

Chaparral and Grassland

Although the Chaparral and Grassland plant communities have few, if any trees, they are of particular interest to this Plan. Because they afford a contrasting backdrop for the Oaks, they are essential to the landscape character of Lafayette. By maintaining the Chaparral and Grassland areas, a greater ecological and visual diversity is sustained.

Chaparral (Spanish for "place of the Mediterranean Live-Oak scrub") is composed of various species of dense, twiggy, evergreen shrubs and shrubby trees with only a few larger trees on its edges or in ravines. There are two types of Chaparral which are differentiated by the softness and density of the plants. Hard Chaparral is a very dense, one-layered vegetation type—plants such as Toyon, Manzanita and Scrub Oak are its primary species. Soft Chaparral contains softer, more easily penetrated species such as Coyote Brush. Several small patches of hard Chaparral exist within Lafayette on the southern slopes of Lafayette Ridge and larger areas occur higher on the ridge just outside the City limits. These slopes are steeper and rockier than the surrounding Grassland and the Chaparral seems to be permanent. This means that the Chaparral plants will always regenerate themselves, even after fire.

Larger areas of Lafayette are covered by the soft Chaparral. The most notable area is the watershed land around Lafayette Reservoir. These Chaparral lands appear to be in a transitional state between Grassland and Oak Woodland. Early photos of the reservoir property show clearly that Grassland dominated the rolling hills. Very little brushy vegetation can be detected. Again, this seems to have

been the result of control by grass fires and grazing. Once these two controls are removed, the Coyote Brush moves into the Grassland and quickly covers the land. Seedlings of Oaks, Bay and Buckeye then become established in the shade of the Chaparral. Eventually the trees increase in size and number, crowding and shading out the Coyote Brush. In time, the woodland returns unless fire burns off the woody plants.

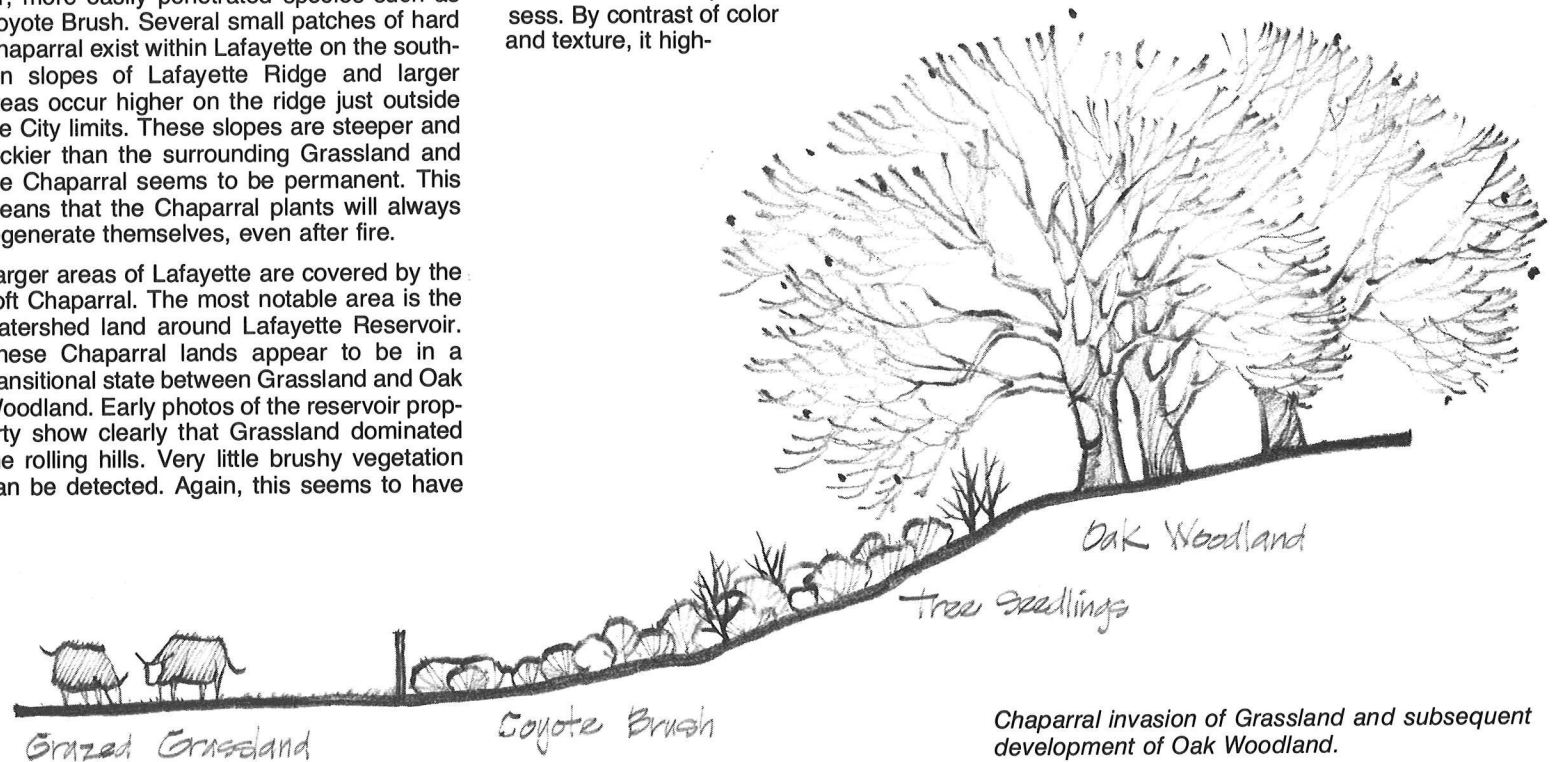
This plant succession sequence continues on many of the Grasslands of Lafayette where grazing is discontinued. The Oak Woodlands will eventually dominate except on the steeper, drier slopes. The transition will be subtle, but in time, a marked change in the landscape composition will be noticed.

Grassland has unique open space qualities which neither Chaparral nor Woodland possess. By contrast of color and texture, it high-

lights surrounding wooded areas. Grasslands offer a different recreational experience for hiking and horseback riding as well as kite flying, birdwatching and sunning in an open field.

