# Stanford University Draft Community Plan and General Use Permit Application

# Final Environmental Impact Report Volume I

December 18, 2000

# TABLE OF CONTENTS

## VOLUME I – DRAFT EIR

## SUMMARY



## 1 INTRODUCTION



## 2 DESCRIPTION OF PROPOSED PROJECT



## 3 PLAN CONSISTENCY

# 4 ENVIRONMENTAL ANALYSIS

# 7 ALTERNATIVES TO THE PROPOSED PROJECT



# 8 DOCUMENTATION



# STANFORD UNIVERSITY CP/GUP MITIGATION MONITORING AND REPORTING PROGRAM



# VOLUME II - APPENDICES

## LIST OF FIGURES

## LIST OF TABLES

# SUMMARY

## PROJECT DESCRIPTION SUMMARY

Santa Clara County has jurisdiction over 4,017 acres of Stanford University land located in the unincorporated portion of the County. This land includes the core campus north of Junipero Serra Boulevard (1,773 acres) as well as largely undeveloped areas in the foothills (2,244 acres). The County has chosen a Community Plan (CP) as the appropriate instrument to regulate the use of Stanford lands. The CP will establish policies and land use designations and will guide the County in its approval process for development of Stanford lands. The CP will be an amendment to the County General Plan that refines the strategies, policies, and implementation recommendations of the General Plan in order to apply them to Stanford's lands. The specific entitlements to use Stanford land for housing or academic facilities, conditions for such use, and the process for obtaining specific project approvals will be contained in a separate document known as a General Use Permit (GUP).

Stanford University has submitted a Draft CP and GUP application to the County Planning Office. The combination of these two land use instruments – the CP and GUP – is intended to govern development and use of Stanford University lands for at least ten years. This EIR analyzes the CP and GUP as proposed by Stanford on November 15, 1999 and amended on April 19, 2000.

Although this EIR analyzes both the CP and GUP, they are separate documents. As noted above, the CP is a General Plan document, establishing policies for development at Stanford. The GUP will allow specific levels of development at Stanford over the next 10 years, which must be determined to be consistent with the CP. The County could approve the CP, but not approve the GUP, or could modify the amount of development requested in the GUP based on environmental or other planning considerations. A detailed description of the CP and GUP application is provided in Chapter 2.

## IMPACT AND MITIGATION SUMMARY

Table S-1 provides a summary of the impacts, cumulative impacts, and mitigation measures that are discussed in detail in Chapter 4. Cumulative impacts are identified by a "C" before the numeric impact designation (i.e., BIO-C1). The impacts and mitigation measures are identified in one of three categories:

- Significant and Unavoidable - Impact is significant and cannot be mitigated to a less than significant level;
- Significant - Impact is significant but can be mitigated to a less than significant level; and
- Less than Significant - Impact is not considered significant and no mitigation is required.

## AREAS OF CONTROVERSY OR EXPRESSED CONCERN

The CEQA Guidelines (Section 15123[b][2]) require the summary section of an EIR to identify areas of controversy or expressed concern known to the Lead Agency, including issues raised by agencies and the public. Issues of concern raised by regional and local agencies and the public were identified through written responses received on the Notices of Preparation (NOP). The NOP and letters of comment received on the NOP are provided in Appendix A. A summary of the NOP comments, and listing of where the comments are addressed in the EIR is provided in Appendix B. Areas of concern that were raised about the project include:

- Impacts of increased development on local and regional traffic;
- Potential loss of recognized open space areas in the foothills and within the central campus;
- Adequacy of proposed housing to meet existing and future needs of Stanford students, faculty and staff;
- Increased demand for school capacity;
- Effects of new development exacerbating existing flooding problems downstream of campus; and
- Project impacts on rare, threatened and endangered species.

## ALTERNATIVES SUMMARY

CEQA requires that an EIR identify alternatives to a project as proposed. The CEQA Guidelines specify that the EIR identify alternatives that could attain most of the project objectives but might avoid or reduce significant affects of the project. In addition, the EIR must analyze a No Project Alternative that assesses the environmental effects in the even that the project does not occur. This EIR analyzes three project-level alternatives and several other alternative components. The project-level alternatives include No Project (No Additional Permits), No Project (Additional Permits) and Reduced Project. Chapter 7 provides a detailed description of the project alternatives, and analysis of the project alternative impacts.

### No Project (No Additional Permits)

The No Project (No Additional Permits) alternative assumes that the remaining capacity of the existing 1989 GUP would be constructed, and that no additional permits or discretionary approvals would be awarded to Stanford.

### No Project (Additional Permits)

The No Project (Additional Permits) alternative assumes that Stanford would apply for, and obtain, individual use permits for the projects contemplated in the proposed GUP application. Under this alternative, no CP would be adopted, and existing General Plan land use designations and policies would apply.

### Reduced Project

The Reduced Project alternative would approximately halve the development contemplated in the proposed GUP application. Under this alternative, the proposed CP would be adopted and the proposed land use designations and policies would apply.

### Alternative Components

In addition to the project-level alternatives, the following components are evaluated:

- Academic Growth Boundary (AGB) – two alternative locations for the AGB are considered, one paralleling existing development and one following Junipero Serra Boulevard (JSB)
- Land Use Designations – the following changes are evaluated
  - Change golf course from Academic Campus to Campus Open Space
  - Change golf course north of JSB from Academic Campus to Campus Residential; and from Academic Campus to Campus Open Space or Open Space and Field Research south of JSB
  - Change foothills from Open Space and Academic Reserve to Open Space and Field Research
  - Change Arboretum Corner from Academic Campus to Campus Open Space
  - Designate additional or alternative campus areas as Special Conservation as necessary to mitigate potential environmental effects

- Transportation options include
  - The no net new commute trips standard
  - Construction of a new roadway on Stanford lands to connect Sand Hill Road north of JSB to Alpine Road near the I-280 interchange
  - Dedicate easements for trail corridors (as identified in the CP) consistent with direction in the County Trails MP and dedication policies
  - Maintain development proposed in CP/GUP and reduce parking supply by 50 percent for academic uses

- Housing components are:
  - Requiring a linkage between academic development and housing
  - Housing site E on Stanford Avenue, no build
  - Housing site D on El Camino Real, no build or relocate units to Escondido Village
  - Housing Site I on El Camino Real, provide setback and reduce density by either eliminating units or relocating units to Site H at Quarry and Arboretum
  - Sites K, L, and N, no build or reduce density

- School Site - designate a middle school site near the intersection of Page Mill and Deer Creek Roads

