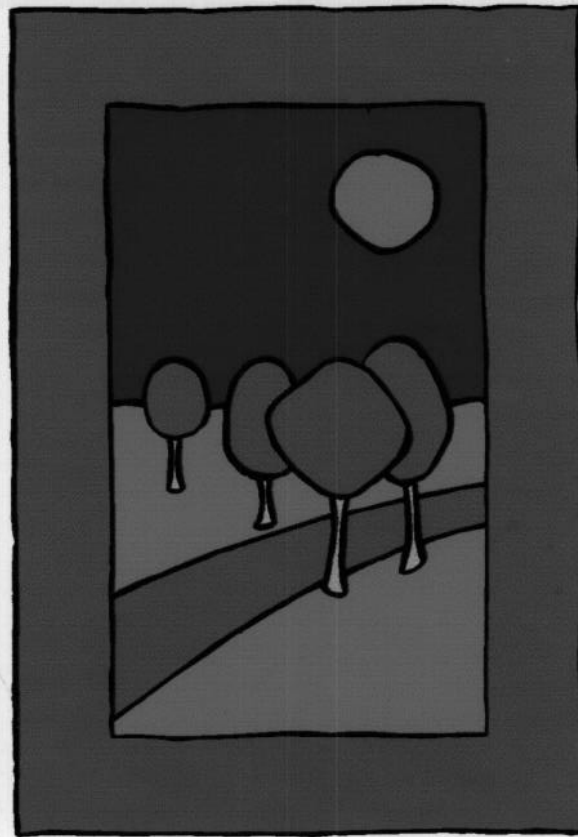


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City of Carlsbad



Citywide Trails Program Report

June 2001

THE CITY OF CARLSBAD'S
CITYWIDE TRAILS PROGRAM
REPORT

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CITYWIDE TRAILS PROGRAM REPORT

Executive Summary

Carlsbad Citywide Trail Program Philosophy:

The new Citywide Trail System has been designed with emphasis on affordability, flexibility, and ease of implementation. Cost projections have been significantly reduced compared with earlier estimates. The optimum use of volunteers will be pursued for both trail construction and maintenance, and grant funding opportunities will be explored. Trail alignments and design features have been made more flexible to provide the City with the maximum options for implementation, ranging from minimally improved dirt paths to fully improved, paved trails. The level of amenities to be provided at specific locations (such as restrooms, benches, and parking) can be determined as the trail program matures and evolves and as funding becomes available. The trail system will be built over time as development occurs or as other opportunities arise. The key point is to begin implementation of the trail program now, utilizing whatever level of resources can be provided.

The proposed Carlsbad Citywide Trails Program is visualized as a multi-use recreation and circulation system providing varied and attractive routes for pedestrians, as well as mountain and family bicyclists. Additionally, the trail system may be used for joggers and speed walkers, wheelchairs, skaters, and possibly new types of non-motorized future recreation.

An updated Citywide Trails Program is proposed at this time, for several reasons:

1. In some cases, trails have been constructed by development projects on alignments that differ from the conceptual alignment shown in the General Plan. An example is the Carrillo Ranch trails system that is far more extensive than the single trail segment shown on the conceptual map.
2. New information regarding sensitive species and habitats requires that some trail segments be moved to avoid impacts.
3. Some trail segments may no longer be feasible due to new development or environmental constraints.
4. Staff is proposing a new classification of trail that will generally parallel the Circulation Element roads and provide an alternative surface for walkers, joggers, bicyclists, and other non-motorized uses.

This updated Citywide Trails Program has two main trail classifications, Circulation Element Trails and Recreational Trails. These trail types can be adapted in several ways to suit the unique area they occupy. Flexible standards allow for the accommodation of a variety of needs and uses, as detailed below.

Circulation Element Trails are intended to supplement the vehicular roadway system to allow pedestrians and bicyclists to move more easily about the City. They are destination-oriented, like the roadway system itself. The trail may be in place of or in addition to sidewalk. It may be paved (asphalt), unpaved, or both. It may have a fence or railing in some locations or enhanced landscaping where appropriate. It may be adjacent to development or open space. The first priority should be placed on including trails in new circulation element roads that are being planned or designed at this time. Construction of trails along existing roads will be a phased process over a number of years. It is anticipated that at final completion of the system, there will be approximately 90 miles of circulation element trails including sidewalks in the City.

Recreational Trails are not destination-oriented. The purpose is recreational, to provide opportunities for outdoor exercise and for experiencing nature. The majority of trails built as part of new development will be of this type. Although some of these trails may be paved, the majority will be unpaved. The trails program anticipates 68 miles of recreational trails at completion of the system. Developers will build approximately 43.5 miles with the remaining 24.5 miles built on public rights of way or open space.

Summary of Cost Estimates:

The costs to build and maintain trails can vary widely depending on the type of trail and the number of amenities provided along the trail such as staging areas, bathrooms, fencing, etc. This report does not identify exactly what type of trail will be built in a specific area. Rather, the costs are estimates based on the average costs of building a variety of different types of trails with an average number of amenities. The amount of money budgeted each year for the system will constrain the number of trails developed, the type of trails constructed and the level of amenities provided. This funding decision will determine the ultimate type of trail system developed in Carlsbad and the pace in which it can be implemented. However, the funding need not be a deterrent to continuing with the implementation of the trails program as it can be developed slowly with only a minimal amount of funding.

There are currently 14 miles of existing trails with another 14.5 miles of trails to be acquired and built by the City. The remainder of the recreational trail system is expected to be built by private developers and dedicated to the City. The costs to acquire and build the public portions of the recreational trails are estimated at approximately \$3 million over the life of the development of the system. This report does not attempt to quantify the cost of the circulation element portion of the trail system. These portions are will be constructed as the roads are built or repaired using the same funding source as the road project or as later identified.

The costs to maintain the recreational trails at build out of the system are estimated at between \$168,000 to \$380,000 per year depending on the level of maintenance and the amount of volunteer labor available. This would equate to approximately \$3.66 to \$8.49 per household at build out.

As stated earlier, the cost estimates are based on a number of assumptions and will be incurred over a number of years as the trails system is developed. Thus, the financing is not needed all in one year. In addition, private donations, grants and volunteer labor could significantly reduce the amount of funding ultimately needed for the trails system.

For these reasons, bond financing is not recommended. The most feasible financing source would be either the creation of a Mello-Roos district, which requires a two-thirds vote by the property owners, or the General fund. Either of these methods could provide a variable amount of money over a period of time to finance both the development and the maintenance costs of the system.

Next Steps:

A number of steps are required to begin the implementation portion of the Citywide Trails Program. They include the following:

- Review the Trails Program with the Parks and Recreation and Planning Commissions.
- Hold a public workshop in order to gain input and feedback from the community.
- Assign staff to manage the trails program. For the 2001-02 fiscal year, one of the new park planners will work with the Trails team to begin the implementation process described here.
- Organize a volunteer base to assist with defraying maintenance costs and promoting the trails system. Revise the current Engineering standards for roads to include provisions for trails
- Develop a protocol for incoming project review to ensure Trails Program compliance.
- Design a brochure / trail guide and web page to promote the trails currently in existence to the community.
- Present a General Plan Amendment (Open Space, Parks and Recreation, and Circulation Elements) to City Council, including the appropriate Environmental Review
- Develop and implement the financing option as directed by City Council.

Carlsbad citizens have clearly communicated their desire for nature trails, jogging and walking paths. The Carlsbad Citywide survey asked survey respondents to rate the importance of various City facilities and programs on a scale of 0-10, with 10 representing "very important" and 0 representing "not at all important." Trails were the second highest priority after open space preservation on a list of thirteen various programs and services.

The City has been working for many years to develop and implement a comprehensive trails system, and this proposal represents an opportunity to show our citizens that we are listening to their priorities, and ready to deliver a quality Citywide Trails Program.

Recommendations:

- 1.) City Council direct staff to undertake Trails Program Implementation Actions as listed in **Appendix A** in the Citywide Trails Program Final Report.
- 2.) City Council select a preferred financing option.
- 3.) Move as quickly as possible to convert existing private trails to public trails and publicize these existing trails in order to increase public awareness of what trails are already available.

SECTION 1: BACKGROUND

Carlsbad has included trails in its planning efforts as far back as the 1973 General Plan. In 1988 the City embarked upon a comprehensive review of its open space policies and planning. The first task was preparation of a trail feasibility study, which was completed in August 1990. The study concluded that a trail system is feasible and should be pursued. That study also recommended standards for trail construction, conceptual alignments, and financing considerations.

The key results of the 1990 Trails Feasibility Study were included in a follow-up document called the Open Space and Conservation Resource Management Plan (OSCRMP), which was adopted in 1992. The OSCRMP was then incorporated in the Open Space and Conservation Element of the General Plan as part of the General Plan Update of 1995.

One of the primary mechanisms for obtaining trail easements and construction of trails is through conditions placed on new development. Since 1992, the Planning Department has been applying a standard condition to new projects requiring an irrevocable offer of dedication for a trail easement. The City has not yet been developed over enough of its land area that a significant amount of the trail system can be achieved through integration of trail needs with future development planning. It is important to note that the City intends for the detailed design and alignment of all trail segments to be determined by individual projects. The final locations for trails should be refined through project layout and site-specific design, civil engineering and environmental constraint analysis. If the dedication for a trail easement is accepted by the City, the trail is constructed as a public trail. If the City does not accept the dedication, the trail is constructed as a private trail, with the maintenance and liability being borne by the Homeowners Association.

Most of the trails constructed by new development since 1992 are private trails at this time. However, it is the City's intention that these become public trails. The conversion from private to public usage can occur when there is an adopted financing plan for maintenance and liability, and the City accepts dedication of the trail easement. One of the primary goals of the present report is to provide a recommended financing plan for City Council consideration and adoption. In addition to the financing recommendations, staff is recommending some modifications to the standards for trail construction and to conceptual alignments. These proposed modifications are outlined below.

The Citywide Trails Program for Carlsbad is visualized as a multi-use recreation corridor providing varied and attractive routes for pedestrians, as well as mountain and family bicyclists. Additionally, the trail system may be used for joggers and speed walkers, wheelchairs, skaters, and possibly new types of non-motorized future recreation.

SECTION 2: TRAILS PROGRAM OVERVIEW

Contained in the City's General Plan is the Conceptual Open Space and Conservation Map (*Exhibit A*). It shows the trail alignments that were proposed as a part of the planning efforts described above. These alignments were always intended to be conceptual and subject to change. A note on the map states: "The conceptual greenways and trails shown on this map are intended to be flexible, and should not be interpreted as depicting precise, rigid alignments. It is anticipated that the alignments of the greenways and trails may be adjusted as warranted, as better information becomes available through additional field work, further environmental analysis, more detailed planning, or similar future activities."