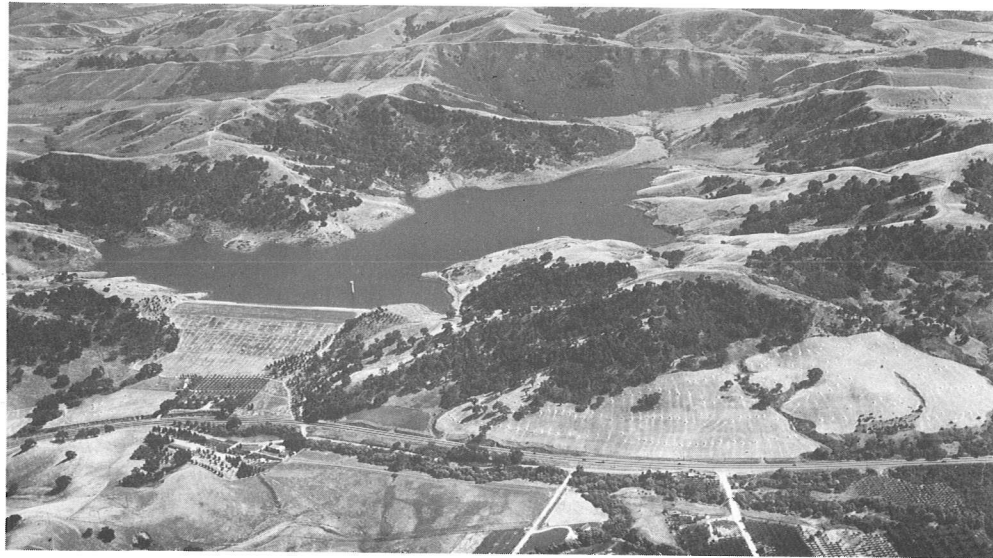
Because of the unique open space qualities of grassland, certain areas within the City, such as the Reservoir watershed, should be managed for the perpetuation of this vegetation type.

Grasslands offer a diversity in the landscape composition. Existing Woodlands should not be removed to recreate a Grassland mosaic, but maintaining golden hills preserves the distinctive California landscape.

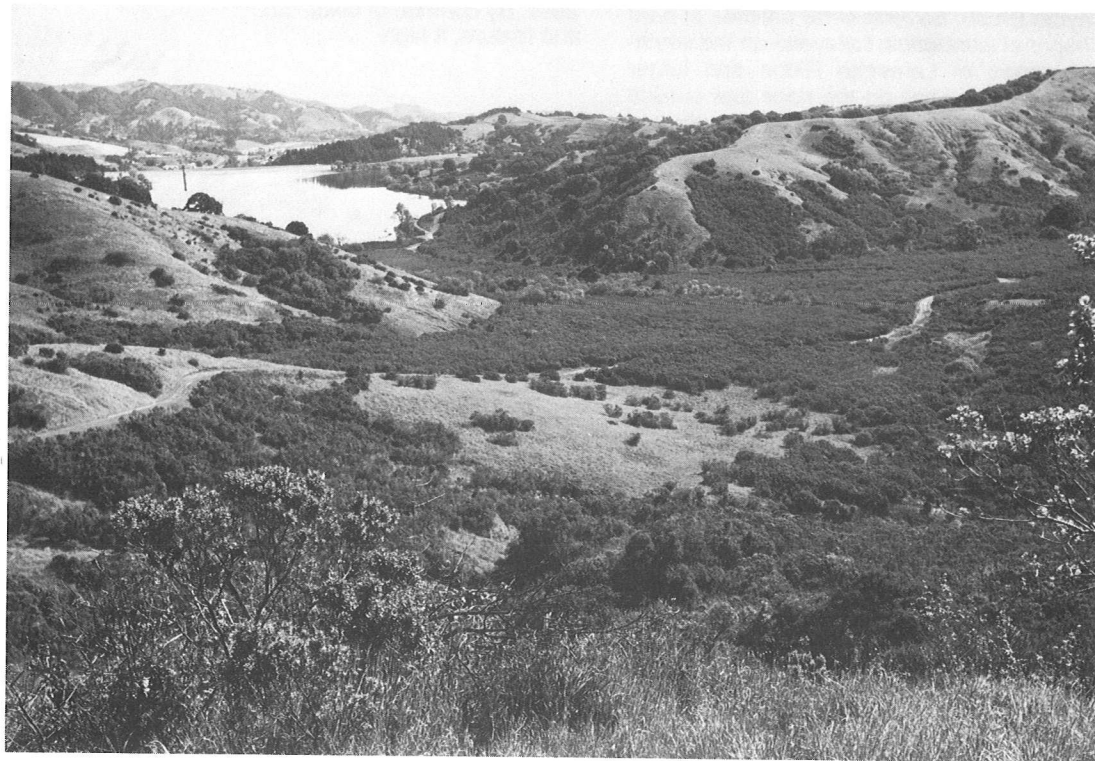


Chaparral invasion of Grassland and subsequent development of Oak Woodland.

Grassland dominates slopes of Lafayette Reservoir in this early photograph.



Chaparral and Woodlands invade Grassland at Lafayette Reservoir.