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| **1. Land Use** | | | |
| LU-1. Will the project increase potential for conflict as a result of incompatible land uses? | Less than Significant | No mitigation is necessary. | Less than Significant |
| **2. Open Space, Recreation and Visual Resources** | | | |
| OS-1. Will the project be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways? | Less than Significant | No mitigation is necessary. | Less than Significant |
| OS-2. Will the project result in the loss of recognized open space? | Significant | OS-2: Cluster Development in Lathrop Development District | Significant |
| OS-3. Will the project adversely affect recreational opportunities for existing or new campus residents and facility users? | Significant | OS-3A: Improvement of Parks<br>OS-3B: Dedication of Trails | Less than Significant |
| OS-4. Will the project cause an adverse effect on foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas? | Significant | OS-4: Protect Visual Quality Along El Camino Real | Less than Significant |
| OS-5. Will the project cause an adverse effect on foreground views from one or more private residences or significantly alter public views? | Less than Significant | No mitigation is necessary. | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| OS-6. Will the project create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists? | Significant | OS-6: Control Light and Glare | Less than Significant |
| OS-C1: Will the project combined with other cumulative projects be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways? | Less than Significant | No mitigation is necessary. | Less than Significant |
| OS-C2: Will the project combined with other cumulative projects result in the cumulative loss of recognized open space? | Significant | OS-2: Cluster Development in Lathrop Development District | Significant |
| OS-C3: Will the project combined with other cumulative projects adversely affect recreational opportunities? | Significant | OS-3A: Improvement of Parks<br>OS-3B: Dedication of Trails | Less than Significant |
| OS-C4: Will the project together with other cumulative projects cause an adverse effect on foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas? | Significant | OS-4: Protect Visual Quality Along El Camino Real | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| OS-C5: Will the project along with other cumulative projects cause an adverse effect on foreground views from one or more private residences or significantly alter public views? | Less than Significant | No mitigation is necessary. | Less than Significant |
| OS-C6: Will the project along with other cumulative projects create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists? | Significant | OS-6: Control Light and Glare | Less than Significant |
| **3. Population and Housing** | | | |
| PH-1: Will the project result in a net loss, through conversion or demolition, of homes occupied by low- or moderate-income households? | No Impact | No mitigation is necessary. | Less than Significant |
| PH-2: Will the project result in a net loss, through conversion or demolition, of multifamily rental housing? | No Impact | No mitigation is necessary. | Less than Significant |
| PH-3: Will the project increase the demand for housing thereby causing indirect environmental impacts? | Significant | PH-3A: Identify Additional Housing Sites<br>PH-3B: Condition New Academic Space on the Construction of Housing | Less than Significant |
| PH-C1&2: Will the project have a cumulative potential to result in a net loss of homes occupied by low- or moderate-income households or a net loss of multifamily rental housing? | No Impact | No mitigation is necessary | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| PH-C3: Will the project plus cumulative projects increase the demand for housing thereby causing indirect environmental impacts? | Significant | PH-3A: Identify Additional Housing Sites<br>PH-3B: Condition New Academic Space on the Construction of Housing | Less than Significant |
| **4. Traffic and Circulation** | | | |
| TR-1: Transit. Will the project adversely affect public transit service levels or accessibility? | Less than Significant | No mitigation is necessary. | Less than Significant |
| TR-2: Bicycle and/or Pedestrian. Will the project cause adverse impacts on the use of bicycle and/or pedestrian travel ways? | Less than Significant | No mitigation is necessary. | Less than Significant |
| TR-3: Parking. Will the project create adverse impacts to existing parking or access to existing parking? | Less than Significant | No mitigation is necessary. | Less than Significant |
| TR-4: Vehicular Impacts – Freeways. Will the project create adverse vehicular impacts on the freeways? | Less than Significant | No mitigation is necessary. | Less than Significant |
| TR-5: Vehicular Impacts – Intersections. Will the project create adverse vehicular impacts for intersections in Palo Alto, Santa Clara County, and Menlo Park? | Significant | TR-5A: Tier 1 Intersection Capacity Expansion<br>TR-5B: Trip Reduction and Monitoring<br>TR-5C: Cooperative Trip Reduction<br>TR-5D: Intersection Capacity Expansion | Significant |
| TR-6: Residential Streets. Will the project result in traffic impacts to surrounding residential neighborhoods? | Significant | TR-6A: Reduce Cut Through Traffic on Residential Streets<br>TR-6B: Require Site-Specific Traffic Studies for Large GUP Projects | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| TR-7: Construction. Will the project create additional construction traffic causing a substantial reduction in access to land uses or a reduction in mobility? | Significant | TR-7: Construction Traffic Control Measures | Less than Significant |
| **5. Hydrology and Water Quality** | | | |
| HWQ-1: Surface Water Hydrology. Will the project cause increased runoff due to creation of impervious surfaces? | Significant | HWQ-1: Manage Stormwater Runoff | Less than Significant |
| HWQ-2: Groundwater. Will the project reduce groundwater quantity? | Significant | HWQ-1: Manage Stormwater Runoff<br>HWQ-2: Maintain Groundwater Recharge | Less than Significant |
| HWQ-3: Groundwater. Will the project degrade groundwater quality? | Significant | HWQ-3: Protect Water Quality | Less than Significant |
| HWQ-4. Surface Water Quality. Will the project result in a degradation of surface water runoff quality? | Significant | HWQ-3: Protect Water Quality<br>HWQ-4: Best Management Practices for Preventing Post-Construction Urban Runoff Pollution | Less than Significant |
| HWQ-C1: Will the project have a cumulative potential to impact surface water hydrology, groundwater quantity, groundwater quality or surface water quality? | Significant | HWQ-1: Manage Stormwater Runoff<br>HWQ-2: Maintain Groundwater Recharge<br>HWQ-3: Protect Water Quality<br>HWQ-4: Best Management Practices for Preventing Post-Construction Urban Runoff Pollution | Less than Significant |
| **6. Geology and Seismicity** | | | |
| G&S-1: Will project facilities be damaged by ground surface rupture? | Less than Significant | No mitigation is necessary. | Less than Significant |
| G&S-2: Will earthquake-induced strong ground shaking damage project facilities? | Less than Significant | No mitigation is necessary. | Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| G&S-3: Will project facilities be damaged by co-seismic ground deformation? | Less than Significant | No mitigation is necessary. | Less than Significant |
| G&S-4: Will project facilities be damaged by liquefaction or settlement during an earthquake? | Less than Significant | No mitigation is necessary. | Less than Significant |
| G&S-5: Will project facilities be damaged by unstable slope conditions? | Less than Significant | No mitigation is necessary. | Less than Significant |
| G&S-6: Will project facilities be exposed to damage due to expansive soils or soils with moderate to high erosion potential? | Less than Significant | No mitigation is necessary. | Less than Significant |
| **7. Hazardous Materials** | | | |
| PHS-1: Will the Project provide safeguards to protect the public from exposure to hazardous materials at concentrations detrimental to human health? | Significant | PHS-1: Risk Management Plan | Less than Significant |
| PHS-2: Will the Project provide safeguards to protect the public from exposure to hazardous waste at concentrations detrimental to human health? | Less than Significant | No mitigation is necessary. | Less than Significant |
| PHS-C1: Will the project plus cumulative projects provide safeguards to protect the public from exposure to hazardous materials and wastes at concentrations detrimental to human health? | Significant | PHS-1: Risk Management Plan | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| **8. Biological Resources** | | | |
| BIO-1: Will the project cause a loss of individuals or occupied habitat of endangered, threatened, or rare wildlife or plant species? | Significant; California Tiger Salamander | BIO-1(a) through (e) - Option 1: CTS Mitigation Program Proposed by Stanford | Option 1 - Significant |
| | | BIO-1(a) through (e) - Option 2: Alternative CTS Mitigation Program (not proposed by project applicant) | Option 2 - Less than Significant |
| | | BIO-1(a) through (e) - Option 3: Federal and State Alternative CTS Mitigation Program (proposed by the United States Fish & Wildlife Service and California Department of Fish and Game) | Option 3 - Less than Significant |
| | No Impact; Steelhead and California red-legged frog | No mitigation is necessary. | Less than Significant |
| | Potentially Significant; Rare, Threatened, and Endangered Plants | BIO-1(f) through (k): Rare, Threatened, and Endangered Plant Protection Program | Less than Significant |
| | Less than Significant; American Peregrine Falcon and Willow Flycatcher | No mitigation is necessary. | Less than Significant |
| BIO-2: Will the project cause a loss of individuals of CNPS List 3 or 4 plant species? | Significant | BIO-1(f) through (k): Rare, Threatened, and Endangered Plant Protection Program | Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| BIO-3: Will the project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites? | Significant | BIO-3: Active Raptor and Migratory Bird Nest Protection Program | Less than Significant |
| BIO-4: Will the project cause a permanent net loss of habitat for sensitive wildlife species? | Less than Significant | No mitigation is necessary. | Less than Significant |
| BIO-5: Will the project cause a permanent loss of sensitive native plant communities? | Significant | BIO-5: Protect Oak Woodland Habitat | Less than Significant |
| BIO-6: Will the project substantially block or disrupt wildlife migration or travel corridors? | Significant | BIO-1(a) through (e) - Option 1: CTS Mitigation Program Proposed by Stanford<br>BIO-1(a) through (e) - Option 2: Alternative CTS Mitigation Program (not proposed by project applicant)<br>BIO-1(a) through (e) - Option 3: Federal and State Alternative CTS Mitigation Program (proposed by the United States Fish & Wildlife Service and California Department of Fish and Game) | Less than Significant |
| BIO-7: Will the project conflict with the County's tree preservation ordinance? | Significant | BIO-7: Planting of Replacement Trees | Less than Significant |
| BIO-8: Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | Less than Significant | No mitigation is necessary. | Less than Significant |
| BIO-9: Will the project result in a net loss of wetlands or other waters of the U.S.? | Significant | BIO-9: Wetland Avoidance and Replacement | Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| BIO-C1 through BIO-C3, BIO-C7, and BIO-C8: Will the project impact sensitive biological resources based on evaluation criteria 1 through 3, 7, and 8? | Significant | BIO-1(a) through (e) - Option 2: Alternative CTS Mitigation Program (not proposed by project applicant)<br>BIO-1(f) through (k): Rare, Threatened, and Endangered Plant Protection Program<br>BIO-3: Active Raptor and Migratory Bird Nest Protection Program<br>BIO-7: Planting of Replacement Trees | Less than Significant |
| BIO-C4: Will the project, combined with other cumulative projects, cause a permanent loss of habitat for sensitive wildlife species? | Less than Significant | No mitigation is necessary | Less than Significant |
| BIO-C5: Will the project, combined with other cumulative projects, cause a permanent loss of sensitive native plant communities? | Significant | BIO-5: Protect Oak Woodland Habitat | Less than Significant |
| BIO-C6: Will the project, combined with other cumulative projects, substantially block or disrupt wildlife migration or travel corridors? | Significant | BIO-1(a) through (e) - Option 2: Alternative CTS Mitigation Program (not proposed by project applicant) | Less than Significant |
| BIO-C9: Will the project, combined with other cumulative projects, result in a net loss of wetlands or other waters of the U.S.? | Significant | BIO-9: Wetland Avoidance and Replacement | Less than Significant |
| **9. Historic and Archaeological Resources** | | | |
| HA-1: Will the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? | Significant | HA-1: Protection of Historic Resources | Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| HA-2: Will the project cause a substantial adverse change in the significance of an archaeological resource as defined in Public Resources Code 21083.2? | Significant | HA-2: Protection of Archaeological Resources | Less than Significant |
| HA-3: Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | Significant | HA-3: Protection of Undiscovered Paleontological Materials | Less than Significant |
| HA-4: Will the project disturb any human remains, including those interred outside of formal cemeteries? | Significant | HA-2: Protection of Archaeological Resources | Less than Significant |
| HA-C1: Will the project combined with cumulative projects have a potential to disturb historical resources? | Significant | HA-1: Protection of Historic Resources | Significant |
| HA-C2-4: Will the project combined with cumulative projects have a potential to disturb archaeological, unique geological, or paleontological resources, or human remains? | Significant | <u>Archaeological Resources</u><br>HA-2: Protection of Archaeological Resources<br><u>Unique Geologic, Paleontological Resources and Human Remains</u><br>No mitigation is necessary. | Less than Significant |
| **10. Public Services and Utilities** | | | |
| PS-1: Will the project increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained? | Significant; Police<br>Significant; Fire<br>Significant; Water<br>Significant; Wastewater | PS-1A: Maintain Police Services<br>PS-1B: Maintain Fire Services<br>PS-1C: Water Conservation and Recycling<br>PS-1D: Improve the Wastewater Collection System | Less than Significant<br>Less than Significant<br>Less than Significant<br>Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| | Less than Significant; Solid Waste | No mitigation is necessary. | Less than Significant |
| | Less than Significant; Electrical Power | No mitigation is necessary. | Less than Significant |
| PS-2: Will the project create a demand for additional school capacity that cannot be met by existing or planned capacity? | Significant | PS-2: Maintain School Capacity | Less than Significant |
| PS-C1: Will the project, combined with other cumulative projects, increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained? | Significant | PS-1A: Maintain Police Services<br>PS-1B: Maintain Fire Services<br>PS-1C: Water Conservation and Recycling<br>PS-1D: Improve the Wastewater Collection System | Less than Significant |
| PS-C2: Will the project, together with other cumulative projects, create a demand for additional school capacity that cannot be met by existing or planned capacity? | Significant | PS-2: Maintain School Capacity | Less than Significant |
| **11. Air Resources** | | | |
| AQ-1: Will there be inadequate mitigation for potential construction-period emissions? | Significant | AQ-1: Reduce Diesel Emissions | Less than Significant |
| AQ-2: Will the project produce local CO concentrations that exceed federal and state standards? | Less than Significant | No mitigation is necessary. | Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| AQ-3: Is the project inconsistent with emission growth factors contained in any BAAQMD air plans or does it result in an emissions increase greater than the listed significance thresholds? | Less than Significant | No mitigation is necessary. | Less than Significant |
| AQ-4: Will the project create objectionable odors? | Less than Significant | No mitigation is necessary. | Less than Significant |
| AQ-5: Will the project significantly alter air movement, moisture, or temperature, or change in climate, either locally or regionally? | Less than Significant | No mitigation is necessary. | Less than Significant |
| AQ-6: Will the project expose sensitive receptors or the general public to substantial levels of toxic air contaminants? | Less than Significant | No mitigation is necessary. | Less than Significant |
| AQ-C1: Will the project have significant cumulative air quality impacts? | Less than Significant | AQ-1 Reduce Diesel Emissions | Less than Significant |
| **12. Noise** | | | |
| NOISE-1: Will construction of the project expose the public to high noise levels? | Significant | NOISE-1: Reduce Construction Noise | Significant |
| NOISE-2: Will operation of the project expose the public to high noise levels? | Significant | NOISE-2: Reduce Operational Noise | Less than Significant |
| NOISE-3: Will operation of the project expose the public to high traffic noise levels? | Less than Significant | No mitigation is necessary. | Less than Significant |