An updated Citywide Trails Program is proposed at this time, for several reasons:

1. In some cases, trails have been constructed by development projects on alignments that differ from the conceptual alignment shown in the General Plan. An example is the Carrillo Ranch trails system which is far more extensive than the single trail segment shown on the conceptual map.
2. New information regarding sensitive species and habitats requires that some trail segments be moved to avoid impacts.
3. Some trail segments may no longer be feasible due to new development or environmental constraints.
4. Staff is proposing a new classification of trail that will generally parallel the Circulation Element roads and provide an alternative surface for walkers, joggers, bicyclists, and other non-motorized uses.

The Proposed New Citywide Trails Program (*Exhibit B: Trails Planning Map*) consists of two classifications of trails – Recreational Trails and Circulation Element Trails.

Recreational Trails

Recreational Trails are not destination-oriented. The purpose is recreational, to provide opportunities for outdoor exercise and for experiencing nature. The majority of trails that will be built as part of new development will be of this type. Although some of these trails may be paved, the majority will be unpaved.

Many hikers on this type of trail will be attracted to densely vegetated areas where wildlife may be observed (such as streams and woodlands) or to high points where expansive views may be enjoyed. Carlsbad's varied topography and habitats provide many such opportunities, and the Recreational Trails will seek to make maximum use of these. However, responding to these desires raises other issues, such as protection of sensitive species and the acceptable gradient (steepness of slope) for a trail.

Protection of sensitive species and their habitats will be ensured by close coordination with the federal and state wildlife agencies regarding all Recreational Trail alignments.

The City's objective will be to achieve a sustainable balance between the public's desire to see wildlife and the species' need for undisturbed feeding, nesting, and other essential behaviors. The experience in other areas of the country shows that if the public is not given an adequate opportunity to approach sensitive areas, they will create their own unauthorized trails. The City and the wildlife agencies can prevent this by allowing a carefully selected point of access that satisfies the public's curiosity while minimizing impacts to the wildlife. An example of this might be to allow a trail to bridge a stream at the narrowest point in the stream, thus saving money and reducing impacts.

It is important to note that Carlsbad's open space is already criss-crossed with numerous informal trails. These trails were not authorized, designed, or constructed. They simply resulted from years of use by residents. In some cases these informal trails impinge on sensitive habitat or species. In many cases, these trails exist on private property without the property owner's permission. The objective of the Citywide Trails Program will be to formalize trails on alignments that avoid impacts to wildlife and respect private property while maintaining the public's access to open space. In accomplishing this objective, some existing informal trails will have to be closed. The understanding and cooperation of the public will be important to the overall success of the program.

In attempting to provide access to high viewpoints, the steepness of slope becomes a critical factor that interrelates with the habitat issue. The 1990 Trail Feasibility Report indicated that a gradient of 0% to 5% is optimum, and 5% to 10% is acceptable. Gradient of more than 10% was advised for distances of less than 100 ft., and switchbacks were recommended as a means of maintaining acceptable trail gradient on steeper slopes. While these recommendations are still important considerations, they are not applicable in all situations. In some locations, the trail system will need to utilize existing, informal trails or access roads that may exceed the recommended gradient. Use of these existing routes is often preferred because the construction of a new trail would result in excessive habitat impacts. In addition, some members of the public want trail segments that are more challenging. The net outcome of these factors is that the trail system will offer a variety of gradients depending on the specifics of a given situation. The majority of trails will have a gradient of less than 10%, while a few trail segments will be steeper than 10% gradient in order to give access to high points and unique view opportunities, and a variety of trail difficulty levels.

Circulation Element Trails

Circulation Element Trails are intended to supplement the vehicular roadway system to allow pedestrians and bicyclists to move more easily about the City. They are destination-oriented, like the roadway system itself. The idea for this classification arose from the recognition that the existing roadway system is not particularly "pedestrian friendly." Wide roadways and high speeds may be good for auto traffic flow but not for people on foot or on bicycles. Although it will still be necessary for pedestrians to cross major intersections, it is hoped that trails will be more inviting than standard sidewalks or bicycle lanes. For example, children may utilize these trails to go to school or to visit friends in other neighborhoods. Residents may use the

Circulation Element Trails to walk or bike to neighborhood shopping centers instead of using a car.

Any of these concept trails may be in place of or in addition to sidewalk. It may be paved (asphalt), unpaved, or both. It may have a fence or railing in some locations or enhanced landscaping where appropriate. It may be adjacent to development or open space. Each location will be unique, depending on topography, right-of-way width, and other factors. On currently existing circulation roads the City will construct these trails where possible. On future circulation roads trails will be provided by developers when building the roads, or via fees paid by developers.

Not all circulation element roads are appropriate or feasible for trails. Many existing circulation element roads do not have sufficient right-of-way to add a trail, and there may be other constraints as well. Further study of each roadway will be necessary to determine whether a trail segment is possible. The first priority should be placed on including trails in new circulation element roads that are being planned or designed at this time. Construction of trails along existing roads will be a phased process over a number of years.

TRAILS IN AREAS OF FUTURE DEVELOPMENTS

Much of the Citywide Trails Program will be constructed as part of new development projects. The OSCRMMP anticipated that implementation of the trail system would occur through the project design of public projects, design review of private projects, dedication through the subdivision approval process, and public purchases, which still holds true. Trail alignments will be reviewed as part of the review of the project as a whole, producing a well-integrated design. Environmental review and any outside permitting for the trail, such as wildlife agency permits, will be obtained as part of the project. The project developer bears the cost of constructing the trail. Recently constructed examples of this approach include Rancho Carrillo and La Costa Valley. As noted previously, these are private trails at this time. They will be converted to public trails when the City has adopted a financing plan to assume maintenance and liability.

Exhibit C provides a summary of future development areas where recreational trails will be incorporated. Some of these properties are already in the review process (such as Villages of La Costa and Calavera Heights), while others have not yet been submitted. The 1990 Trail Plan suggested alignments for many of these areas. The OSCRMMP anticipated that these alignments might need to change for various reasons. The new Citywide Trails Program does not suggest alignments within these areas. Instead, connection points with existing trails on adjacent properties are shown, and the project will be required to make these connections. Within the project, review of the trail alignment will focus on placing the trail within the most appropriate portions of the open space. In those areas of the City that are already built-up, potential exists to complete the Citywide Trails Program through improvement of existing open space corridors. In a small number of cases trail linkages will only be possible along

sidewalks and through the use of bicycle lanes within the road right-of-way. The trail system currently in place (*Exhibit D: Existing Trail System*) is provided for comparison purposes.

TRAILS ON PUBLIC PROPERTY AND EXISTING OPEN SPACE

Completion of the Citywide Trails Program will necessitate construction of trail segments across some publicly owned properties and across some privately owned open space parcels. In these cases, the City will have to bear the cost of construction of the trail, as well as the environmental analysis and any necessary permitting. In a few cases an easement for public access will have to be obtained. Alignments within these areas will require further study by the City, taking into consideration topography, habitat, adjacent uses, and other issues. The OSCRMP anticipated the difficulty/challenge of putting trails through existing areas, and addressed it in the following way: "In those areas of the City which are already built-up, potential exists to complete the Citywide trail network through improvement of existing open space corridors. In a small number of cases trail linkages will only be possible along sidewalks and through the use of bicycle lanes within the road right-of-way."

SECTION 3: DESIGN CONCEPTS AND STANDARDS

Design standards for paved and unpaved trail classifications have been identified and recommended as paved trails being a minimum of 8 ft. to a maximum of 14 ft. in width and unpaved trails being a minimum of 8* ft. to a maximum of 10 ft. in width (*5 ft. under certain circumstances, e.g. sensitive open space / habitat areas).

Trails have been divided into the following four recommended concept classes. Generally, the classes make a distinction between size, use and location of trails. All trails are depicted with a range of widths that can be adjusted to suit specific conditions.

- Unpaved Trails Design Concept A
- Paved Trails Design Concept B
- Combination Paved/Unpaved Trails Design Concept C
- Alternative Concepts for Circulation Element Trails

Unpaved Trails Design Concept A (Exhibit E). This type of trail is designated as unpaved hiking and biking trails and are typically separate from streets and sidewalks. Ideally, a minimum eight ft. wide path is preferred, however, under certain circumstances, the trail width may be reduced to a five ft. minimum.

Paved Trails Design Concept B (Exhibit F). These trails are designated as paved for both pedestrian and bicyclist users and usually would follow existing streets and sidewalks. Pedestrians would use the paved trail and bicyclists would use a bikeway, which would be separated by a painted line.

Combination Paved / Unpaved Trails Design Concept C (Exhibit G): These trails would be a combination of paved/unpaved trails. The bike portion of the trail would be a minimum of eight ft. in width and have a four-ft. high wooden fence or landscaping to help separate the trail uses.

With an estimated 13 miles of future circulation roads yet to be constructed in the City, it is important to incorporate both paved and unpaved trails into the circulation roadway plan before it is too late. *Alternative Concepts for Circulation Element Trails (Exhibit H)* will provide pedestrian and bicycle links between residential areas, schools, businesses, parks, places of employment and other areas of significant community activity.

SECTION 3A: RELATED PROJECTS

Two important related projects are the Coastal Rail Trail and the Bikeway Master Plan. The Coastal Rail Trail is a regional plan to utilize the San Diego Northern Railroad right-of-way to create a pedestrian and bicycle link from Oceanside to downtown San Diego. The conceptual alignment of the Coastal Rail Trail through Carlsbad has been included in **Exhibit B** to show how it will relate to other parts of the Trail System. Federal grant funding may be available to assist with construction of the Coastal Rail Trail, and design work is proceeding at this time.

The Bikeway Master Plan is a study intended to facilitate safer and more efficient bicycle transportation within Carlsbad. The study evaluated existing roadways and bicycle facilities and offered a number of recommendations for improvements. Although the emphasis of the study was on Class 2 bikeways (marked lanes on existing roadways), opportunities for Class 1 bike paths (separated bike trails) were also discussed and evaluated.

All three programs – Citywide Trails Program Plan, Coastal Rail Trail, and Bikeway Master Plan – are complementary and mutually supportive. It is recommended that the implementation phase of the Citywide Trails Program include consideration of ways to formalize the beneficial connections between the three planning efforts. One way to accomplish this would be to include all three in an amendment to the General Plan Open Space and Conservation, Parks and Recreation, and Circulation Elements.

SECTION 4: ESTIMATED MILEAGE

The OSCRMP (1992) described three classifications of trails – paved pedestrian and bike path, unpaved hiking and bike path, and sidewalks/bike paths. The current proposal adds a fourth classification, Circulation Element Trails, and makes adjustments to the other classifications. The new estimate of total trail system mileage is shown below: The mileage as originally shown in the OSCRMP and as revised by this proposal is shown below.

Table 1.