Riparian Woodland

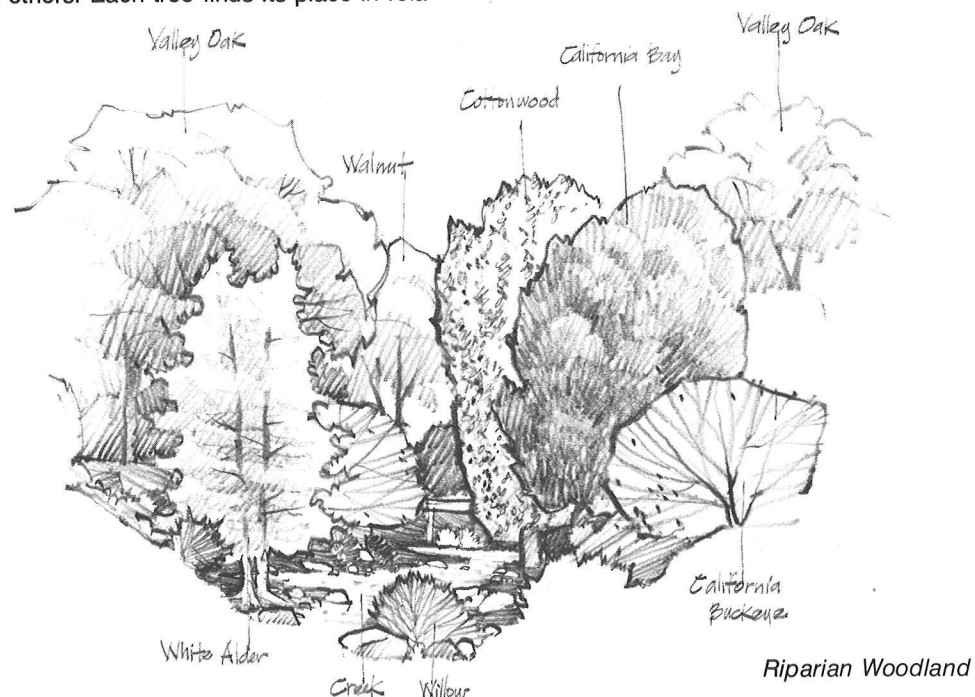
Unlike the Oak Woodlands which have changed since Indian times, the woodlands along the many streams remain largely the same. In Lafayette the narrow valleys are laced with streams banded with lush trees which form protective habitats for wildlife. These Riparian Woodlands vary in width and form a tall, dense backdrop to all the lowland areas of the City. They are an integral part of the landscape because of their visual prominence. Towering Valley Oaks and Walnuts, along with Bay, Live Oak and Buckeye are interspersed with the brighter, lighter Boxelder and Cottonwood. Several species of low Willows line the deep channels and occasionally White Alder and Bigleaf Maple arch over the streams.

A Riparian Woodland is a collage of varying colors and textures. The predominant theme of streamside vegetation is the association of the trees and shrubs with water. All riparian trees are waterseeking, some requiring more than others. Each tree finds its place in rela-

tion to the water course. The higher drier banks favor the Oaks, Bay and Buckeye with the Alder, Boxelder, Willow and Cottonwood at or near the water's edge.

This association with water is the key for selecting plants in a Riparian Woodland. The main water courses in Lafayette—Las Trampas and Lafayette Creeks—flow year 'round. Other channels are intermittent, flowing only when rainfall and runoff are heavy. Both types of situations foster the conditions of soil moisture necessary for native riparian trees.

When selecting trees to plant in water-courses, choose first from a selection of trees which would naturally grow in or near the creek or creek bed. Using several species provides the variety which is characteristic of a Riparian Woodland.

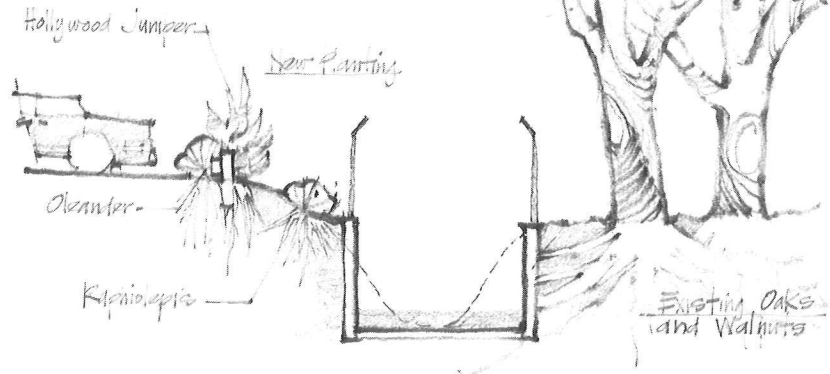


The list of trees for creekside planting includes only native trees commonly found along streams. These trees will perpetuate the quality of this natural plant community. The relative growth rates of the various trees are included in the list. Many of the native riparian trees are fast growing. Thus tree cover can be established or re-established relatively quickly.

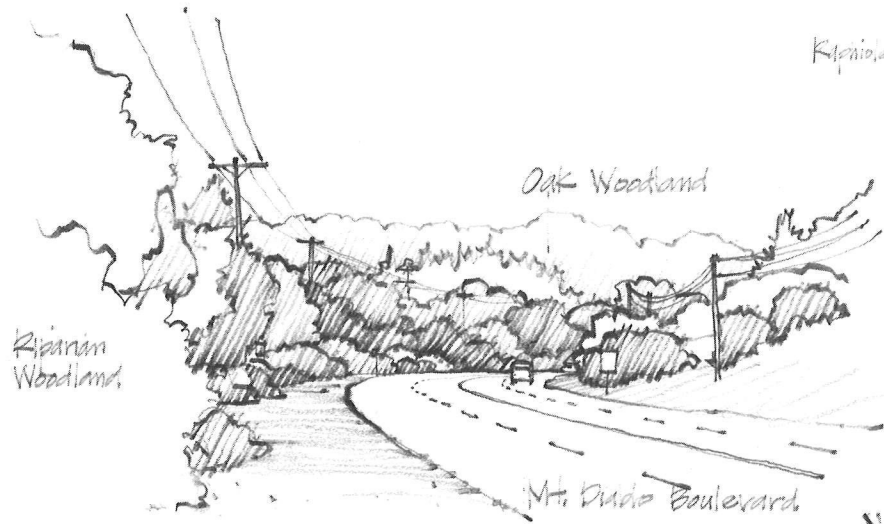
The use of irrigation systems to water young plants is not always necessary, especially along streams. Research at the University of California—Davis has developed techniques for the direct seeding of woody plants. Procedures for this process are detailed in a free Agricultural Extension Service publication entitled, *Direct Seeding of Woody Plants* (AXT-n27) by R. Harris, A. Leiser and F. Chan. Direct seeding done in the fall prior to the winter rains can produce well established trees before the next summer. The native riparian trees which can be successfully grown by direct seeding methods are: Bigleaf Maple, Black Walnut, Boxelder, Buckeye, Live Oak and Valley Oak.

In addition to the native trees there are a number of other trees which can be used along streams in certain situations. These trees are especially suitable for private gardens bordering on streams where a more varied plant selection is desired. The supplemental list includes trees that are compatible with the natives and ecologically suitable for the riparian environment. They are *not* recommended for a primary or dominant planting—only as secondary trees to be planted in limited numbers. Many exhibit good fall foliage color. This seasonal enrichment to the landscape has been indicated on the list.