# Table S-1

## Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| NOISE-4: Will vibration from project construction cause any disturbance? | Less than Significant | No mitigation is necessary. | Less than Significant |
| NOISE-C1: Will construction of the project combined with other nosie sources expose the public to high cumulative noise levels? | Significant | No mitigation is possible. | Significant |
| NOISE-C2: Will operation of the project expose the public to high cumulative noise levels? | Less than Significant | NOISE-2: Reduce Operational Noise | Less than Significant |
| NOISE-C3: Will operation of the project expose the public to high cumulative traffic noise levels? | Less than Significant | No mitigation is necessary. | Less than Significant |
| NOISE-C4: Will vibration from project construction plus cumulative projects cause any disturbance? | Less than Significant | No mitigation is necessary. | Less than Significant |
| **13. Growth Inducement** | | | |
| GI-1: Will the project induce growth or concentration of population thereby leading to indirect impacts on the physical environment? | Significant | GI-1: Identify Additional Housing Sites and Implement Traffic and Service Mitigation Measures | Significant |
| GI-2: Will the provision of infrastructure improvements associated with the project stimulate population and housing growth beyond that projected in the Palo Alto Comprehensive Plan or the Santa Clara County General Plan? | Less than Significant | No mitigation is necessary. | Less than Significant |

## Table S-1

### Impact and Mitigation Summary

| Impact | Pre-Mitigation Significance | Mitigation Measure | Post-Mitigation Significance |
|---|---|---|---|
| GI-C1: Will the project, along with other projects in the vicinity, create cumulative growth inducing impacts? | Significant | No feasible mitigation is available beyond those measures discussed in mitigation measure GI-1. | Significant and Unavoidable |

Source: Parsons, 2000

# 1 INTRODUCTION

## 1.1 BACKGROUND

Stanford University is a private institution, and as such, is subject to normal zoning controls and project approval procedures. Stanford’s lands have been developed during the last 10 years under the 1989 General Use Permit (GUP). The 1989 GUP was issued to permit the use of Stanford’s lands for educational purposes, consistent with the Santa Clara County Zoning Ordinance that establishes educational uses as a conditionally permitted use in all zoning districts, and any use consistent with the General Plan as a conditionally permitted use in the A-1 district. In addition, portions of the core campus have been developed for single-family residences, a permitted use under the applicable zoning, and leased to faculty and staff. The University has almost reached the limit of allowable development in the 1989 GUP, creating the need for a new set of development entitlements if additional academic facilities and residences are to be provided.

Stanford University submitted an application for the Stanford University Community Plan/General Plan Use Permit to the County in November 1999. Copies of Stanford’s proposed Draft Community Plan and General Use Permit Application are available from the County Planning Office and can be found online at the County’s web site (http://sccplanning.org/ndins.htm). Minor amendments were submitted on April 19, 2000. This application as amended constitutes the proposed project analyzed in this EIR, and is described in Chapter 2, Description of Proposed Project.

The Community Plan/General Use Permit (CP/GUP) project area encompasses the 4,017 acres of University land located in unincorporated Santa Clara County. A General Use Permit (GUP) has governed development on Stanford's central campus and foothill areas for over 30 years; the Community Plan (CP) is a new tool that will state policies for campus growth. Potential development allowable under the 1989 GUP is close to complete, requiring a new GUP. Because the County felt that greater understanding of potential future growth and decision-making context was required, it directed Stanford to submit an application for a General Plan amendment (the CP) in conjunction with the GUP application.