Trail Mileage (OSCRMP 1992)

Trail Type	Mileage
Paved pedestrian and bike path	2.0 miles
Unpaved hiking and bike path	61.0 miles
Sidewalks/bike paths	11.0 miles
Total	74.0 miles

Trail Mileage (current proposal)

Trail Type	Mileage
Paved pedestrian and bike path	12 miles
Unpaved hiking and bike path	56 miles
Sidewalks/bike paths	13 miles
Circulation Element Trails	77 miles
Total	158 miles

The above mileage estimate is approximate and subject to change as individual trail segments are approved and constructed. These figures should not be viewed as either minimums or maximums, but merely estimates based on current information. For example, unpaved hiking and bike paths are likely to exceed the estimate based on site-specific planning for new development and on publicly owned land. The mileage estimate for paved pedestrian and bike path has been increased in order to make more of the system accessible to persons with physical limitations, such as the elderly, very young children, and persons using mobility aids.

The estimate for sidewalks/bike paths has increased slightly to reflect existing conditions. This figure does not reflect all sidewalks and bike paths in the City, but only those locations where the sidewalk/bike path is functioning as the identified trail segment and it is not possible to utilize one of the other trail types. All 13 miles of this classification currently exist. It is recommended that no additional miles of sidewalk/bike path be included in the trail system.

The Circulation Element Trails will be built over a number of years as new roads are constructed and existing roads are modified. The total mileage of Circulation Element Roads at buildout will be approximately 90 miles, and of that total it is estimated that 77 miles will be suitable for construction of a trail. The full 77 miles of Circulation Element Trails represents a goal that may take twenty or more years to achieve.

A significant portion of the Citywide Trails Program has already been constructed. Approximately 14 miles of trails exist at this time, not including sidewalks / bike paths. Approximately 10 miles of these existing trails are open to the public, while 4 miles will remain private trails until the City assumes maintenance responsibility.

Table 2. Trail Mileage- Existing and Future

	Paved	Unpaved	Total Miles
Private		4	4.0
Public	1.5	8.5	10.0
Total Existing Trails	1.5	12.5	14.0
Private Construction	6.5	33	39.5
Public Construction	4	10.5	14.5
Total Future Recreational Trails	10.5	43.5	54.0
Sidewalks (existing)			13.0
Total Future Circulation Element Trails			77.0
Total			158.0

SECTION 5: LIABILITY FROM GENERAL PUBLIC

Public agencies have immunity from liability for injuries caused by a condition of any unpaved road or any trail, per California Government Code Section 831.4. This will not prevent anyone from filing a suit against the City in the event of an injury, and there are always circumstances that could nullify this immunity. However, this immunity has been liberally construed in favor of public agencies in several court decisions.

If a paved trail or sidewalk is on an easement granted to the public that provides access to unimproved property, then the City should provide adequate warnings of the existence of any condition of the trail that constitutes a hazard to preserve its immunity from liability for injuries. Warnings are required by Government Code §831.4 only where pathways are paved.

However, signage may be appropriate regardless of immunity. Staff should consider the nature of the trail and then determine if signage is needed to promote health and safety. Friendly reminder signs, or, for example, rustic, carved plaques with helpful

hints, such as “Bring plenty of water,” or “Watch out for poison oak,” may also be beneficial.

A public entity is also not liable for any dangerous condition created on public property solely by the criminal or negligent actions of a third party.

ADA CONCERNS

The Citywide Trails Program paved trail surfaces and sidewalk links will accommodate persons with disabilities wherever possible (For guidelines see **Appendix B**). Trail segments will include signage indicating difficulty levels, grade information, and accessibility information. Future City Trail Maps will also contain this information.

LIABILITY REGARDING VOLUNTEERS

Volunteers are considered employees of the City of Carlsbad for the purposes of Workers’ Compensation. They must sign a waiver agreeing to their status as such, and that workers’ compensation benefits will be the sole and exclusive remedy in the event a volunteer is injured while performing volunteer activities and services.

Safety training for trail volunteers will be per the Public Works Illness and Injury Prevention Program. The Carlsbad Watershed Network (CWN) originally organized a group of volunteers to construct the Hcsp Grove trail. The Carlsbad City Council contributed funding to this group to purchase a Kubota tractor to assist with their trail-construction efforts. The CWN has agreed to aid the City by helping to provide volunteer labor for trail construction and maintenance. The CWN should limit the number of volunteer drivers on the Kubota tractor to those who have met OSHA’s specific training and certification requirements. The Carlsbad Watershed Network should understand that this organization is responsible as well as the City for volunteer safety, and all volunteers should participate in safety training. Volunteers should not drive City vehicles.

SECTION 6: CITYWIDE TRAILS PROGRAM COST ESTIMATES

Funding for completing a Citywide Trails Program is planned as a shared cost using development, other private and public funds. Developer dedication of completed trails is expected to provide approximately 60% of the recreational trail system with the City purchasing and constructing the remaining trail segments. The cost to acquire, construct and maintain trails along the circulation element roads is expected to be paid from the same source of funding as used for road construction in much the same way as sidewalks are constructed and maintained.

The cost to build and maintain trails can vary widely depending on the type of trail and the number of amenities provided along the trail such as staging areas, bathrooms, fencing, etc. This report does not identify exactly what type of trail will be built in a specific area. Rather, the costs are estimates based on the average costs of building

a variety of different types of trails with an average number of amenities. The amount of money budgeted each year for the system will constrain the number of trails developed, the type of trails constructed and the level of amenities provided. This funding decision will determine the ultimate type of trail system developed in Carlsbad and the pace in which it can be implemented.

In 1996, Economic Research Associates (ERA) and Fieldman Rolapp and Associates (FRA) were retained to update the economic analysis of the trails portion of the Open Space and Conservation Resource Management Plan (OSCRMP). In early 1997, Council accepted the update prepared by ERA and FRA entitled the Carlsbad Trail System Cost Update (1996 Update). The 1996 Update is referred to extensively throughout the next two sections as a basis of comparison for the cost figures and methods used in this report.

ACQUISITION AND CONSTRUCTION COSTS

Recreational Trails

As shown earlier in Table 2, there is an estimated 54 miles of recreational trails still to be constructed in the City. Of this amount, 39.5 miles are expected to be constructed as a part of private development and dedicated to the City. Thus, there are no acquisition or construction costs associated with them.

The remaining 14.5 future trail miles are located on public land or on dedicated open space. These segments will need to be constructed by the City. In addition, it is estimated that the City will need to acquire approximately 1.75 miles of easements in order to complete the trail segments.

Acquisition Costs

The cost to acquire the trail easements is estimated based on recent purchases of easements for road purposes. The estimate being used by the engineering staff is currently \$160,000 to \$260,000 per acre or between \$73 and \$119 per lineal foot. The cost will vary significantly depending upon the allowable use of the land being purchased.

The 1996 Update used a much lower cost of \$39 per lineal foot of trail. The higher cost used in this report is justified due to the significant increase in property values between 1996 and today as well as recent experience in acquiring road easements. For estimation purposes, staff is assuming the easements will cost the City approximately \$200,000 per acre, or \$92 per lineal foot. Thus, the estimated cost for the 1.75 trails miles needed is \$850,000. See **Exhibit I** for the calculations and comparison to the 1996 Update.

Construction Costs

The trails the City builds may be either paved or unpaved, depending on the area through which the trail passes and slope of the easement. Staff surveyed a number of cities to determine what actual costs had been over the past few years. Cost estimates for paved trail construction ranged from \$21,000 to \$190,000 per mile for the agencies that were surveyed. The wide range was mainly due to the number of

amenities such as restrooms, signage, fencing and landscaping. The cost of unpaved trails was even more difficult to establish because many agencies built upon existing trails that required very little construction. In addition, the number of volunteers used for trail construction varied significantly between agencies. Only one agency was able to provide an actual cost for trail construction (Poway), which showed an average of \$42,000 per mile for trail only construction (no amenities).

For comparison purposes, the 1996 Update estimated average construction costs for the City financed segments at \$118,000 per mile. If this cost were escalated at the ENR index from 1996 to present, the cost would be \$128,000 per mile. The 1996 Update also provided estimated costs from the National Park Service that showed trail cost of \$174,000 per mile for paved and \$130,000 per mile for unpaved trails in 1996 dollars. Both of these figures include estimates for signage and landscaping. A comparison of these figures is shown below in **Table 3**.

Table 3. Comparison of Trail Construction Costs Per Mile Using 2001 Dollars

Source	Paved	Unpaved
Survey	\$ 21,000 - 190,000	\$ 42,000
Nat'l Park Service (escalated)	\$ 188,000	\$ 140,000
1996 Update (escalated)	Average cost \$ 130,000 (Rounded)	

Due to the wide variation in cost data, staff has chosen to use an estimate of \$130,000 per trail mile as the cost to the City for trail construction. This is the average cost shown in the 1996 Update escalated for inflation. The cost includes construction of the trail path as well as the cost of amenities including landscaping, staging areas and fencing. The development costs may be less if the City is able to take advantage of volunteers to provide some of the labor. The use of volunteers is discussed further in subsequent sections.

Using this estimate, the cost to the City to acquire the easements and construct the trails on public land or dedicated open space is expected to be in the \$3 million range as shown in **Table 4**.

Table 4. Estimated City Cost for Trail Acquisition and Construction

	Trail Miles	Cost per Mile	Total Cost
Acquire easements	1.75	\$ 485,760	\$ 850,080
Construct trails	14.5	\$ 130,000	\$ 1,885,000
Contingency (10%)			\$ 273,500
Total			\$ 3,008,580

Circulation Element Trails

There are currently approximately 64 miles of circulation element roads already built in the City and another 13 miles expected to be built over the next ten to twenty years as the City builds out. As was noted earlier, it is not expected that the City will be able to construct trails along all of these roads. As part of the implementation of this plan, it is suggested that each of the roadways already constructed be evaluated to determine if trail construction is possible and desirable for each segment. The actual construction of the circulation element trails is expected to occur over an extended period of time, as the opportunities arise, with a focus on those trails that are needed most to provide links to schools, parks, recreational trails and other public areas.

For circulation element roads that are yet to be constructed, this plan anticipates that the trail will be incorporated into the road project using the standards as shown in Exhibit C. In this manner, the trails will be developed along with the road and a separate funding source is not required.

MAINTENANCE

Maintenance costs for trails built along circulation element roads and sidewalks are not included in this analysis. The costs for these trails portions are considered in-lieu of sidewalks and therefore would be paid from the same source as all other sidewalk maintenance. Maintenance costs for the remainder of the trail system were looked at in several different ways, as actual amounts incurred varied significantly from agency to agency. Of the various agencies contacted, the costs ranged from \$2,100 to \$9,700 per mile. The variations were caused by the type of trails being maintained (paved, unpaved, fencing, etc.) as well as the number of volunteers used in the maintenance.

The 1996 Update estimated maintenance cost at build out of the trail program using a budget building approach. The report shows costs, in 1996 dollars, ranging from a low of \$2,060 per mile to a high of \$4,570 per mile. These budgets were updated and are shown in **Exhibit J**. Based on these estimates, the cost to maintain the recreational trail system at build out will be in the range of \$2,500 to \$5,900 per mile as shown in **Table 5** below.