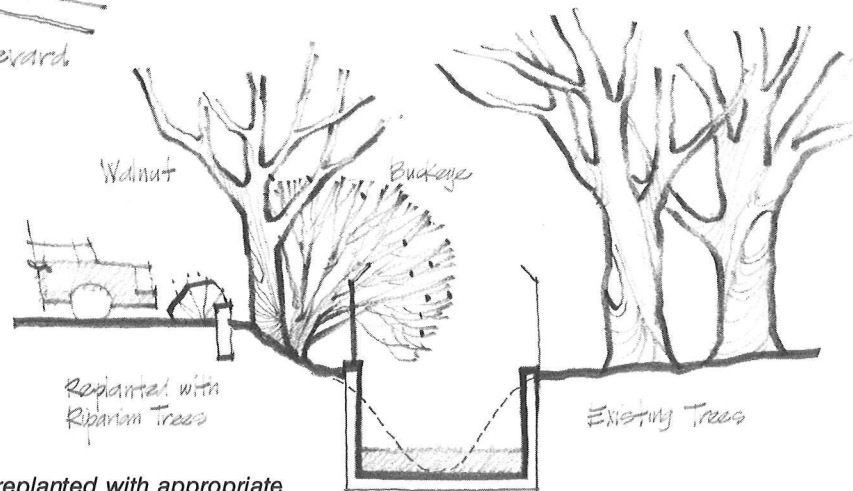
Consistency of plant cover along water courses occurs because streams are linear systems. Seeds from trees upstream are carried along the channel in the flowing water. These seeds become lodged in rocks or debris along the bank and establish new plants perhaps miles away from the parent trees.



Channelized creek replanted with unrelated exotic plants.



Rural character of west entry to Lafayette.



Channelized creek replanted with appropriate streamside trees.

There is an inherent danger of introducing the wrong trees along a stream and spreading them along its length. Several exotic trees occasionally used in this area reseed prolifically and are extremely aggressive growers. These trees should be especially avoided if our streams are to be maintained in their natural state.

Many of the trees on this "to be avoided" list are also visually incompatible with natural riparian woodlands. This is especially true of the grey-leaved Acacias and Eucalyptus, Pines and the Purpleleaf Plum.

Drainage swales are similar to streams in that they transport water for at least a part of the year. These intermittent water courses may be very narrow drainage ditches or broad swales constructed to transport runoff. Frequently they carry a small amount of irrigation runoff in the summer. They generally lie in the more level valley floors and usually lack tree cover.

These earth-formed swales should be treated as streams when planted. If there is no visual connection to the natural woodlands, the trees on the supplemental list may be effectively used. Alders, Poplars, Willows, Red Maple and Liquidambar are all capable of growing well in moist swales and ditches.

It is difficult to imagine Lafayette without its creeks, but we can look at neighboring Walnut Creek for comparison. Increased flood plain development combined with single-purpose flood control techniques can erase the natural creeks forever. A small piece of Lafayette Creek between Moraga Road and Second Street is already channelized. This is visible proof that the natural creek beds can disappear.

In the business district, the Riparian Woodlands form a unique edge to the commercial center. These tall trees are a superb buffer between the downtown and the nearby residential areas. Few communities have such a fine backdrop. Similarly, nearly all the major arterial roads entering Lafayette follow stream courses. St. Mary's Road, Moraga Road and the western end of Mt. Diablo Boulevard are notable examples. The adjacent Riparian Woodlands define these corridors providing the unique rural charm that distinguishes Lafayette.

Concrete channelization and other structural flood control solutions are debatable issues which cannot be discussed in detail in this report. Nevertheless, it is obvious that the loss of Lafayette's creeks, especially those near the business district, would have a devastating effect on the quality of the environment. Few cities are still fortunate enough to have a flowing stream with magnificent trees so close to a commercial center as well as wooded streams pervading nearly every residential neighborhood.

These streams and their woodlands are irreplaceable and are therefore of infinite value. All the streams in Lafayette should be officially recognized and protected as essential environmental resources.

There are a number of circumstances which may require either major or minor alteration to stream courses. Flood control is one example; bridge or road bank construction are others. Existing trees tagged to be "saved" in an improvement project along streams are often killed during construction or as a result of it. Grades are raised around the base of trunks, roots are severed, and frequently the natural water source is sealed off. Creekside trees grow there because of the water. Once this water is diverted, tree survival is highly improbable. Tree preservation guidelines are

outlined in detail in a separate section. These guidelines should be followed whenever construction around existing Riparian trees is proposed.

In situations where tree cover is removed along streams, plans for replanting should be considered an integral part of the project. The objective of such planting should be to restore, insofar as possible, the original habitat and to re-establish the continuity of the Riparian Woodland. Surprisingly, this simple logic is frequently not followed. Instead, we can see many examples throughout the Bay Area of "gardenesque" creek replanting schemes. Oleanders, Purpleleaf Plums and other exotics are introduced into what was once a lush woodland. Such plants are appropriate for a private garden, but conflict with the character of streamside vegetation, even for those streams which have been modified.

The City should include plans for preserving existing trees as well as replanting tree cover which is removed as a part of the initial review of any stream construction project. Such plans should be reviewed by the Tree Commission and/or a qualified consultant for appropriateness to the setting and its ecosystem, using the design guidelines of this Plan as a basis for approval.



Buffer planting along freeway shows potential as a green edge.

Lafayette Creek forms a wooded edge to the commercial district.