The purpose of the CP is to create a policy framework that will guide both Stanford and the County in their land use decision making, and that will provide the public with a better understanding of Stanford's future use of land. The CP will be an amendment to the 1995 Santa Clara County General Plan; the GUP will be the general entitlement that will allow a defined amount of development under a specified set of conditions. The land use activities ultimately permitted through the proposed GUP will be in accordance with the CP policies and the land use designations defined by the CP as adopted by the County. These proposed designations include Academic Campus, Open Space and Academic Reserve, Special Conservation, Campus Residential – Low Density, Campus Residential – Moderate Density, Campus Open Space, and Public School. Maps of proposed land use designations and other features of the CP are included in Chapter 2, Description of Proposed Project.

Generally, the GUP could result in the construction of new academic facilities totaling approximately 2,035,000 gross square feet, which includes academic support, student activity, cultural and athletic facilities. 2,350 housing units for graduate, undergraduate, hospital residents, and postgraduate fellows are also proposed, as well as between 302 and 668 housing units for designated faculty and staffed, based on the proposed ranges of low-density and moderate density zoning. Utilities, roads, bikeways, landscaping, and other requisite infrastructure could be constructed, including 2,873 proposed additional parking spaces.

## 1.2 PURPOSE OF THE EIR

Pursuant to the California Environmental Quality Act (CEQA), discretionary decisions by public agencies regarding non-exempt public and private projects are subject to environmental review. The purpose of an environmental impact report (EIR) is to identify the significant effects of the project on the environment, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided (Section 21002.1(a)). Each public agency is required to mitigate or avoid the significant effects on the environment of projects it approves or carries out whenever it is feasible.

This Draft EIR has been prepared by Santa Clara County (lead agency) pursuant to CEQA. The purpose of this Draft EIR is to analyze the environmental effects of implementation of the project, to indicate means to avoid or reduce possible environmental degradation, and to identify alternatives which would avoid or reduce any significant adverse effects of the project. Environmental effects of the project that must be addressed include the significant adverse effects of the project, growth-inducing effects of the project, and significant cumulative effects of past, present, and reasonably anticipated future projects.

## 1.3 COUNTY REVIEW PROCESS

The Stanford Proposed Community Plan (CP) and General Use Permit (GUP) must be processed, conditioned and approved by Santa Clara County to become effective. The County has established a review and approval process that includes many opportunities for members of the public to observe and participate in community forums, public hearings, town hall meetings, and meetings of a community resource group. As noted above, the potential environmental effects from future development described in the CP/GUP will be presented in this EIR and reviewed in formal public hearings. Following publication of this Draft EIR, there will be a public review and comment period during which the County will accept written comments on the document. The Santa Clara County Planning Commission will hold a public hearing on the Draft EIR, at which time both the Commission and the public will be invited to orally comment on the document. Written and oral comments which raise significant environmental issues will be responded to and the comments and responses will be published in a document entitled Final Environmental Impact Report. Following publication, the Final EIR (including the DEIR) will be presented to the Board of Supervisors for certification as to its compliance with CEQA before any action is taken on the CP/GUP.

If the CP is approved, the County Board of Supervisors will adopt it as an amendment to the County’s General Plan. The County could approve the GUP following the CP approval and the new GUP would supercede the 1989 GUP. Based on the County Planning Office's review of the proposed CP/GUP, it is possible that the proposed CP/GUP will be modified before it is adopted. In part, the modification could be in response to potential impacts of the CP/GUP and the results of the alternatives analysis included in this Draft EIR. In no case would the CP/GUP be modified in ways that would create new significant impacts, cause a substantial increase in the severity of the environmental impacts identified in this Draft EIR, or require the consideration of substantially different project alternatives or mitigation measures.

## 1.4 USES OF THE PROGRAM EIR

The Stanford CP/GUP is intended to provide a program to guide the development of a variety of academic and academic-related uses (e.g., student housing) over a 10-year period. Accordingly, this EIR is intended to be a program level EIR to consider the environmental impacts, mitigation measures and alternatives of the CP/GUP as a whole. This approach avoids duplication, allows the lead agency to consider broad policy alternatives and mitigation measures at an earlier time when there may be more flexibility to address the issues, and addresses cumulative impacts that might be overlooked in a project level EIR. (Refer to section 15168 of the CEQA Guidelines.)

If the Stanford CP/GUP is approved, as each individual building project is developed, Santa Clara County is required to examine the proposed development and to determine whether potential effects have been fully analyzed in this Program EIR. If proposed building projects would have no effects beyond those already analyzed, Santa Clara County can find that the building projects are covered by this Program EIR and no further CEQA environmental documentation would be required. If a proposed building project would have effects that were not analyzed in this program EIR, a new environmental document would need to be prepared with additional focused environmental documentation. This approach provides an opportunity to increase the efficiency and effectiveness of CEQA compliance while achieving a high level of environmental protection.

This EIR evaluates the foreseeable impacts of development under the CP and GUP through the year 2010, which is the longest feasible timeframe for analyzing environmental impacts with any level of reliability. Foreseeable development at Stanford through 2010 is presumed to be the level and type of development proposed in the GUP. While unforeseeable factors may cause Stanford to apply for an amendment to the GUP or other use permits within this time frame, any such proposals and the associated environmental impacts cannot be predicted with any reasonable degree of accuracy and, therefore, are too speculative to evaluate in this EIR. If Stanford applies for a GUP amendment or other use permits, further environmental review will be conducted at that time. (Refer to section 1.5.B.)

## 1.5 HOW THE GENERAL USE PERMIT WORKS

### 1.5.A Projects Consistent with the General Use Permit

As is the case now, under the 1989 General Use Permit, if the proposed new GUP were approved, Stanford would be allowed to apply to the County for Architectural and Site Approval (ASA) Committee approval of new buildings if they are consistent with the GUP, rather than requiring a separate use permit. Projects would undergo environmental review as part of the ASA review process. There would be two potential points of public input on a project; once during the environmental review process (if a Negative Declaration or EIR is required) and once during the ASA Committee review of the project. A defined set of small projects are exempt from ASA review under the zoning ordinance (Section 5.40.050 of the Santa Clara County Revised Zoning Ordinance).

It is possible that projects of a specified size or scope may be required to receive Planning Commission approval, even if they are consistent with the GUP. Such projects will be identified through the conditions of the GUP.

### 1.5.B Projects Inconsistent with or not within the General Use Permit

Projects which are inconsistent with, or not within, the new GUP would require Planning Commission approval of a separate Use Permit or a modification of the GUP, and would also require environmental review as part of that review process. No Use Permit application that is inconsistent with the Community Plan will be accepted by the County. As part of the approval of an additional Use Permit, the project is subject to ASA approval. For these projects, there would be three potential points of public input on a project; once during the environmental review process (if a Negative Declaration or EIR is required), once during the ASA Committee review of the project, and once during the Use Permit approval process before the Planning Commission. Projects inconsistent with the GUP would include those that:

1) are outside the CP Academic Growth Boundary;
2) exceed the threshold for overall projected square footage under the proposed new GUP;
3) are proposed at a time when population growth might exceed any limits identified in the new GUP conditions; or
4) are otherwise inconsistent with the conditions of the GUP.

Depending on the ultimate terms of the Community Plan and General Use Permit, applications for separate Use Permits may not be considered by the County for all or part of the GUP area. For example, although Stanford has proposed that limited development be allowed within the Open Space and Academic Reserve area through individual Use Permits, the County may determine that individual permits will not be allowed in this area.

## 1.6 AGENCIES AND APPROVALS

Portions of Stanford University are in the jurisdiction of Santa Clara County, San Mateo County, the City of Palo Alto, the City of Menlo Park, Portola Valley and Woodside. However, the CP/GUP will address future development only for the 4,017 acres of University land in unincorporated Santa Clara County. Santa Clara County is the Lead Agency for the preparation of environmental documentation for the proposed project under Article 4, Section 15051 of CEQA. Under CEQA, other agencies that have discretionary authority over the project or aspects of the project are considered “responsible agencies.”

Possible responsible agencies for approval and implementation of the proposed project would include, but may not be limited to, the following. Each of these responsible agencies may need to review this EIR, or conduct separate environmental analyses and documentation for CP/GUP related projects.