Table 5. Annual Maintenance Costs Per Household

Range	Low	Medium	High
Maintenance costs per mile	\$ 2,537	\$ 4,044	\$ 5,882
Trail Miles to be Maintained	68	68	68
Total Cost	\$ 172,516	\$ 274,992	\$ 399,976
Estimated Housing Units at Build Out	47,100	47,100	47,100
Annual cost per housing unit	\$ 3.66	\$ 5.84	\$ 8.49

Maintenance costs may be at the lower range if a strong volunteer base is developed and if the trails are simply constructed with a low number of amenities. The fewer volunteers available and the more amenities added, the higher the maintenance costs.

On a per household basis, the costs range from \$3.66 to \$8.49 at build-out. These assume a total build out of 47,100 residential dwelling units as shown in the growth projections for the 2001-02 Capital Improvement Program. These costs would be less if they were spread over the commercial/industrial base as well as the residential.

SUMMARY OF COST ESTIMATES

- Acquisition of trail easements - \$850,000
- Trail improvements - \$2.2 million
- Annual maintenance - \$173,000 to \$400,000 per year
\$3.66 to \$8.49 per household

SECTION 7: FINANCING ANALYSIS

The 1996 ERA Study provides information about a variety of methods for financing trail acquisition, improvements, and maintenance. Significant options range from issuing debt (General Obligation bonds, Mello-Roos or Assessment District bonds or Certificates of Participation) to creating additional development fees (trail-in-lieu fees, public facility fees, mitigation funds) to other sources such as grants, volunteerism and the General fund. Many of the possible options involve the issuance of debt. In order to issue debt for a project, a revenue source would need to be identified to insure the repayment of the debt. General Obligation bonds and special districts create their own revenue source by assessing an additional tax or assessment on the property owners. Other debt issues, such as Certificates of Participation (COPs) do not create any new money, thus repayment would need to be from a current source such as the General fund or a fee program. More information on each of these methods can be found in **Appendix C**.

In addition to the public financing options discussed here, financing may be available through various grant programs or from private donations. These sources should be pursued as the opportunities arise. They are not discussed further here as the amounts that can be raised using these methods cannot be determined.

SECTION 7A: RECOMMENDED FINANCING OPTIONS

Land Acquisition and Construction of Improvements - The total costs for acquisition and construction of the Recreational trails is expected to be in the range of \$3 million. These costs will be incurred over time as the trail alignments are identified. Since the City's share of the costs to acquire land and construct trails is less than \$5 million and the timing of when the land would be needed and available for purchase is so

uncertain, a debt issue may not be an appropriate financing method. Rather the use of a Special District (Mello-Roos or a 1972 assessment district) or paying for them when needed from the General fund may be more appropriate in these circumstances.

Maintenance - Operating and capital equipment expenses are also too low to warrant debt financing and in many cases are not eligible for such. Thus, the options for paying for the maintenance are the same as for the acquisition and construction: either a special district or from the General Fund. These options are discussed further below.

SPECIAL DISTRICTS

There are a number of different types of special districts that could be formed to finance the Trail System as discussed in the Appendix D. Staff is not recommending using any of the assessment district financing options due to the strict requirements placed on this financing technique by the passage of Proposition 218. Under Proposition 218, only the costs attributed to providing a "special benefit" to the property owners within an assessment district may be assessed. Any "general benefit" portions would need to be paid by the City's general revenue sources. The calculation of special vs. general benefit would be determined by an Assessment Engineer through a detailed study. Since the Trails System is citywide, it is unlikely that a significant amount of the costs would be considered "special benefit"; therefore, the advantage of using this financing technique would be severely reduced.

On the other hand, the City could form a Mello-Roos district to finance the trails program's costs. The assessment from a Mello-Roos district is considered a tax and, as such, is not subject to the rules of Proposition 218. Since the trails program is citywide in nature, it benefits current residents as well as newly developing areas. Thus a financing option that spreads the cost among all users would be most equitable. A Mello-Roos district would allow for this. A Mello-Roos district also allows the City to assess for both the maintenance costs and the acquisition and construction costs.

The process to form a Mello-Roos District would require an engineer to calculate the formula for the tax. The tax can be spread based on any reasonable and equitable method. A notice and a ballot would be sent to all property owners in the district notifying them of the proposed tax and asking them to vote upon it. A vote of at least 2/3 of the registered voters would be required. The City would need to provide sufficient information prior to the vote to insure that the property owners were well informed about the projects they were approving and the amounts of the future taxes. The taxes cannot be increased without another vote of the property owners.

The City Council would also need to update the Council Policy on the use of Mello-Roos districts if this option was chosen. The current policy does not allow for the pass-through of the tax on residential properties.

GENERAL FUND

If General fund financing were to be used for the acquisition and construction costs, approval for this purpose would need to be obtained from the citizens due to the limitations imposed by Proposition H. Proposition H (the expenditure limitation) states *“The city shall make no real property acquisition and/or no improvement to real property the cost of which exceeds one million dollars in city funds, unless the proposed acquisition and/or improvement project and the cost in city funds is first placed upon the ballot and approved by a majority of the voters voting thereon at an election. A project may not be separated into parts or phases so as to avoid the effects of this chapter.”*

If the voters approve the trails program, a reserve could be established in the General fund for the estimated costs, which would be drawn upon as needed for trail acquisition and construction. The General fund balance as of June 30, 2001 is expected to be approximately \$55 million.

General fund financing of maintenance costs would require the addition of the costs to the annual operating budget adopted by Council each June. The maintenance costs at build-out of the system would add between \$173,000 and \$400,000 to the General fund operating budget. The use of volunteers and the quality of the maintenance would be the main factors influencing the ultimate annual costs.

SUMMARY OF FINANCING OPTIONS

1. Create a Mello-Roos district to pay for the maintenance costs as well as some or all of the acquisition and construction costs.
 - a. Requires a 2/3 vote
 - b. Places a special tax on property owners.
 - c. Provides an equitable method of spreading the cost among all benefiting property owners.
2. Use the General fund.
 - a. Recommend setting aside the amount needed for acquisition and construction from the General fund balance.
 - b. Requires a majority vote of the citizens for the acquisition and construction costs.
 - c. Does not add any new taxes or assessments.

Note: For any of the options listed below, staff recommends developing a strong volunteer base to assist in the construction and maintenance of the trails; thereby, keeping the costs at a minimum. The volunteer group may also be able to do fund raising, grant writing, trail communications, etc.

SECTION 8: NEXT STEPS

A number of steps are required to begin the implementation portion of the Citywide Trails Program. They include the following:

- Review the Trails Program with the Parks and Recreation and Planning Commissions.
- Hold a public workshop in order to gain input and feedback from the community.
- Assign staff to manage the trails program. For the 2001-02 fiscal year, one of the new park planners will work with the Trails team to begin the implementation process described here.
- Organize a volunteer base to assist with defraying maintenance costs and promoting the trails system. Revise the current Engineering standards for roads to include provisions for trails.
- Develop a protocol for incoming project review to ensure Trails Program compliance.
- Design a brochure / trail guide and web page to promote the trails currently in existence to the community.
- Present a General Plan Amendment (Open Space, Parks and Recreation, and Circulation Elements) to City Council, including the appropriate Environmental Review.
- Develop and implement the financing option as directed by City Council.

Volunteer assistance will be organized and incorporated into the Citywide Trails Program when and where appropriate. Staff will seek additional funding assistance through grant applications. Coordination and communication with adjacent cities regarding trail connections has already been initiated, and will continue in order to best utilize our joint trail resources.

Carlsbad citizens have clearly communicated their desire for nature trails, jogging and walking paths. The Carlsbad Citywide survey asked survey respondents to rate the importance of various City facilities and programs on a scale of 0-10, with 10 representing "very important" and 0 representing "not at all important." Trails were the second highest priority after open space preservation on a list of thirteen various programs and services.

The City has been working for many years to develop and implement a comprehensive trails system, and this proposal represents an opportunity to show our citizens that we are listening to their priorities, and ready to deliver a quality Citywide Trails Program.

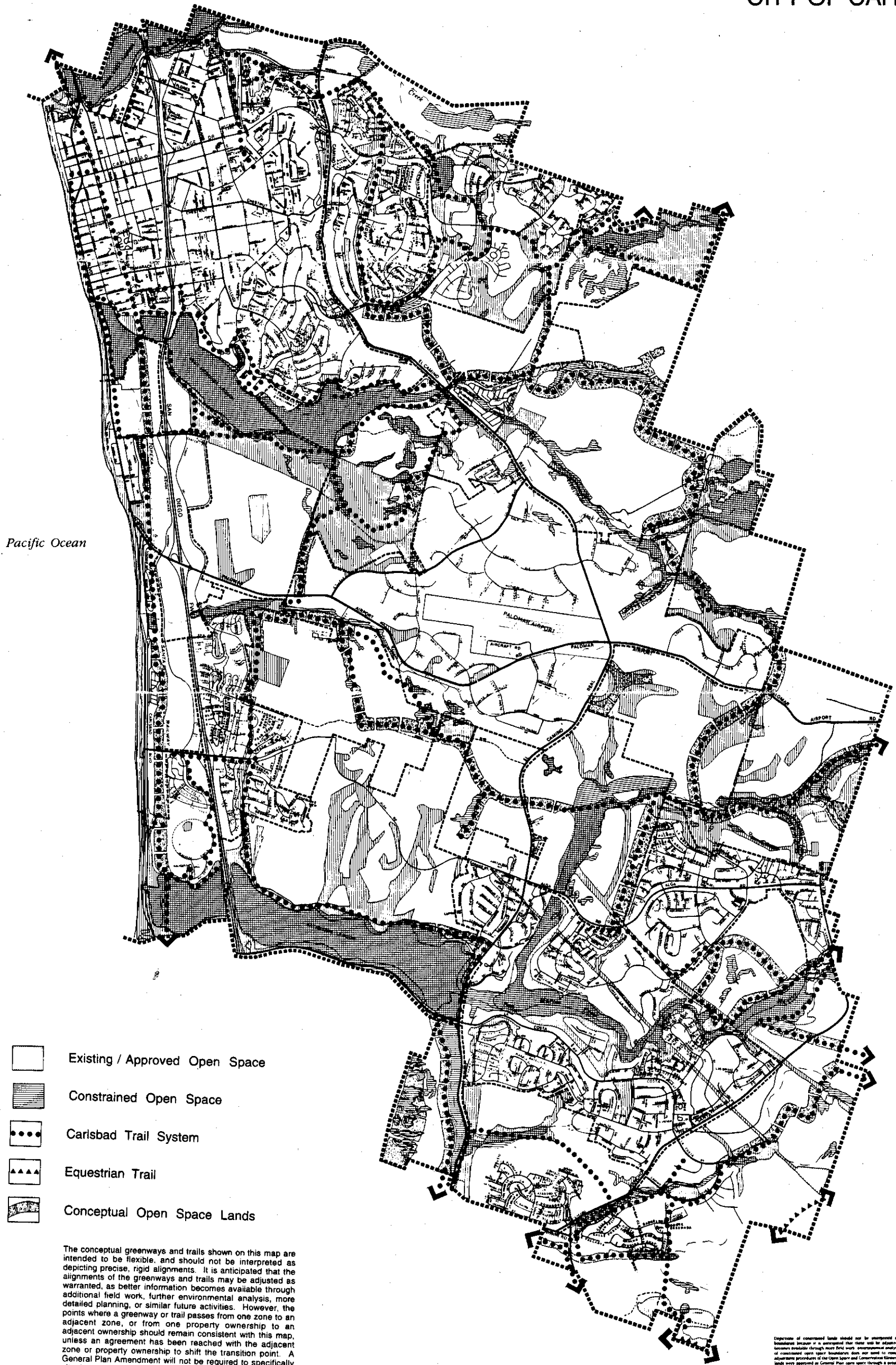
RECOMMENDATIONS

- 1.) City Council direct staff to undertake Trails Program Implementation Actions as listed in **Appendix A** in the Citywide Trails Program Final Report.
- 2.) City Council select a preferred financing option.
- 3.) Move as quickly as possible to convert existing private trails to public trails and publicize these existing trails in order to increase public awareness of what trails are already available.