NATIVE RIPARIAN TREES FOR CREEKSIDE PLANTING

Plant Name	Deciduous/ Evergreen	Growth Rate
Acer macrophyllum— Bigleaf Maple	deciduous	moderate
A. negundo— Boxelder	deciduous	fast
Aesculus californica— California Buckeye	deciduous	moderate
Alnus rhombifolia— White Alder	deciduous	fast
Juglans hindsii— Black Walnut	deciduous	fast
Populus fremontii— Cottonwood	deciduous	fast
Salix laevigata— Red Willow	deciduous	fast
S. lasiolepis— Arroyo Willow	deciduous	fast
Quercus agrifolia— Coast Live Oak	broadleaf	slow—moderate
Q. lobata— Valley Oak	deciduous	slow—moderate
Umbellularia californica— California Bay	broadleaf	slow—moderate

TREES TO BE AVOIDED ALONG STREAMS OR DRAINAGE CHANNELS

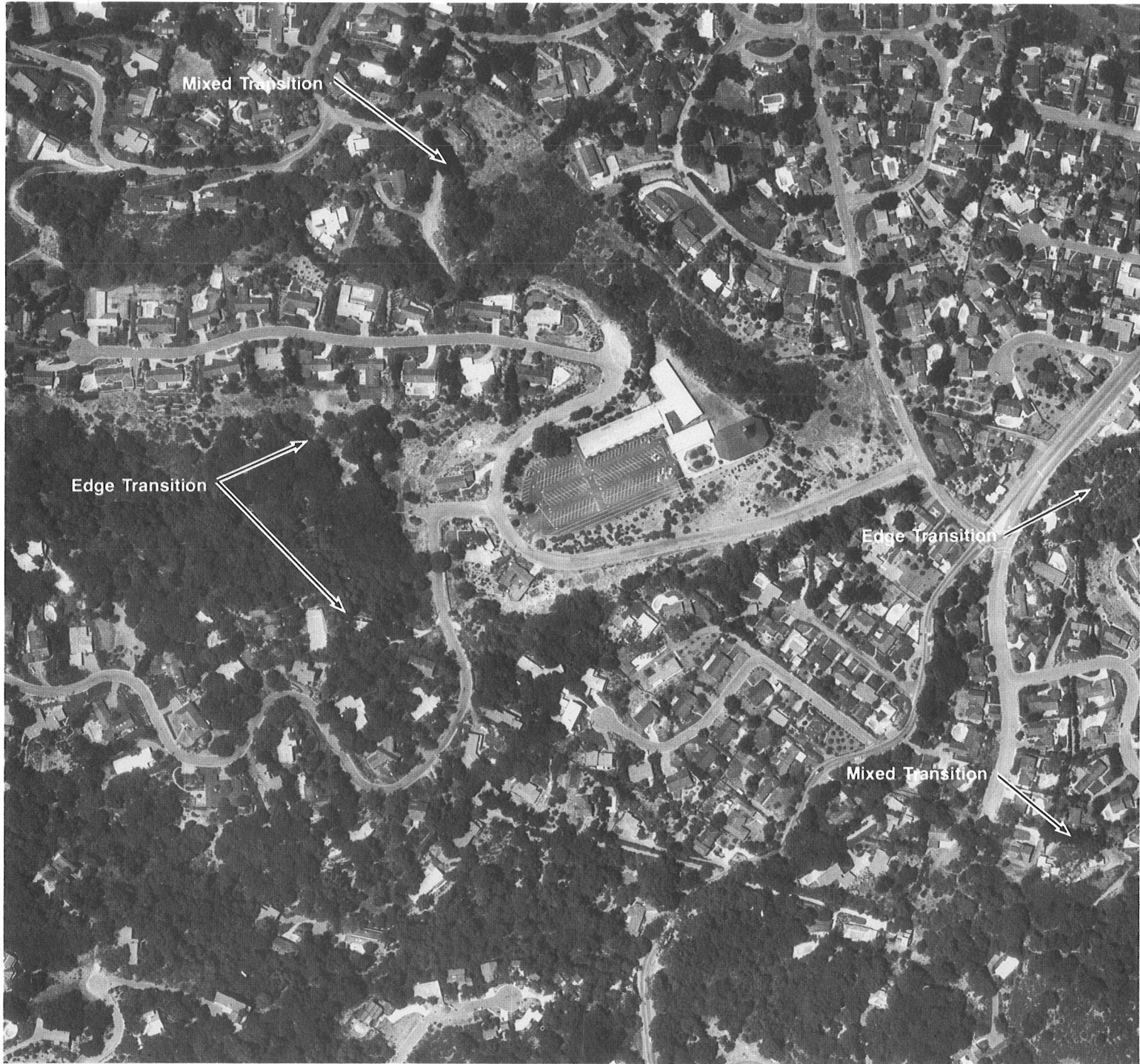
Plant Name

Acacia armata - Kangaroo Thorn
 A. baileyana - Bailey Acacia
 A. decurrens - Green Wattle
 A. d. dealbata - Silver Wattle
 A. longifolia - Golden Wattle
 A. melanoxylon - Black Acacia
 Ailanthus altissima - Tree of Heaven
 Eucalyptus species - Eucalyptus, Gums
 Pinus species - Pines
 Populus species - White Poplar
 Prunus species - Plums
 (particularly P. cerasifera 'Atropurpurea')
 'Atropurpurea)—Plums

TREES TO SUPPLEMENT STREAM PLANTING

Plant Name	Deciduous/ Broadleaf Conifer	Evergreen/	Good Fall Foliage Color
*Acer circinatum— Vine Maple	deciduous		yes
A. rubrum— Red Maple	deciduous		yes
Alnus cordata— Italian Alder	deciduous		no
Liquidambar styraciflua— Sweetgum	deciduous		yes
Maytenus boaria— Mayten Tree	broadleaf		no
Nyssa sylvatica— Black Gum	deciduous		yes
Platanus occidentalis— American Sycamore	deciduous		no
*P. racemosa— California Sycamore	deciduous		no
Populus nigra 'Italica' Lombardy Poplar	deciduous		yes
Salix babylonica— Weeping Willow	deciduous		yes
S. discolor— Pussywillow	deciduous		no
S. matsudana 'Tortuosa'— Corkscrew Willow	deciduous		no
*Sequoia sempervirens— Coast Redwood	conifer		no

The Asterisk (*) indicates a California native.



THE TRANSITIONAL LANDSCAPES

In this Plan the tree planting guidelines are associated with the various types of landscapes of Lafayette. The landscape in which trees are planted becomes the basic visual context. The Oak Woodlands and the Riparian Woodlands have easily recognizable landscape characteristics. The completely urbanized landscape is also distinctive for its lack of influence from the natural plant communities. In Lafayette, many residential areas are in what can be called transitional landscapes.

Two types of transitional landscapes can be observed. One occurs in that zone between a clearly natural woodland or grassland and a developed or planted property. This zone or edge is transitional because of location. An example would be the edge of a residential neighborhood or school abutting an adjacent wooded hillside.