### 1.6.A Local Agencies

- Santa Clara Valley Transportation Authority, responsible for transportation planning, congestion management, and related air quality improvements in Santa Clara County.
- Santa Clara Valley Water District, responsible for flood control and water quality management.
- City of Palo Alto, responsible for fire and wastewater services, and for transportation improvements within their jurisdiction. The City of Palo Alto may also participate with Stanford University on one project facility, the Performing Arts Center.
- City of Menlo Park, responsible for transportation improvements within their jurisdiction.
- San Francisco Water Department, responsible for water supply.
- Palo Alto Unified School District, responsible for K-12 education of Stanford residents and for its facilities on Stanford University lands.

### 1.6.B Regional Agencies

- San Francisco Bay Regional Water Quality Control Board, responsible for water quality protection and issuance of waste discharge permits pursuant to the National Pollution Discharge Elimination System.
- Bay Area Air Quality Management District, responsible for air quality management and attainment of State and federal air quality standards.

### 1.6.C State Agencies

- California Department of Transportation, responsible for transportation improvements on state roads and highways.

### 1.6.D Federal Agencies

- The U.S. Army Corps of Engineers, responsible for watercourses and wetlands.

### 1.6.E Trustee Agencies

In addition to the responsible agencies listed above, the EIR will be used by “trustee agencies”, which are those state agencies having jurisdiction by law over natural resources that could be affected by the project. In this instance there is one trustee agency that is expected to use the EIR:

- California Department of Fish & Game, responsible for protecting sensitive biological species and habitats.

Although not technically a trustee agency under CEQA, the U.S. Fish and Wildlife Service also has jurisdiction over species of concern in the project area, and may need to review this EIR in regard to potential impacts to those species.

# 2 DESCRIPTION OF PROPOSED PROJECT

## 2.1 PROJECT LOCATION

Stanford University is located in Santa Clara and San Mateo counties approximately 35 miles south of San Francisco and 20 miles north of San Jose, CA (see Figures 2-1 through 2-3).

The Draft Community Plan (CP) and General Use Permit (GUP) application (November 15, 1999), which constitute the proposed project, apply to Stanford lands located within unincorporated Santa Clara County, CA (4,017 acres). The CP/GUP area is within a total University landholding of 8,180 acres. Stanford lands in other jurisdictions, including San Mateo County, Menlo Park, Palo Alto, Portola Valley and Woodside, are not a part of the CP or GUP application (see Figure 2-2). The CP boundary generally includes Stanford lands located on the south side of El Camino Real between Sand Hill Road/Alpine Road and Page Mill Road/Hillview Avenue. This boundary includes the core campus area (north of Junipero Serra Blvd.) and large portions of the Stanford foothills (south of Junipero Serra Blvd.).

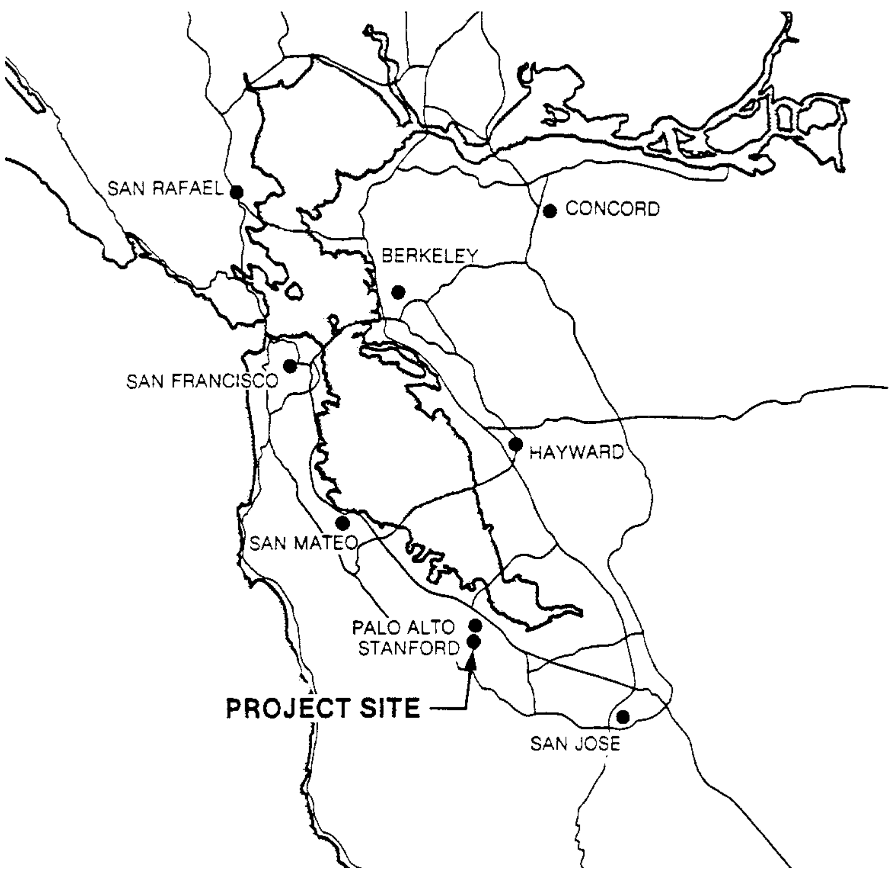



**Figure 2-1 Project Location**

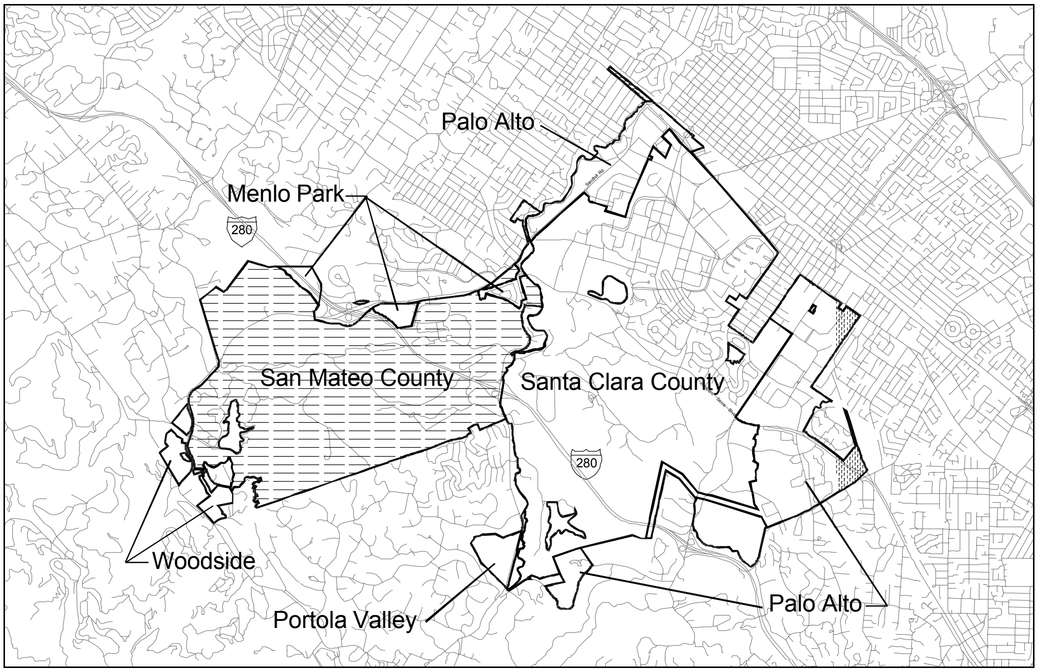
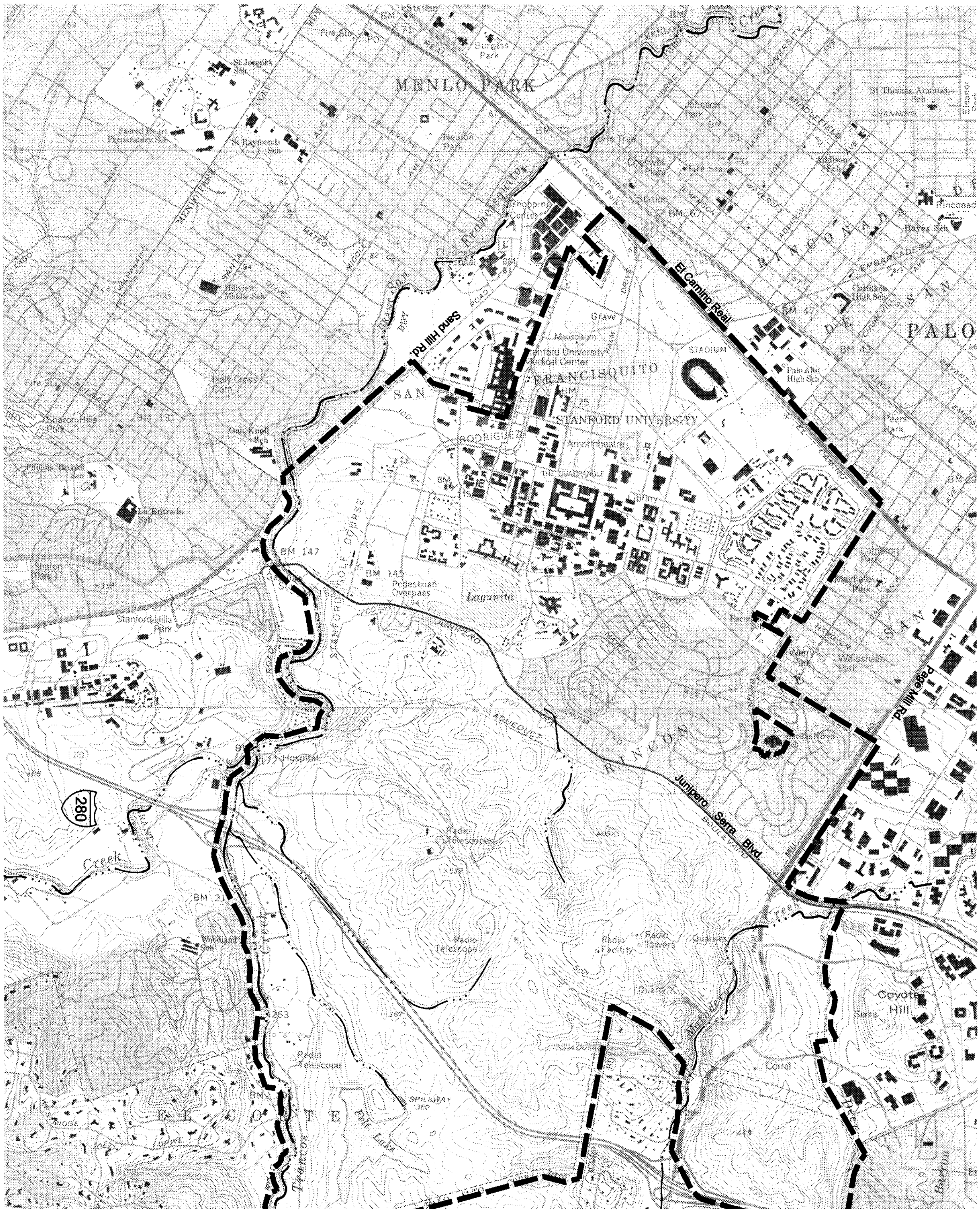