CONCEPTUAL OPEN SPACE & CONSERVATION MAP

CITY OF CARLSBAD

JUNE 1994

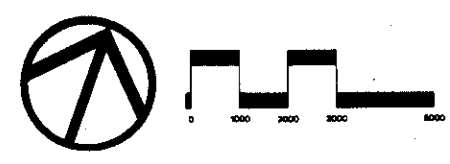


Pacific Ocean

-  Existing / Approved Open Space
-  Constrained Open Space
-  Carlsbad Trail System
-  Equestrian Trail
-  Conceptual Open Space Lands

The conceptual greenways and trails shown on this map are intended to be flexible, and should not be interpreted as depicting precise, rigid alignments. It is anticipated that the alignments of the greenways and trails may be adjusted as warranted, as better information becomes available through additional field work, further environmental analysis, more detailed planning, or similar future activities. However, the points where a greenway or trail passes from one zone to an adjacent zone, or from one property ownership to an adjacent ownership should remain consistent with this map, unless an agreement has been reached with the adjacent zone or property ownership to shift the transition point. A General Plan Amendment will not be required to specifically site the conceptual components of this plan. A General Plan amendment will be required if any component of the conceptual plan is deleted.

Depictions of constrained lands should not be interpreted as representing precise boundaries because it is anticipated that these will be adjusted as better information becomes available through more field work, environmental analysis, etc. The adjustments of constrained open space boundaries do not need to comply with the standard adjustment procedure of the Open Space and Conservation Element until the constrained lands were approved as General Plan open space through a project specific General Plan amendment.



City of Carlsbad Trails Planning Map

Exhibit B

Existing Trail Mileage

Trail Type	Miles
Existing Paved Trail	2.0
Existing Sidewalk	17.3
Existing Unpaved Trail	15.8
Total	35.1

Circulation Element Mileage

Road Type	Miles
Existing	76.3
Future	13.1
Total	89.4

- Existing Paved Trail
- Existing Sidewalk
- Existing Unpaved Trail
- Proposed Rail Trail

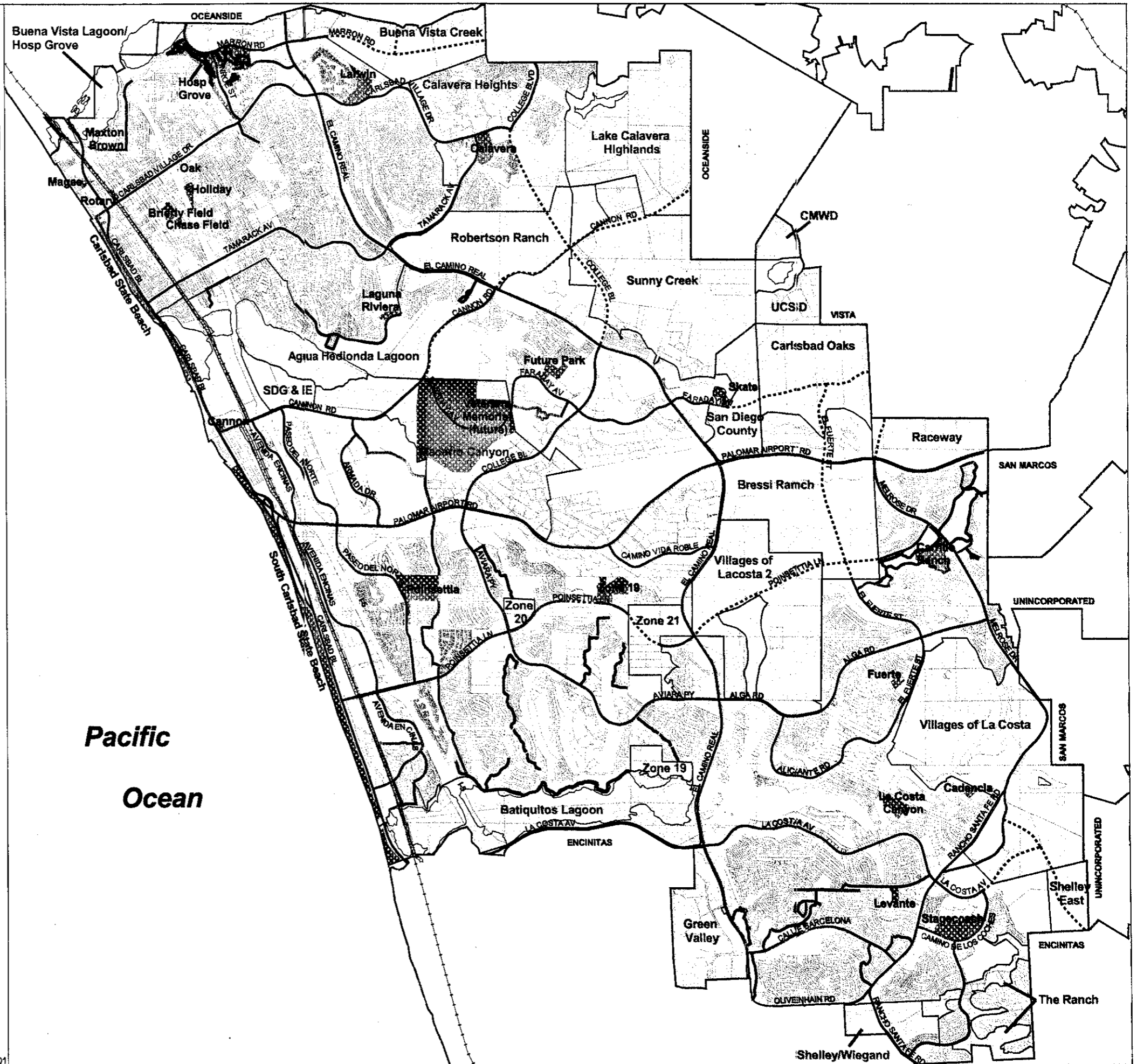
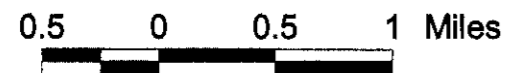
- Railroad

Circulation Element of General Plan

- Existing
- Future

- Park

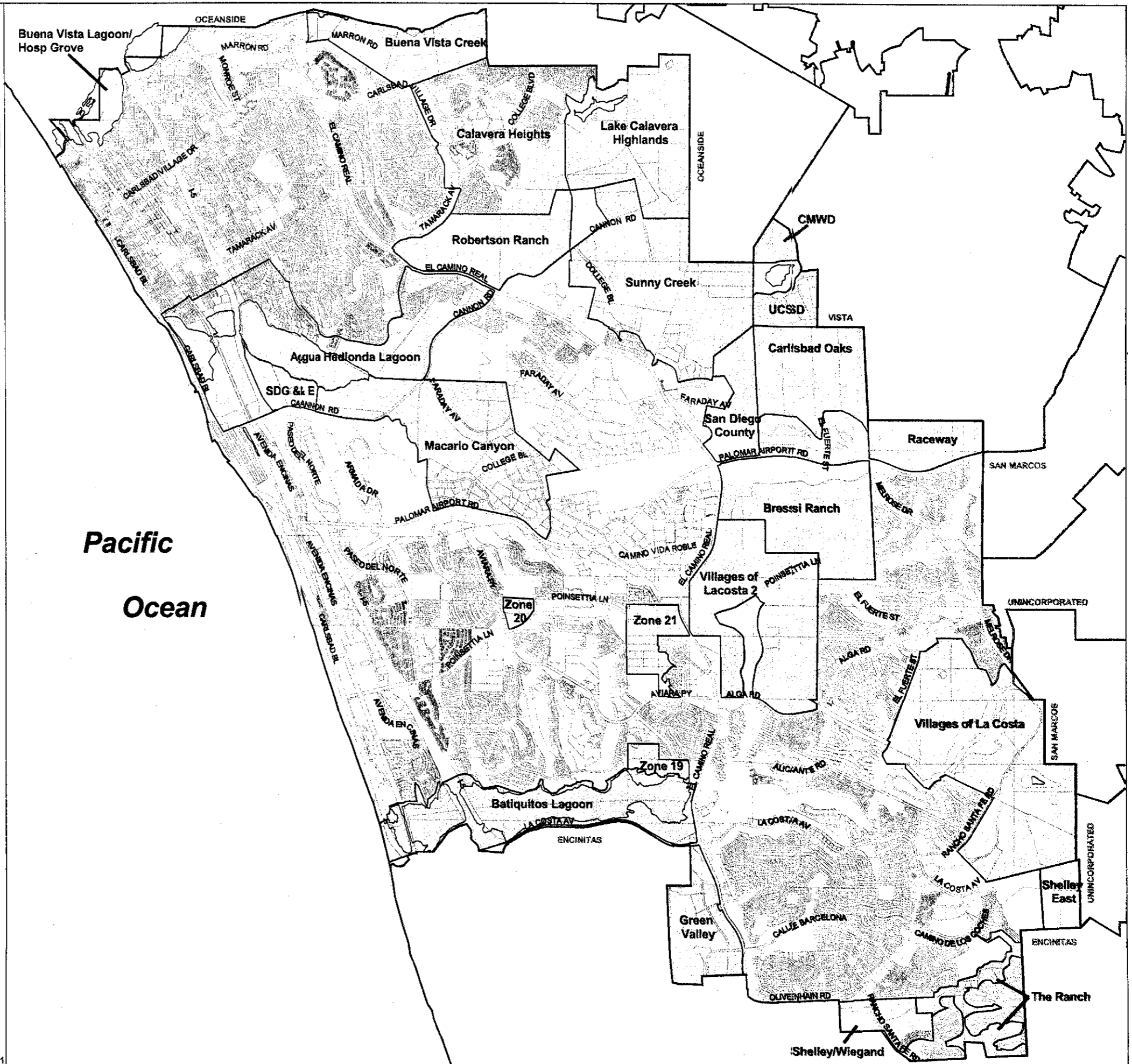
- Recreational Trails to be Constructed on Public Land or Dedicated Private Open Space
- Recreational Trails to be Constructed as Part of Private Development