The other transitional landscape occurs in areas where native trees intermingle with introduced trees. Neither tree type dominates the landscape character. Much of the Acalanes area exhibits this pattern of tree cover.

Typical transitional planting situations include:

- property lines;
- roads between residential tracts and woodlands;
- school or church boundaries;
- utility easements (power and water);
- parks, trails and other open space areas.

Recent plantings in these transitional landscapes are almost exclusively composed of exotics which bear little visual or ecological relationship to the natural landscape. The widespread planting of Monterey Pine (*Pinus radiata*) stands out as an example of a fine tree frequently used in the wrong place.

This Pine is used to line roads, surround playing fields, border private gardens and cover grassy slopes. It has become the most commonly planted tree in Lafayette.

Monterey Pine has many virtues, but also many flaws when it is used in this areas. Its fast growth rate (up to 4 feet a year) and its relative drought tolerance are attractive qualities for achieving quick growth on barren land. However, the Monterey Pine is native only to the cool, foggy coastal Monterey Peninsula of California where temperatures rarely exceed 85° F (30°C) nor fall below freezing. Summer fog condenses on the Pine's needles and creates measurable precipitation.

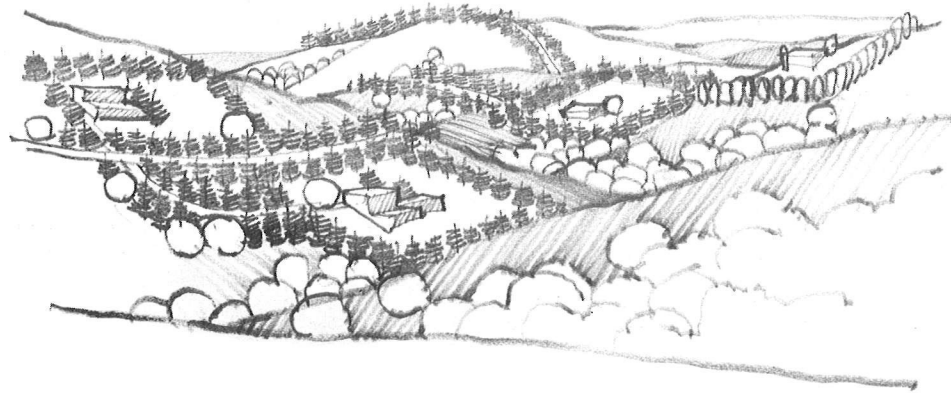
In Lafayette, Monterey Pine is growing outside its native climatic environment. The trees are stressed during the hot, dry summers. As a result of this stress, a number of pests have attacked the Pine, especially older ones. The Pine Engraver Beetle (*Ips paraconfusus*) attacks these older trees, carving out channels in the cambium layer under the bark which causes quick death to the trees. Monterey Pine is also particularly sensitive to smog and damage to trees, particularly those close to the freeway, has been documented. Even under ideal growing conditions this tree is short-lived and declines after 30 or 40 years.

Fads in the use of plant materials exist just as they do in the choice of clothes or other consumer commodities. In the East and Midwest, millions of American Elms are dying of Dutch Elm disease. The over-use of that tree a century ago is now being replaced by a craze for planting Honeylocusts. Nature does not tolerate monocultures long, especially when plants are growing at the edge of their environmental limits. The Eucalyptus disaster during the 1972 Freeze is evidence of this. The more subtle death of many Monterey Pines in Contra Costa County is another.

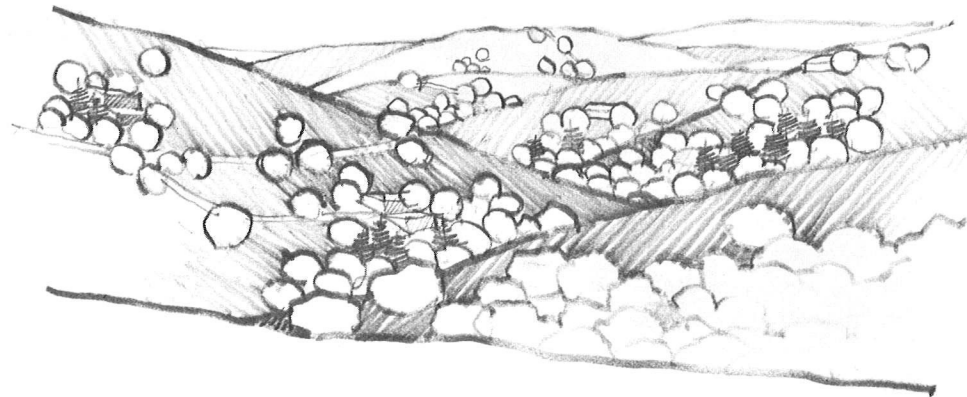
Several other conifers are well adapted for planting in Lafayette. Among them are the Italian Stone Pine (*Pinus pinea*), a round-topped species from the Mediterranean region. The Coulter Pine (*Pinus coulteri*) is another drought tolerant native found in scattered locations of the South Coast Range of California. The Knobcone Pine (*Pinus attenuata*) found on rocky soils of the inner Coast Range, is still another excellent drought tolerant native. It reseeds easily making it useful for erosion control.

Monterey Pines are frequently planted along property lines for a visual screen. Pines, like other conifers shed their lower needles and branches as the upper foliage shades the lower. In a few years, the desired screen no longer exists. A smaller, more shrub-like tree would serve the purpose more effectively.

This Plan is not proposing a ban on the planting of Monterey Pine. Rather, it encourages a thoughtful selection of trees to satisfy a particular function, always considering the overall effect on the character of the landscape. The Pine Grove at the entrance to the Reservoir creates a splendid landscape composition as well as a fine entry experience—an excellent example of the use of the tree. Monterey Pine should be used with more restraint. As a result of their wholesale planting, the character of the landscape is changing. Rounded hills with complementary rounded tree forms are being covered with dark, sharp-topped conical forms which march in regular lines across the slopes. Sharply delineated boundaries unrelated to topography or natural vegetation are becoming more visible.



Boundary and road edge tree planting conflicts with topography and native vegetation.



