

## Water conservation

- *Outdoor spaces account for a large percentage of campus water use. Water conservation should be given a high priority in every design.*

Water conservation can be achieved in many ways, including selection of drought tolerant plant materials, application of water conserving irrigation technologies or water recycling. Each of these approaches can contribute to significant reduction in water use without reducing landscape utility or satisfaction.

In addition to the domestic water drawn from the Hetch Hetchy reservoir, the University has a water system of wells and reservoirs dating back to pre-Founding agricultural activities. Governor Stanford built Lagunita, Searsville and Felt Lakes to store rainwater for use during the dry season. These lakes are supplemented by wells, and all are joined together in a system of pipes and hydrants serving the central campus. This well water system may be a preferable alternative to the Hetch Hetchy system for some landscape applications.

Greywater systems— which separate toilet water from other domestic waste— capture water from domestic drains for reuse in the landscape. Landscapes generally require much lower water quality than the potable supply. Some labs and other academic facilities use large quantities of water for cooling scientific devices. This water could perhaps be captured for landscape use in a greywater system. Reclaimed water presents significant potential health concerns. Any system must be tested and securely separated from the potable supply. If these concerns are adequately addressed, greywater systems can present a significant opportunity to reduce overall water use.

Thus water conservation can be achieved both by reducing the overall amount of water used in the landscape and by using each drop of water more than once.

### *Techniques*

- *Confine irrigated lands to areas of greatest human use. Where irrigation is required, apply the latest, most successful water conserving technologies.*
- *Explore the potential of using the well water system for irrigation.*
- *Find ways to capture and use Lagunita water when the lake is drained in the spring, rather than allowing it to run directly into the storm drain.*
- *Consider innovative greywater recycling systems.*



Most of Campus Drive is a "rural ribbon" through which the traveler experiences the Farm, even though high-tech buildings lie just beyond.

## Arboretum restoration

- *Today's Arboretum is in decline. Gradually replant with new trees to maintain a natural buffer between the campus and its urban surroundings.*

The original plan for Stanford set aside land on both sides of Palm Drive to be planted as an Arboretum containing horticultural specimens from around the world. This design ensured that the approach to the University would pass through groves of trees along the entry drive leading to the monumental Main Quad.

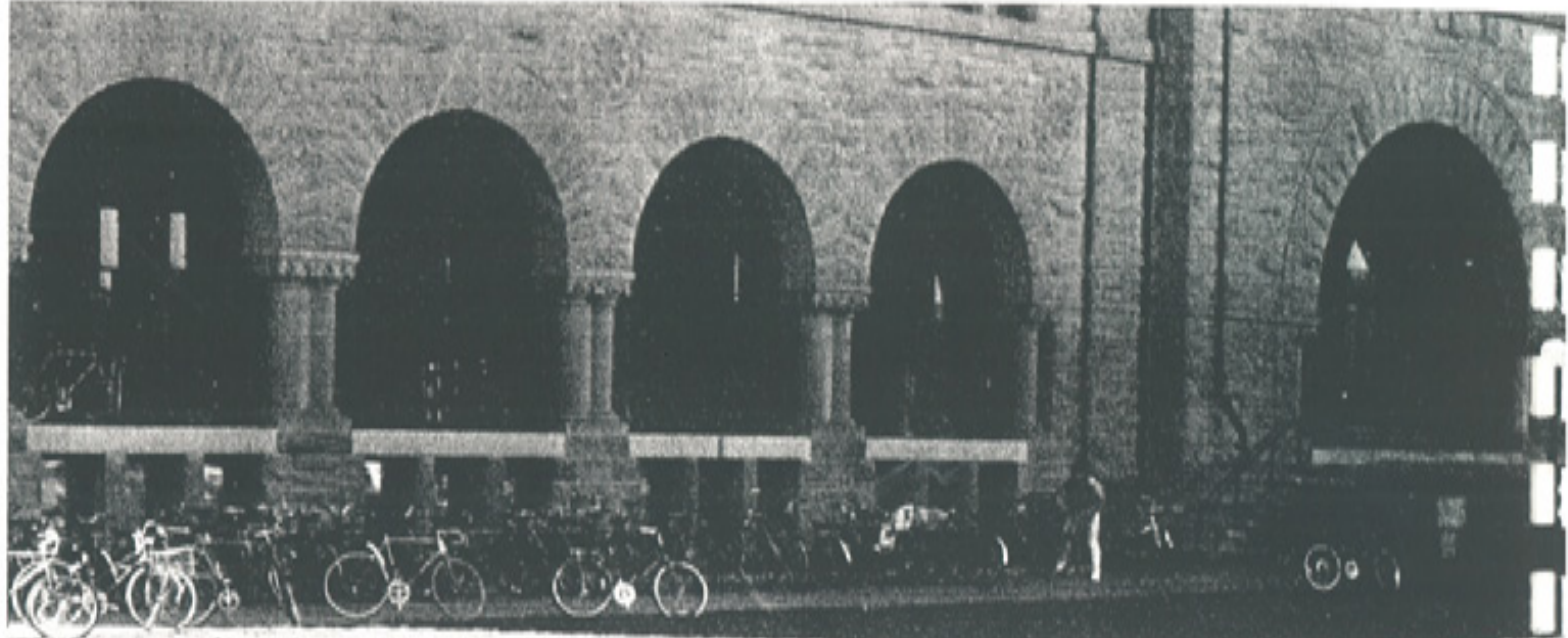
Fast growing Australian Eucalyptus were planted as a nurse crop for a variety of other exotic species. As the Stanford's became preoccupied with building the Quad, however, the Arboretum was neglected. The adaptable Eucalyptus survived and the more delicate specimens died. In this way, what has become one of the campus' best loved landscapes evolved by a mixture of ambition and neglect.