City of Carlsbad Future Recreational Trails

Exhibit C

-  Recreational Trails to be Constructed on Public Land or Dedicated Private Open Space
-  Recreational Trails to be Constructed as Part of Private Development



Pacific
Ocean



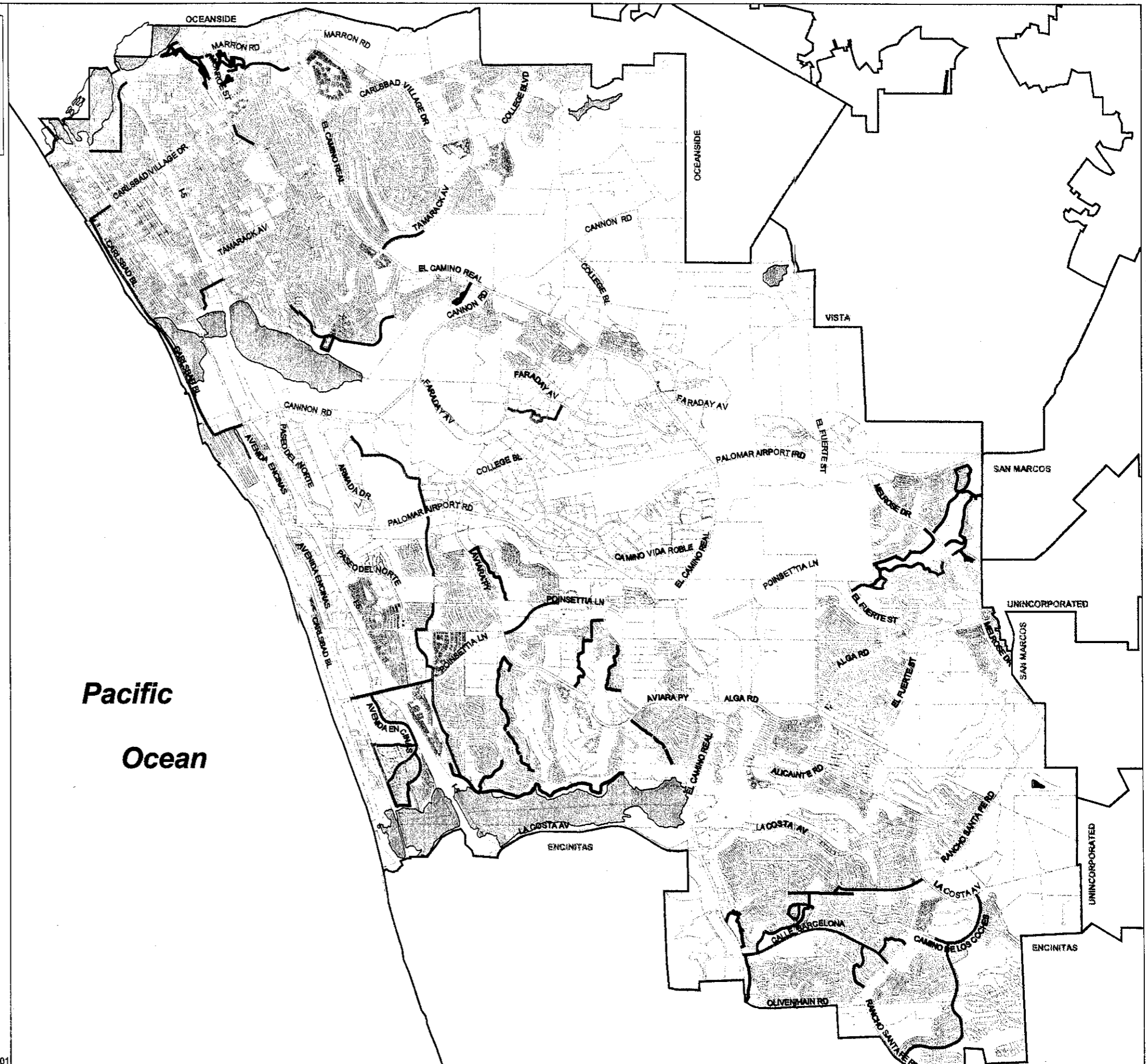
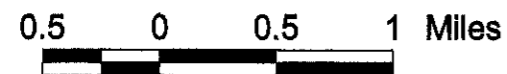
City of Carlsbad Trail System

Exhibit D

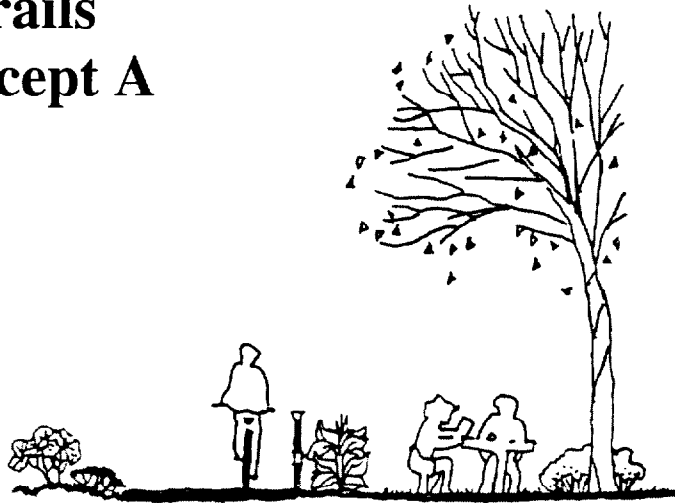
-  Existing Paved Trail
-  Existing Sidewalk
-  Existing Unpaved Trail

Trail Mileage

Trail Type	Miles
Existing Paved Trail	2.0
Existing Sidewalk	17.3
Existing Unpaved Trail	15.8
Total	35.1

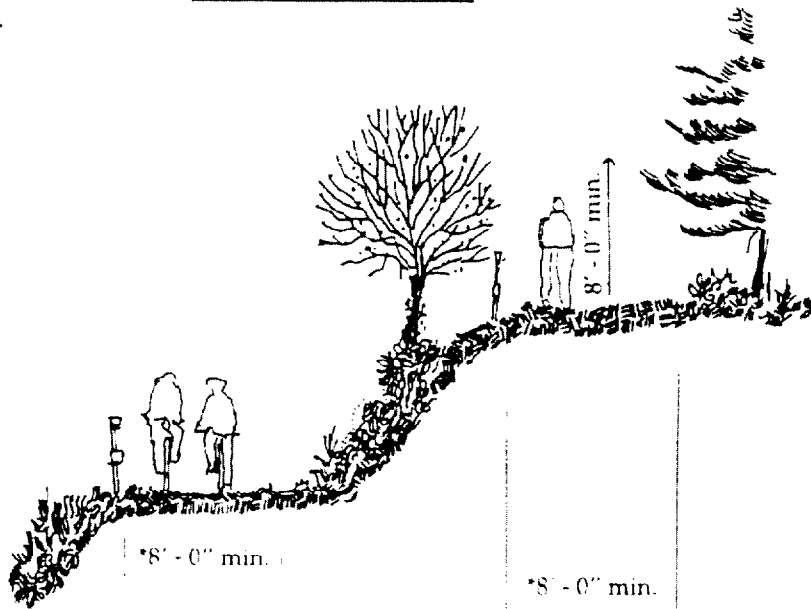


Unpaved Trails Design Concept A



Where appropriate,
control vegetation to
retain views.

2'	8' - 0" min.	2'
10' - 0" preferred		
11' - 0" min. R.O.W.		

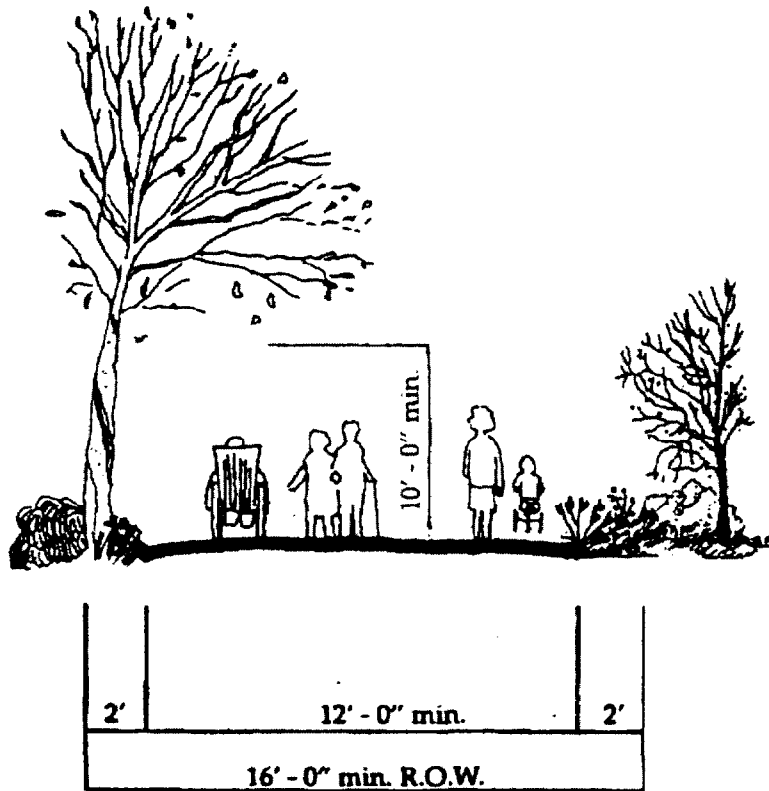
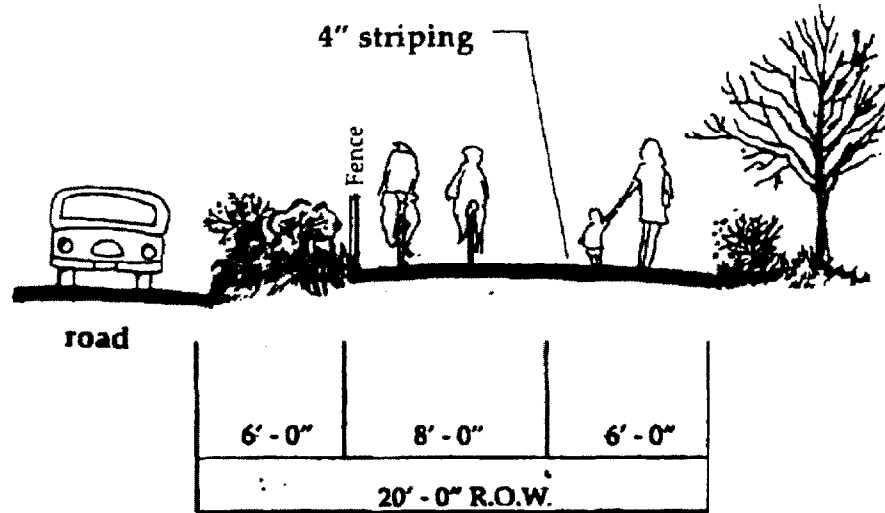


Erosion control mechanisms
required on steep slopes.