Random planting of rounded tree forms arranged in groupings sympathetic to both topography and native tree masses.

THE DEVELOPED LANDSCAPE

Establishing clear planting guidelines for the two types of transitional landscapes is difficult. They are neither completely natural nor entirely exotic. A transitional landscape borrows qualities of both. But again, planting clues should be taken from established surroundings.

As a principle to follow when planting in the transitional types of landscape, first determine the relationship of the proposed tree planting to the nearby natural landscape. Tree forms and types which compliment the natural vegetation should be used. Then the trees should be fitted into natural patterns, enhancing the natural topography rather than opposing it.

Where the natural landscape is not a strong element, consideration of tree type is less important. Fitting the trees to the topography still remains an important design factor. Effective screening or spatial definition can be achieved by planting trees in irregular groupings rather than in single rows. These clumps and groupings of trees can blend more harmoniously to the form of the topography than rigid lines of trees.

Specific recommendations for planting in the transitional landscapes are difficult because of the many variables of landscape character and tree use. In the next section, The Developed Landscape, a number of lists suggest appropriate trees for various functions. These trees can be used in the transitional landscapes. Similarly, the trees recommended for use in the natural landscape can be used where appropriate—the edge of a woodland or to develop a woodland character.

In the more densely developed landscape where residential and commercial development predominate, the visual connection to the natural landscape is either non-existent or only remotely visible in the distance. Here natural vegetation is absent or represented by an occasional large tree. The dominant treescape comprises ornamentals such as Modesto Ash, London Plane and Oleander. Introduced plants establish the landscape character.

In Lafayette, the developed landscape is generally found in two types of situations. The first and largest of these areas are the valley bottoms. Orchards once covered this land with a neat patchwork. Residential subdivisions and the commercial center have now replaced all but a few small remnants of the agrarian times. However, the scale of the landscape is largely unchanged. Small to medium sized trees similar in size and character to the orchard trees cover the valley floors. In some places the orchard influence is still quite strong, as along portions of Happy Valley and Springhill Roads. Views are foreshortened in these convex land forms. Views outward are usually up toward the ridges and trees stand out against the skyline.

The other type of developed landscape occurs on the hillside, especially south and west facing slopes, and ridge tops. Here the natural cover was formerly grass or the shrubby soft chaparral. In some places grading for streets and building sites has removed the few trees that dotted the land.

From these convex land forms views are long—across to distant hills or down into the valleys. Trees stand out against both land forms and the sky.

The compositional elements of the developed landscape are buildings, pavement and introduced plants. In the most densely developed areas such as the commercial center, trees stand out in sharp contrast to structures and pavement. Because of this contrast as well as their relative scarcity, trees take on important roles as design elements. They serve as landmarks, pinpointing or emphasizing locations. The great Eucalyptus in front of Petar's or the Lombardy Poplars at Diablo Forge are examples of such landmarks. Street trees unify and bring harmony to a street of varied uses and architectural forms as do the Plane Trees along the east end of Moraga Boulevard. Trees can also reinforce the importance of streets relative to their size and scale. Other trees humanize the scale of plazas and shopping centers such as at Plaza Park. Climate control, especially shading, is another important function of trees in this hot summer area.

The question of what trees to plant in this developed landscape becomes an issue of design. Because the relationship to natural woodlands is diminished, the selection of trees must be related to the visual and functional roles to be served.

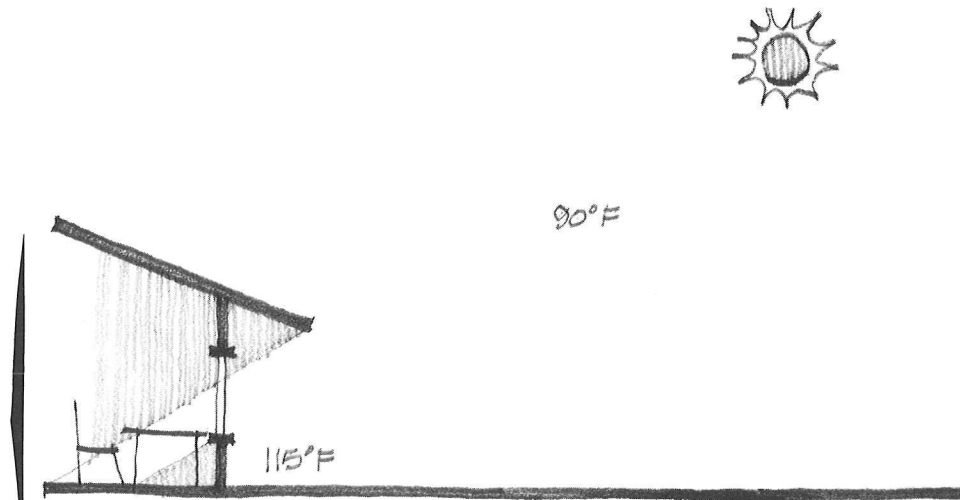
The following design guidelines are divided into three types of developed landscape: the commercial zone, residential areas and institutional property with an emphasis on schools and churches. Guidelines with lists of appropriate trees are given for each. The lists are not intended to suggest that *all* the trees should be used. They offer appropriate selections to satisfy specific planting functions. Detailed planting schemes for any proposed improvement would have to be developed and reviewed for appropriateness and conformance to the guidelines.

Throughout the text, reference is made to the usefulness of trees for microclimate control. This function deserves special emphasis in this day of decreasing energy reserves. The guidelines included here apply to all three types of developed landscape.