**Figure 2-2 Governmental Jurisdictions**

## 2.2 PROJECT DESCRIPTION

Santa Clara County has jurisdiction over 4,017 acres of Stanford University land located in the unincorporated portion of the County. This land includes the core campus north of Junipero Serra Boulevard (1,773 acres) as well as largely undeveloped areas in the foothills (2,244 acres). The County has chosen a Community Plan (CP) as the appropriate instrument to regulate the use of Stanford lands. The CP will establish policies and land use designations and will guide the County in its approval process for development of Stanford lands. The CP will be an amendment to the County General Plan that refines the strategies, policies, and implementation recommendations of the General Plan in order to apply them to Stanford's lands. The specific entitlements to use Stanford land for housing or academic facilities, conditions for such use, and the process for obtaining specific project approvals will be contained in a separate document known as a General Use Permit (GUP).

File: 736167\Graphics\Water Date: 06/20/2000




Stanford University
CP/GUP Project EIR

**COMMUNITY PLAN BOUNDARY**
**LOCATION MAP**

PARSONS

Figure 2-3

On November 15, 1999, Stanford University submitted a Draft CP and GUP application to the County Planning Office. The combination of these two land use instruments – the CP and GUP – is intended to govern development and use of Stanford University lands for at least ten years. However, the CP will remain in place until it is modified or replaced by the County. This EIR analyzes the Community Plan as proposed by Stanford on November 15, 1999, and amended on April 19, 2000. However, the CP will ultimately be adopted by the County as a part of the General Plan. The adopted version may be revised based on the County's determination of appropriate land use designations, and policies for inclusion in the CP because it is intended to be adopted by the County as part of its General Plan. This determination will be based, in part, on the environmental analysis contained in this EIR. The final form of the CP is particularly important because development at Stanford could be guided by this document well after the 10-year time frame of the GUP. The CP also does not authorize any specific development projects, regardless of whether they fall within the GUP or are the subject of an additional use permit.

The GUP will have an expected life of ten years. At the end of ten years, or at the point where development has reached the limits established in the GUP, depending on the GUP conditions, Stanford will be required to submit an application and obtain another approval from the County. Each individual building or project under the GUP must be applied for and undergo additional review in the manner that will be specified in the County's conditions of approval for the GUP.

Normally the zoning designation for a particular property establishes what types of development may occur without further County approval, and what types require a use permit or other approval prior to development. Because most of the Stanford land is zoned A1, there are very few uses permitted as a matter of right (i.e., without any further County approval). Adoption of the CP will not change the level of use permit requirements under zoning. Each proposed development project under the GUP must still undergo the County's ASA process, which is a discretionary review subject to CEQA (refer to Section 1.5 for a discussion of the ASA process). If Stanford wishes to develop projects that do not fall within the GUP, it must either amend the GUP or secure an additional use permit. In either case, an environmental assessment would be conducted to determine what further environmental review is required (refer to Section 1.5.B for more discussion). Stanford's application for the GUP does not guarantee that the University will build any of the projects described in their proposal, particularly housing.

Although this EIR analyzes both the CP and GUP, they are separate documents. As noted above, the CP is a General Plan document, establishing policies for development at Stanford. The GUP will allow specific levels of development at Stanford over the next 10 years, which must be determined to be consistent with the CP. The County could approve the CP, but not approve the GUP, or could modify the amount of development requested in the GUP based on environmental or other considerations.

### 2.2.A Stanford University Community Plan

Stanford's Draft Community Plan and General Use Permit Application are available at the County Planning Office, the City of Palo Alto, the Palo Alto Main Library and the Menlo Park Library, and can be found online at the County's web site (http://sccplanning.org/ndins.htm). The CP proposed by Stanford addresses the seven mandatory General Plan elements required by law. The

CP elements include: Growth and Development; Land Use; Housing; Circulation; Open Space; Resource Conservation; and Health and Safety (including Noise).

### *Growth and Development Element*

The Growth and Development element includes policies that are intended to facilitate continued development and redevelopment of the campus. These policies include promoting compact urban development, providing urban services to the campus, coordinating with local jurisdictions, focusing anticipated development within the core campus and reserving undeveloped land as open space until it is needed for academic uses.

The Growth and Development Element includes a strategy to promote compact urban development patterns. As part of this strategy, Stanford has proposed an Academic Growth Boundary (AGB) that contains sufficient land to accommodate the projected growth for the next 10 years, and perhaps longer, depending upon Stanford’s needs and the County’s future policies with regard to intensification of development of the core campus. The AGB includes only land that is already developed or that is required for the development proposed in the 2000 GUP application. The proposal includes provisions for the AGB to be reviewed periodically to determine if there is a need to revise its location.