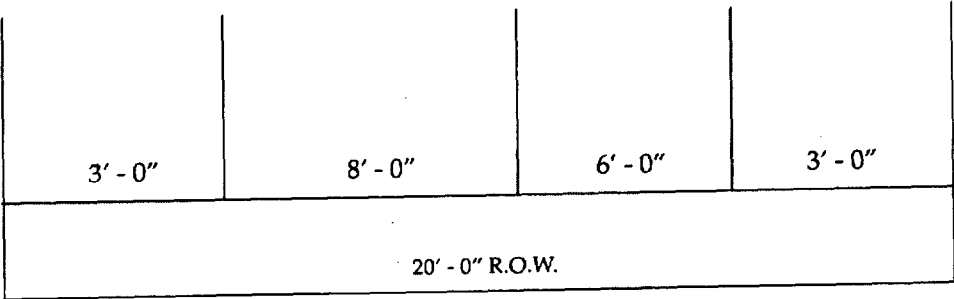
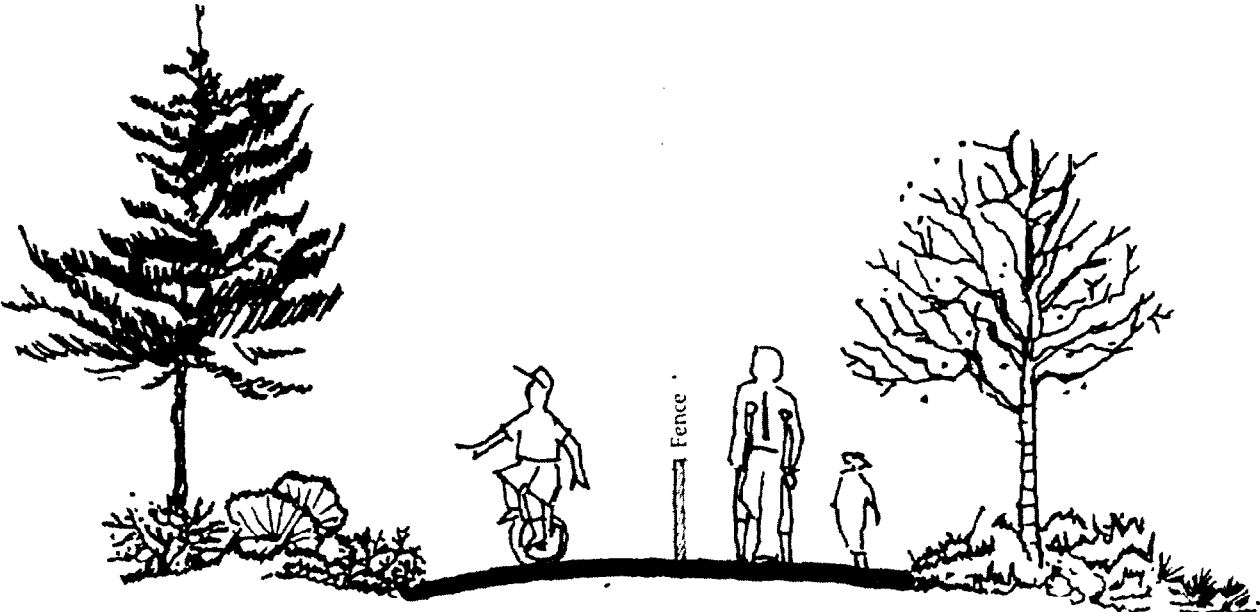
Use switchbacks on steep terrain.

*Under certain circumstances the Trail width may be reduced to 5 ft. minimum.

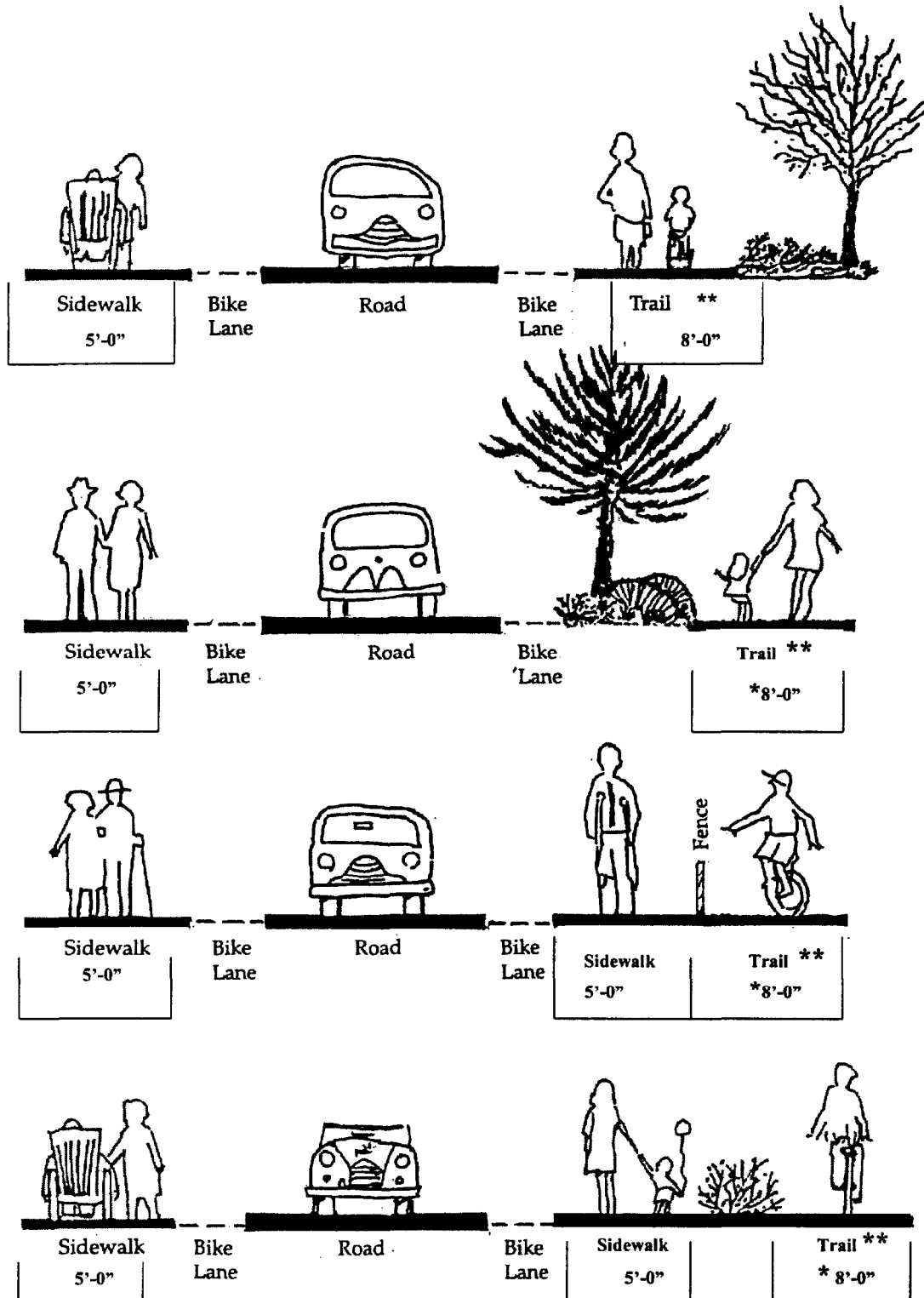
Paved Trails Design Concept B



Combination Paved / Unpaved Trails Design Concept C



Alternative Concepts For Circulation Element Trails



4/10/01

*5 ft. under certain circumstances

**Trail can be paved or unpaved

Estimated Acquisition Costs

2001 Estimate

Cost per acre	\$ 160,000	\$ 200,000	\$ 260,000
Square feet per acre	43,560	43,560	43,560
Cost per square foot	3.67	4.59	5.97
Trail width (in feet)	20	20	20
Cost per linear foot	73.46	91.83	119.38
Linear feet to be acquired	9,240	9,240	9,240
	\$ 678,788	\$ 848,485	\$1,103,030

1996 Update - Average Cost

Cost per acre	\$ 326,700
Square feet per acre	<u>43,560</u>
Cost per square foot	7.50
	<u>0.25 marginal value(1)</u>
	1.875
Trail width (in feet)	20
Cost per linear foot	37.50
Linear feet to be acquired	<u>17,600</u>
	\$ 660,000
Contingency	<u>36,000</u>
Total	<u>\$ 696,000</u>
Total cost per linear foot	<u>\$39.55</u>

(1) The 1996 Update calculated the cost per square foot using a marginal residual land value approach. This approach begins with the full value of a standard residential lot and then reduces it to acknowledge the marginal value of the property. The 2001 estimate begins with the value of actual easement purchases; thus no reduction is required.

EXHIBIT J

Costs to Maintain Citywide Trail System At Build Out Population

STAFF	Low Estimate			Medium Estimate		
	FTE	Annual Salary	Annual Unit Cost	FTE	Annual Salary	Annual Unit Cost
Trail Manager	0.5	65,000	32,500	1	65,000	65,000
Field Ranger	1	45,000	45,000	1	45,000	45,000
Maintenance Crew	1	30,000	30,000	2	30,000	60,000
Part time:						
Seasonal	2	20,000	40,000	3	20,000	60,000
Volunteers	12		-	11		-
Materials			10,000			15,000
Supplies/Printing			5,000			10,000
Rental Equipment (2)			10,000			20,000
Total Cost			172,500			275,000
Miles of System to Maintain (1)			68			68
Cost per mile			2,537			4,044

Staff	High Estimate		
	FTE	Annual Salary	Annual Unit Cost
Trail Manager	1	65,000	65,000
Field Ranger	2	45,000	90,000
Maintenance Crew	2	30,000	60,000
Part time:			
Seasonal	6	20,000	120,000
Volunteers	8		-
Materials			15,000
Supplies/Printing			20,000
Rental Equipment (2)			30,000
Total Cost			400,000
Miles of System to Maintain (1)			68
Cost per mile			5,882

- (1) Recreational trails only- circulation element trails would be maintained as part of the streets.
- (2) Includes contracting for traildozer work. This cost may be significantly less depending on the amount of trails that can be constructed by the volunteers. The Batiquitos Lagoon Foundation has a traildozer available for use which was purchased using funding from a Carlsbad Community Activity Grant.