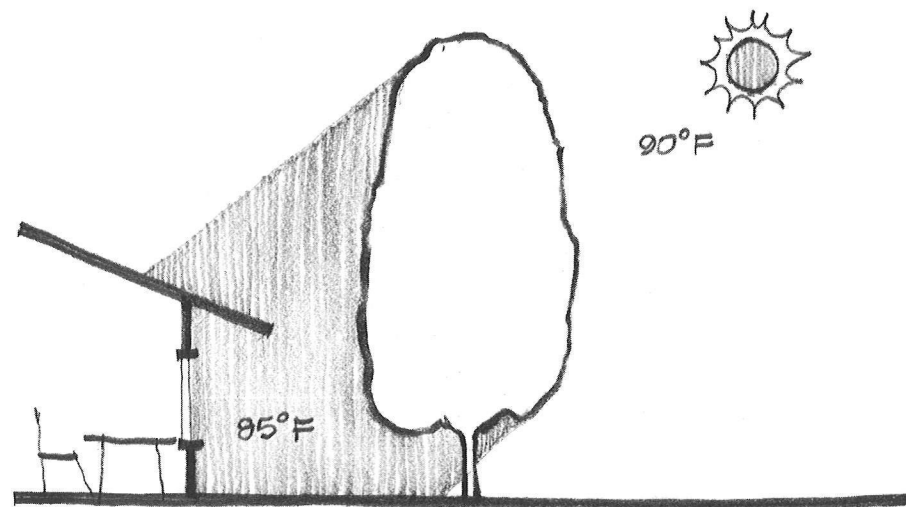
Because of the high summer heat and colder winters in Lafayette, air conditioners and furnaces are used to control the indoor climate. The trend toward technological solutions to climatic control negates time-tested building design and siting techniques. As a result, energy consumption has spiraled in recent years, especially with regard to the use of air conditioning.

Trees are extremely efficient air conditioners. Their foliage canopy blocks the intense direct sunlight, maintaining a consistently cool zone of air beneath. Used in conjunction with building design and orientation, trees can reduce the heavy reliance upon air conditioners for summer cooling. The choice of deciduous trees allows the warming sun to partially heat interiors in the winter, thereby reducing winter fuel demand. A few basic principles are presented here as guidelines for using trees to reduce energy demands.

Shade on building walls during the summer is a function of building orientation and sun angle. The easiest side of a building to shade is the south facing wall. Here the sun angle is the highest in summer and only a narrow extension of the roof line is required to shade the wall. Extended eaves with a vine arbor



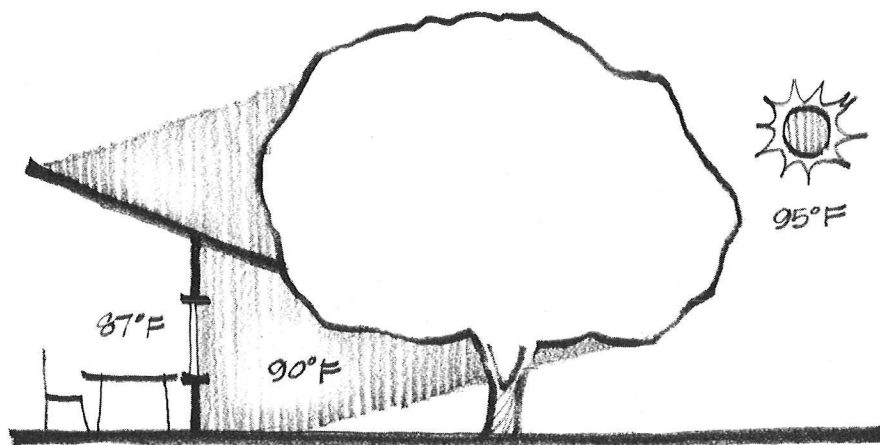
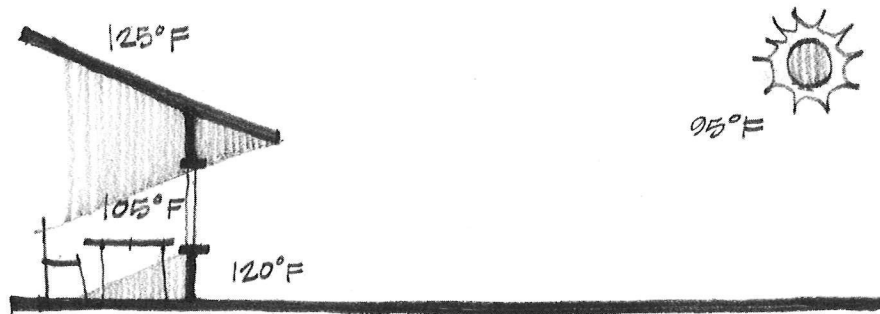
High angle of south sun is easily shielded using small, vertical trees.



may be sufficient. Several vertical deciduous trees can also be effective. By preventing the sun from entering the windows or striking the wall, very efficient cooling is possible. Conversely, in the winter allowing the sun to warm the south wall maximizes the use of sun to heat the building. The use of deciduous trees makes this possible.

The east and west facing walls are the most difficult to protect in summer. The sun angle is lower and strikes windows and walls more

directly. Broad spreading, low branching canopy trees are needed to extend the roof line and block the sun's rays. The west side is most critical. The sun is hottest in late afternoon since the air has been heated all day long. The accompanying sketches help illustrate how trees can be used to cool these south and west exposures and thereby conserve energy.



Low angle of west sun requires a broad-spreading tree for protection.

The City of Lafayette should encourage the use of trees as a long-term means of energy conservation in its review of site plans for all new development and proposed improvements.

The utilitarian use of trees for food is another important function of trees that deserves discussion. The large commercial orchards are gone. However, the land and climate that favored those orchards still exists. In a time of economic stress and high food costs, the planting of orchards is a most appropriate form of tree planting and should be encouraged.

Rather than lining properties with Pines or Dwarf Eucalyptus, we might consider reinstating Candelario Valencia's requirement to mark the boundary limits with fruit or nut trees! The planting of small private orchards or even cooperative neighborhood orchards can be an effective means of providing fruit and nuts as well as maintaining the rural quality of Lafayette.

Lot sizes in many residential areas are quite large—one-half acre or more. The planting of these large properties poses a real problem for many residents. The tendency is to attempt to "garden" the entire piece of property using exotic trees and shrubs and maintaining expensive lawns. The planting of a small orchard can help solve this dilemma and create a pleasing and productive landscape. Even in new housing developments, the planting of fruit trees is a realistic and aesthetically satisfying alternative to the large expanses of irrigated lawns. Apples, pears, plums, almonds and walnuts all thrive in Lafayette. Their display of spring flowers gives an added dimension of enjoyment. Persimmons provide a brilliant splash of fall foliage and fruit color.

Fruit trees do require careful maintenance. However, in terms of the benefits of product and seasonal enrichment, the traditional effort seems worthwhile.

The City of Lafayette should encourage the retention of old orchards and the planting of new ones in its review of site plans for future development.