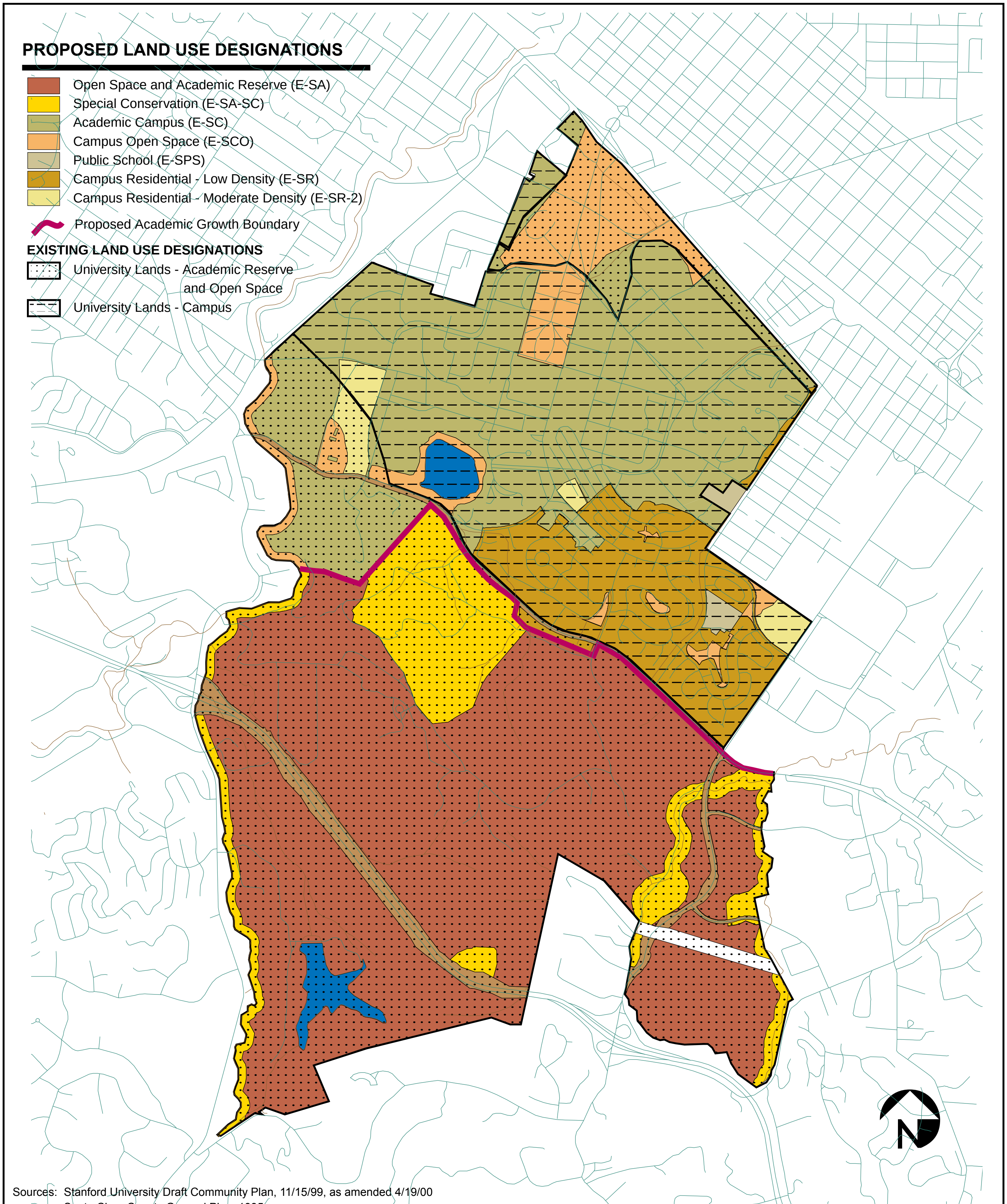
### *Land Use Element*

The Land Use element provides basic strategies for addressing issues relating to land use at Stanford, and establishes policies for seven land use designations. Figure 2-4 compares the proposed land use designations with existing designations. All land use activities proposed as part of the GUP will be developed in accordance with the land use policies included in the CP. The proposed designations, as described in the CP submitted by Stanford include:

#### *Academic Campus (E-SC)*

This designation allows academic uses of University land, including: instruction and research (including teaching hospital facilities); administrative facilities; housing intended for students, postgraduate fellows, and other designated personnel; athletics, physical education, and recreation facilities; support services (such as child care facilities, the bookstore, and the post office); infrastructure, storage and maintenance facilities; cultural facilities and non-profit research institutions with close academic ties to the University (such as the Center for Advanced Study in Behavioral Sciences and the Carnegie Institution of Plant Biology).

Uses consistent with the academic purposes of the University are allowed. Urban services are the responsibility of the University. Allowable uses should be developed to appropriate intensity and densities as established through the General Use Permit.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00
Santa Clara County General Plan, 1995

Stanford University
CP/GUP Project EIR

# EXISTING and PROPOSED LAND USE DESIGNATIONS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 2-4

### *Open Space and Academic Reserve (E-SA)*

This designation applies to lands outside the core campus area which are undeveloped, and are reserved for future academic use. These lands are important for environmental resources of academic value, scenic beauty, and visual relief. Allowable uses include low-intensity academic and conservation uses that are in keeping with the open space character and are dependent upon unique open space resources, or that by their programmatic nature require a remote or natural setting. Utility infrastructure, grazing, and other agricultural uses are also appropriate.

Limited low-intensity academic use consistent with those described above may be allowed at intensities and densities established through a use permit granted by the County. Urban services and development appropriate to the Academic Campus are not allowed.

### *Special Conservation(E-SA SC)*

This sub-designation covers areas identified within the Open Space and Academic Reserve designation that are subject to the following environmental constraints: slope sensitivity zones, seismically hazardous zones, riparian setbacks, and special status species habitat.

The use of these areas is limited to conservation activities, field environmental studies, preexisting academic activities, and agriculture.

### *Campus Residential – Low Density*

This designation applies to lands immediately adjacent to the Academic Campus area that have a residential character and are reserved for housing University faculty and staff. These lands are important to the campus for maintaining the residential character of the University. A variety of housing types, within the density range of 1-8 units per acre, and typical residential support uses are permitted.

Housing at prescribed densities, including detached single-family housing, duplexes, and townhouses, to serve the needs of targeted campus faculty and staff populations are allowed. Residential neighborhoods that promote compact urban development and campus interaction that supports the purposes of the University are encouraged.

### *Campus Residential – Moderate Density*

This designation applies to lands immediately adjacent to the Academic Campus area that have a residential character and are reserved for housing University faculty and staff. These lands are important to the campus for maintaining the residential character of the University. A variety of housing types, within the density range of 8-15 units per acre, and typical residential support uses are permitted.

Housing at prescribed densities, including detached single-family housing, duplexes, condominiums, flats, townhouses, and high-density apartments, to serve the needs of targeted campus faculty and staff populations are allowed. Residential neighborhoods that promote compact urban development and campus interaction that supports the purposes of the University are encouraged.

#### *Campus Open Space*

This designation applies to land retained as open space essential to the historic fabric of the campus (including Palm Drive, the Oval, the Arboretum, the Red Barn area, and Lagunita) and the character of faculty/staff residential neighborhoods. Park-like areas, unimproved open space, landscape buffers, riparian corridors, and conservation areas are allowed with limited academic or temporary related use in keeping with the open space character.

Temporary uses that are compatible with the open space character are allowed.

#### *Public School*

This designation applies to land currently utilized by public schools (Nixon Elementary and Escondido Elementary) and future public school sites, following their dedication to this use.

The use of these areas is limited to public school facilities, including appropriate buildings, and their parking, playgrounds, and athletics fields.

### *Housing Element*

The Housing element provides policies to promote increased and balanced housing opportunities at Stanford. Specifically, goals are identified to: 1) enable students, faculty and portions of Stanford's staff to live close to the academic core; 2) give students, faculty and designated staff access to affordable housing; and 3) provide a variety of housing types to meet the different needs and levels of affordability. Specific opportunity sites for additional campus housing are identified.

### *Circulation Element*

The Circulation element provides policies to promote a balanced and well-integrated circulation system for current and future needs. These policies include promoting land use patterns that support travel alternatives, facilitating coordination between the existing transportation systems, optimizing the use of existing transportation systems, and improving or expanding existing system capacity where necessary.

### *Open Space Element*

The Open Space element provides policies to protect open space in a manner that supports the purposes of the University. These policies include identifying and preserving significant open space in order to maintain the quality and character of the core campus, facilitating development within the core campus to allow lands in the Open Space and Academic Reserve to continue as open space, and delineating Special Conservation areas where extremely limited or no development would be permitted.

### *Resource Conservation Element*

The Resource Conservation element provides policies to protect natural and heritage resources present on Stanford lands. These resources include habitat and biodiversity, water quality and watershed management, heritage resources, and scenic resources. The policies generally provide for additional study of existing resources, protection of identified resources and restoration or enhancement of resources wherever possible.