APPENDIX A

Trails Program Implementation Actions

- Hire Trails Manager (or dedicated current position)
- Design Brochure Guide
- Web Page
- General Plan Amendment
 - Open Space
 - Park and Recreation Element
 - Circulation
 - (Include Coastal Rail Trail, Bike Trail)
- Develop whatever financing option is chosen
- Environmental Review
- Organize Community Volunteers
- Applying and writing Grant opportunities
- Review Trails Plans with Parks and Recreation, and Planning Commissions
- Revise Engineering Standards for Roads to include Trails
- Coordinate with adjacent agencies
- Develop protocol of project review for compliance with Trails
- Coordinate and schedule public workshops
- Establish fund to gather donations

APPENDIX B

Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas

Final Report

September 30, 1999

BACKGROUND

The Architectural and Transportation Barriers Compliance Board (Access Board) is responsible for developing accessibility guidelines under the Americans with Disabilities Act of 1990 (ADA) to ensure that new construction and alterations of facilities covered by titles II and III of the (ADA) are readily accessible to and usable by individuals with disabilities.

SECTION 16. OUTDOOR DEVELOPED AREAS

Outdoor developed areas covered by this section shall comply with the applicable requirements of section 4 and the special application sections, except as modified or otherwise provided in this section.

16.1 General. All newly designed and constructed pedestrian trails or altered portions of existing pedestrian trails connecting to designated trailhead or accessible trails shall comply with 16. All newly designed and constructed camping facilities, picnic areas, and beach access routes or altered portions thereof shall comply with 16.

16.1.1 Extent of Application. Departures from specific technical provisions of this section shall be permitted where specified, and where at least one of the following conditions is present. The conditions in this section do not obviate or limit in any way obligations to comply with 16 at any point that the conditions are not present.

1. Where compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics; or,

2. Where compliance would substantially alter the nature of the setting or the purpose of the facility, or portion of the facility; or,

3. Where compliance would require construction methods or materials that are prohibited by federal, state, or local regulations or statutes; or,
4. Where compliance would not be feasible due to terrain or the prevailing construction practices.

DEFINITIONS.

Trail.

A route that is designed, constructed, or designated for recreational pedestrian use or provided as a pedestrian alternative to vehicular routes within a transportation system.

Designated Trailhead.

A designated point of access that may contain a parking area, information kiosks, restrooms, water hydrants, and may be reached by vehicular or pedestrian access.

Tread width.

The path or visible trail surface perpendicular to the direction of travel. The clear tread width of the trail is the width of the useable trail tread, measured perpendicular to the direction of travel and on or parallel to the surface of the useable trail tread. The minimum clear tread width is the narrowest measurement on the useable trail tread.

16.2 Trails. Where trails are provided, the trail shall comply with 16.2. Where provided, elements located on accessible trails shall comply with 16.5 through 16.21. Elements are not required to be connected by an outdoor recreation access route.

EXCEPTIONS:

1. Where one or more of the conditions in 16.1.1 exists, and where one or more of the conditions in this exception exists, the provisions of 16.2 shall not apply after the first point of departure. The segment of the trail between the trailhead and the first point of departure shall comply with 16.2 unless the trail segment is 500 feet (150 m) or less in length. Where there is a prominent feature less than 500 feet (150 m) from the trailhead, the trail segment between the trailhead and the prominent feature shall comply with 16.2.

The conditions of this exception are:

- (a) The combination of running slope and cross slope exceeds 40 percent for over 20 feet (6100 mm); or
- (b) A trail obstacle 30 inches (760 mm) or more in height across the full tread width of the trail; or
- (c) The surface is neither firm nor stable for a distance of 45 feet or more; or
- (d) A clear width less than 12 inches (305 mm) for a distance of 20 feet (6100 mm) or more

2. Where one or more of the conditions in 16.1.1 are met resulting in departures from the technical provisions in 16.2 for over 15 percent of the length of the trail, 16.2 shall

not apply after the first point of departure. The segment of the trail between the trailhead and the first point of departure is required to comply with 16.2 unless the trail segment is 500 feet (150 m) or less in length. Where there is a prominent feature less than 500 feet (150 m) from the trailhead, the trail segment between the trailhead and the prominent feature shall comply with 16.2.

16.2.1 Surface. The trail surface shall be firm and stable.

EXCEPTION. The provision shall not apply where a firm and stable surface can not be provided because at least one of the four conditions specified in 16.1.1 applies.

16.2.2 Clear Tread Width. The clear tread width of the trail shall be 36 inches (915 mm) minimum.

EXCEPTIONS 1. The clear tread width shall be permitted to be reduced to no less than 32 inches (815 mm) minimum where at least one of the four conditions specified in 16.1.1 apply. 2. The provision shall not apply where 32 inches (815 mm) minimum clear tread width can not be provided because at least one of the four conditions specified in 16.1.1 applies.

16.2.3 Openings. Openings in trail surfaces shall be of a size that does not permit passage of a ½ inch (13mm) diameter sphere. Elongated openings shall be placed so that the long dimension is perpendicular or diagonal to the dominant direction of travel.

EXCEPTIONS 1. Elongated openings are permitted to be parallel to the dominant direction of travel where the opening does not permit passage of a 1/4 inch (6.5 mm) diameter sphere. 2. Openings shall be permitted to be of a size that do not permit passage of a 3/4 inch (19 mm) diameter sphere where at least one of the conditions in 16.1.1 apply. 3. Where openings that do not permit passage of a 3/4 inch (19 mm) diameter sphere are not feasible, because at least one of the conditions in 16.1.1 applies, the provisions of 16.2.3. shall not apply

16.2.4 Protruding Objects. Protruding objects on trails shall comply with ADAAG 4.4.1. and shall have 80 inches (2030 mm) minimum clear head room.

EXCEPTION. Where vertical clearance of a trail is reduced to less than 80 inches (2030 mm) where one of the four conditions specified in 16.1.1 applies, a barrier to warn blind and visually impaired persons shall be provided.

16.2.5 Tread Obstacles. Where tread obstacles exist, they shall not exceed 2 inches (50 mm) high maximum.

EXCEPTIONS. 1. Tread obstacles shall be permitted to be 3 inches (75 mm) maximum where running and cross slopes are 1:20 or less. 2. The provision shall not apply where tread obstacles greater than 3 inches (75 mm) exist, because at least one of the four conditions specified in 16.1.1 applies.

16.2.6 Passing Space. Where the clear tread width of the trail is less than 60 inches (1525 mm), passing spaces shall be provided at intervals of 1000 feet (300 m) maximum. Passing spaces shall be either a 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum space, or an intersection of two walking surfaces which provide a T-shaped space complying with ADAAG 4.2.3 provided that the arms and stem of the T-shaped space extend at least 48 inches (1220 mm) beyond the intersection.

EXCEPTION. The provision shall not apply where passing space cannot be provided because at least one of the four conditions specified in 16.1.1 applies.

16.2.7 Slopes. Slopes shall comply with 16.2.7.1 and 16.2.7.2.

EXCEPTIONS 1. For open drainage structures, a running slope of 14 percent is permitted for 5 feet maximum (1525 mm) with a cross slope of 1:20 maximum. Cross slope is permitted to be 1:10 at the bottom of the open drain, where clear tread width is 42 inches (1065 mm) minimum. 2. The provisions of this section do not apply where one or more conditions in 16.1.1 applies.

16.2.7.1 Cross Slope. The cross slope shall not exceed 1:20 maximum.

16.2.7.2 Running slope. Running slope of trail segments shall comply with one or more of the provisions of this section. No more than 30 percent of the total trail length shall exceed a running slope of 1:12.

16.2.7.2.1 Running slope shall be 1:20 or less for any distance.

16.2.7.2.2 Running slope shall be 1:12 maximum for 200 feet (61 m) maximum. Resting intervals complying with 16.2.8 shall be provided at distances no greater than 200 feet (61 m) apart.

16.2.7.2.3 Running slope shall be 1:10 maximum for 30 feet (9150 mm) maximum. Resting intervals complying with 16.2.8 shall be provided at distances no greater than 30 feet (9150 mm) apart.

16.2.7.2.4 Running slope shall be 1:8 maximum for 10 feet (3050 mm) maximum. Resting intervals complying with 16.2.8 shall be provided at distances no greater than 10 feet (3050 mm) apart.

16.2.8 Resting Intervals. Resting intervals shall be 60 inches (1525 mm) minimum in length, shall have a width at least as wide as the widest portion of the trail segment leading to the resting interval, and have a slope not exceeding 1:20 in any direction.

EXCEPTION. The provision shall not apply where resting spaces cannot be provided because at least one of the four conditions specified in 16.1.1 applies.

16.2.9 Edge Protection. Where edge protection is provided along a trail, the edge protection shall have a height of 3 inches (75 mm) minimum.

16.2.10 Signs. Newly constructed and altered trails and trail segments complying with 16.2 shall be designated with a symbol* at the trail head and all designated access points. Signs identifying accessible trail segments shall include the total distance of the accessible segment and the location of the first point of departure from the technical provisions.

APPENDIX C

Financing Techniques Significant Points

General Obligation Bonds-

- Can fund acquisition and construction costs only
- Increases the taxes levied on the property owners
- Levy is *ad valorem* (i.e. based on the value of the property)
- Requires a 2/3 vote of the citizens

Mello-Roos District-

- Can finance services as well as acquisition and construction
- Can set tax rate based on equitable method (not necessarily value or benefit)
- Can be used as a pay-as-you-go district or issue debt
- Requires a 2/3 vote of the citizens
- Current council policy does not allow tax to pass-through to homeowners on residential properties

1913/1915 Act Assessment District-

- Can fund acquisition and construction costs only
- Requires a vote subject to majority protest
- Costs would be spread based on "special and direct benefit" to each parcel

1972 Landscaping and Lighting Act District-

- Enables assessments to be imposed in order to finance:
 - acquisition of land for parks, recreation, and open space;
 - installation or construction of planting and landscaping, street lighting facilities, ornamental structures, and park and recreational improvements; and,
 - maintenance and servicing of any of the above.
- Requires a simple majority (>50%) vote
- May be difficult to use on a citywide facility such as trails due to adoption of Proposition 218. Alleged abuse of the 1972 Act by cities and school districts was one of the motivating forces behind Proposition 218. The initiative targeted the allegedly tenuous link between parks and recreation facilities and the benefit they provided to properties in the area. Prior to Proposition 218, the successful argument in favor of the Landscaping and Lighting Act was that parks, open space, and recreation facilities benefited properties by increasing their value. As a result of the strict definition of special benefit created by Proposition 218 ("General enhancement of property value does not constitute 'special benefit.'") that justification no longer exists and this Act will be much harder to use.

Certificates of Participation-

- Can fund acquisition and construction costs only
- Does not require a vote
- Does not provide a new revenue source; repayment is typically from the General fund

Development Fees, Taxes and other-

- The ERA report outlines several development fees that may be possible. Staff does not recommend creating any new development fees as new development is now conditioned to create the trails and provide an irrevocable offer to dedicate them to the City as part of the permitting process. However, Council may be able to use Public Facilities Fees, the License Tax on New Construction or Park in-lieu fees, if available, on the acquisition and construction of trails. Revenues from these fees are currently programmed in the Capital Improvement Program. If Council wished to pursue this course of action, additional research would need to be done on the legal aspects and on the availability of the revenues.