Today the Arboretum-- not a true arboretum but a stand of Eucalyptus in grassland-- is in decline. The Eucalyptus are approaching the end of their life cycle and are threatened by insects and disease. Years of Stadium event parking, tailgating and diversion of natural runoff into storm drains has compacted and dried the soil.

Renovating this land as a formal arboretum with specimens from around the world, as Leland Stanford once envisioned, is an attractive but economically difficult alternative.

#### *Recommendations*

- *Restore the Arboretum to revitalize soil and vegetation. Restoration must accommodate limited use for Stadium events while maintaining an unmanicured, open quality.*
- *As the Eucalyptus die, replace them with a similar evergreen, tall, high branching tree, such as native oaks.*
- *If disease and pest problems can be overcome, replant some of the Eucalyptus to maintain the special aroma of the Arboretum.*
- *Unless hazardous to buildings or people, do not remove standing dead wood. Allow the down wood to decompose and restore the soil or become shelter for insects or wildlife.*



**This small knot garden accents the entrance to the Main Quad.**



## Display gardens

- *The campus presents many opportunities for distinctive landscapes. Rather than having a single arboretum of horticultural interest, landscape diversity and education can be achieved by many smaller display gardens in the academic core.*

Discrete display gardens in the central campus can offer horticultural education while providing landscape interest and diversity.

The Stanford campus contains approximately 30,000 trees including horticultural specimens from around the world, though no formal arboretum displays these species or explains their origin. It would be difficult to treat the whole campus as an arboretum, labeling unique and representative plants in all of their various locations.

A more practical way to achieve landscape diversity and education would be to develop smaller display gardens throughout the central campus. These display gardens may be of three types: themes, demonstration gardens of horticultural communities, or showcases for rare specimens. Themes could include seasonal color, special plant forms or even agricultural motifs such as orchards. By creating a series of identifiable display gardens, horticultural education can be brought to the center of campus in affordable, identifiable increments.

#### *Techniques*

- *Find appropriate locations for unique exotic species to showcase special qualities or horticulturally unusual characteristics.*
- *Consider longevity as an important criteria in selecting horticultural specimens.*
- *Design display gardens in selected locations with modest labels or other methods of interpretation to provide horticultural education.*
- *Integrate small orchards or other agricultural motifs into central campus landscapes.*



Johnson Grove, near the Art  
Gallery, provides a shady retreat  
along the redwoods.

## Heritage trees and groves

- *Trees are the slowest growing, longest lasting landscape element. Heritage trees and groves provide continuity in a changing world, as well as a quiet retreat.*

A generation of students is here for only a few years, budgets change annually, University administrations change every ten or twenty years, but old trees stay on. Heritage trees lend permanence to the institution. They take time to grow. They live a long time, sometimes centuries. They provide context and stability in the environment.

Stanford has an abundance of these heritage trees. The native oaks and redwoods are long lived, some predating the founding by a century or more. The oaks, eucalyptus and conifers compose about 80% of the campus tree canopies.

Heritage trees and groves are worth waiting for. Unlike commercial builders who often need "instant effect," the University can afford to plant slow growing trees that ultimately will become part of a larger heritage.

Among the significant heritage trees is the double row of Eucalyptus planted between the Stanford's home (near San Francisquito Creek) and Lagunita. Leland Stanford used to ride between his home and the Red Barn on this road, known as Governor's Avenue. These trees run due north and south. Today Governor's Avenue is barely discernible—the Medical Center and other facilities have been sited across it, and the Eucalyptus are dying and being removed.

Bowman Grove, near the Alumni House, and Dohrmann Grove, near the Art Gallery, are examples of quiet shady retreats created by groves of heritage trees.

### *Recommendations*

- *Preserve Governor's Avenue alignment— even if the trees themselves cannot be preserved. Study ways to maintain the identity, visibility and historical value of the Avenue in the context of the Medical Center Region Plan.*
- *Seek opportunities to create shady groves where appropriate.*

The Governor's Corner residences demonstrate a sensitive, appropriate use of native plant materials.





## Native plants

- *Native California species offer a rich palette of colorful, hardy plant materials. Together with adapted species from other Mediterranean regions, these plants celebrate the unique qualities of the local environment. Native and adapted species are preferred over energy-intensive exotics for ornamental landscapes.*

A century ago, Frederick Law Olmsted designed the campus to be responsive to the Mediterranean climate. His plant palette consisted of rough textured, gray green, drought tolerant plants such as junipers, mulberries, eucalyptus, cedars, and palms. He did not envision sophisticated irrigation systems which allow easy cultivation of lawns and water loving plants. Repeated drought cycles, have heightened interest in native plants and climate responsive landscapes.

Irrigation can also degrade architecture. The sandstone in the Main Quad is rapidly deteriorating from penetration by irrigation of adjoining lawns. Efforts are underway to redesign the Main Quad with a drought tolerant landscape.

The Governor's Corner student housing applied a xeriscape concept in its design. By retaining existing oaks, using native and adapted plants, drip irrigation systems, mulch and river rocks, a satisfying, low-maintenance landscape has evolved. This landscape provides adequate lawns for student play, while also reflecting the arid nature of our region in ornamental areas.

Native landscapes present a different image from those based on European or East Coast models. Unlike the "clean and green" of trimmed boxwood and manicured lawns, native landscapes are usually more rambling, unmanicured and rougher on the edges. They require a different maintenance approach.

**Recommendations**

- *Except in special settings, choose species which do not require formal pruning or intensive maintenance.*
- *Choose drought tolerant species that do not require heavy application of energy-intensive fertilizers, pesticides or herbicides.*

The parking lot at Governor's  
Corner is screened from the  
view of passing motorists on  
Campus Drive.



## Parking lot planting

- *The landscape should dominate the traveler's experience, not the glare and reflection of metal and glass. Screen parking lots adjacent to roadways with planting.*

Thousands of parking spaces cover many acres across campus. These asphalt expanses collect heat from the sun and detract from landscape quality. Many local governments have guidelines specifying a 50% or more shade cover in new parking lots from trees. This dense planting approach can be adopted at Stanford as well. In addition, screen planting around lots can reduce the visual impact of asphalt and parked cars. This screening must be designed to minimize hiding places and maintain adequate visual access by law enforcement officers.

### *Techniques*

- *Select plant material which do not become safety and security concerns.*
- *Select 3'-4' high, evergreen, drought tolerant, low maintenance shrubs.*
- *Install trees in parking lots to reduce solar gain.*