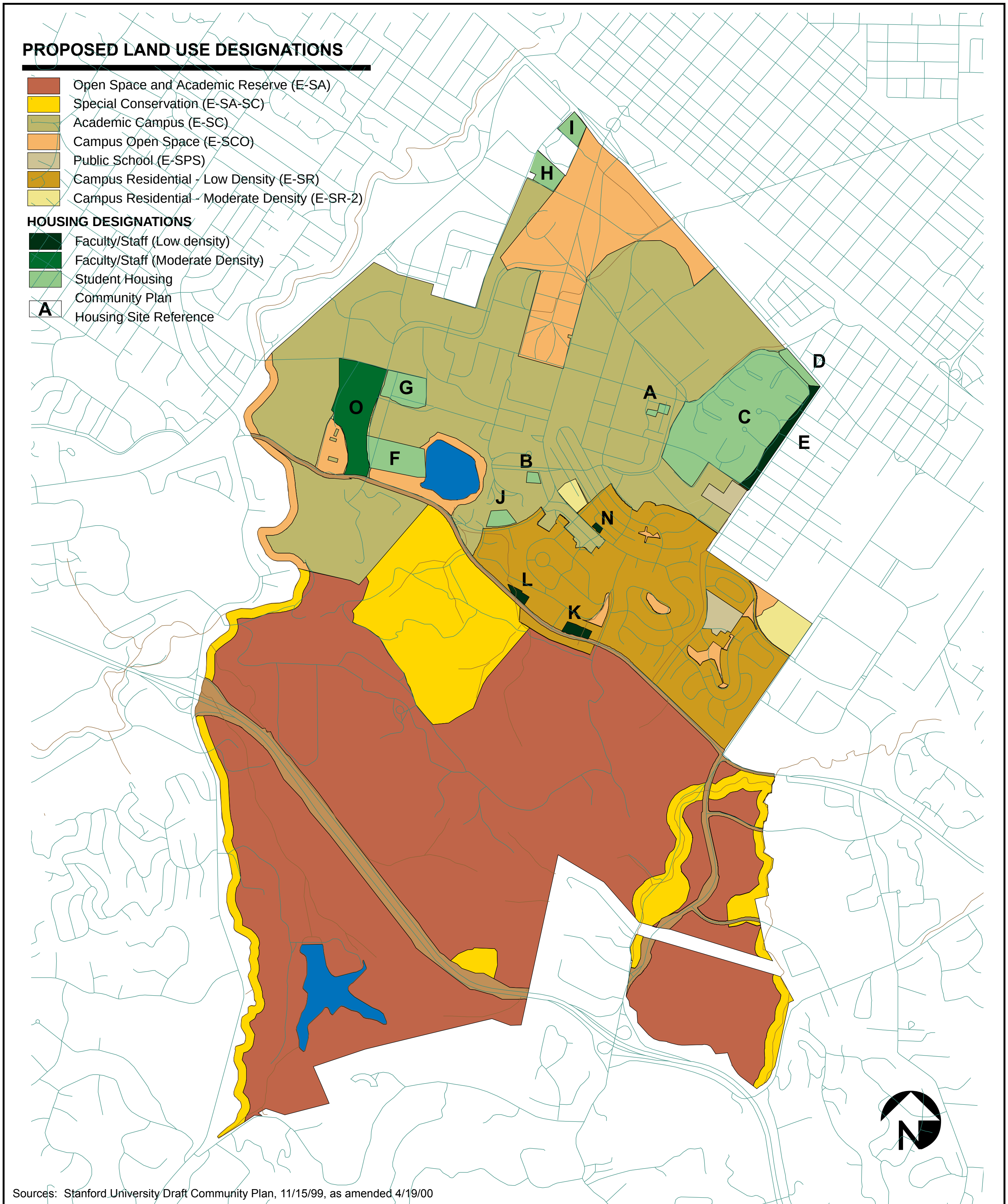
### *Health and Safety Element*

The Health and Safety element provides policies to minimize potential human or environmental injury or property damage. The health and safety issues covered by the element include: air quality; geologic hazards; flooding; hazardous materials; emergency response, preparedness, and prevention; and noise.

## 2.2.B Stanford University General Use Permit

Stanford's Draft Community Plan and General Use Permit Application are available at the County Planning Office, the City of Palo Alto Development Center, the Palo Alto Main Library, and the Menlo Park Library and can be found online at the County's web site (http://sccplanning/ndins.htm). The GUP is intended to define the amount and general location of development proposed by Stanford for the next ten years. The development activities will be in accordance with the land use policies of the CP as described above. As part of the General Use Permit application, Stanford University proposes to:

- Construct new academic facilities totaling approximately 2,035,000 gross square feet, which includes academic, academic support, student activity, cultural and athletic facilities;
- Build 2,000 housing units for graduate and undergraduate students on specific sites identified in the CP Housing Element (Figure 2-5);
- Build 350 housing units for hospital residents and postgraduate fellows on specific sites identified in the CP Housing Element (Figure 2-5);
- Build between 302 and 668 housing units for designated faculty and staff, based on low-density (1-8 units/acre) and moderate-density (8-15 units/acre) zoning on specific sites identified in the CP Housing Element (Figure 2-5) (these sites were amended as of April 19, 2000 with the removal of the Dolores site as a proposed faculty housing site);
- Construct approximately 2,873 additional parking spaces (1,168 for student/hospital resident/postgraduate fellows residential use, and 1,705 for non-residential uses, including spaces associated with cultural and athletic facilities) (the proposed amount of parking was reduced from 3,095 to 2,873 spaces in the amendment submitted on April 19, 2000); and




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# PROPOSED HOUSING SITES

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 2-5

- Construct associated utilities, access roads, bikeways, landscaping, and other requisite infrastructure.

The proposed academic facilities and housing units will be constructed on vacant and redeveloped sites. Site specific locations have been identified for proposed housing development. These sites are shown on Figure 2-5 and described in Table 2-1. The proposed academic facilities and housing units have also been organized by ten Development Districts (see Figure 2-6). Names of Development Districts were developed by Stanford to assist in descriptions of proposed future development, but have no planning significance. The facilities are quantified by development district in Tables 2-2 through 2-5. All academic facilities and housing units will be located in the Academic Campus and Campus Residential land use designations within the proposed Academic Growth Boundary. As proposed by Stanford, the distribution of academic development within Development Districts in the GUP application was intended to be illustrative for purposes of estimating environmental impacts, but development would not be limited to the specific distribution proposed in the GUP application.

Although academic facilities have generally not been defined beyond the gross square footage estimates for each development district shown in Table 2-2, Stanford has described some specific projects that it anticipates developing as part of the GUP. According to Stanford's General Use Permit Application, the following facilities are envisioned:

### *Academic and Cultural Facilities*

Most of these facilities would be developed as infill in the Campus Center District. Stanford's proposal includes a prospective performing arts facility that incorporates a 1,500-1,800-seat main hall supported by two smaller halls (200-seat and 800-seat) and backstage facilities. The facility is envisioned as being adjacent to Frost Amphitheater, opposite the Cantor Center/Stanford Museum. Other academic facilities are expected to focus principally in basic sciences, engineering, and medical sciences areas west of the Oval area. Additional space needs have also been identified for the humanities, social sciences, and professional schools, which are east and south of the Main Quad and Oval area.

### *Academic Support*

These uses include libraries, administrative offices, and utility structures. Most of the anticipated development would consist of new library areas in the Campus Center District, with additional space near the edge of this district for information systems, professional development and student services functions.

### *Athletics and Student Activities*

These facilities would be located in the DAPER/Administrative District and would include a possible new 12,000-seat sports arena. Other concepts for athletics facilities include improvements and additions to the football stadium, golf clubhouse modifications, and a sports medicine facility. Student activity areas could include spaces such as those used for student organizations, general food services, bookstores, and the student union.

### *Housing*

Housing proposals are described in Table 2-1 and Figure 2-5. Stanford's proposal for faculty/staff housing at the Stable Site would require relocation of Hole #1 of the Stanford Golf Course.

## Table 2-1

Housing Sites

| Map Code | Location | Area (acres) | Number of Units | Users |
|---|---|---|---|---|
| A | Manzanita | 1.6 | 100 | Undergraduate |
| B | Mayfield/Row* | 1.3 | 125 | Undergraduate/Graduate |
| C | Escondido Village: Infill | 116.5 | 725 | Graduate |
| D | Escondido Village: El Camino Real Frontage | 4.3 | 250 | Graduate |
| E | Escondido Village: Stanford Avenue | 9.4 | 9-75 | Faculty/Staff |
| F | Driving Range | 17.5 | 350 | Graduate |
| G | Searsville Block<br>Removal of units | 12.8 | 250<br>(-13) | Graduate |
| H | Quarry and Arboretum | 8.0 | 200 | Postgrad/Hospital Residents |
| I | Quarry and El Camino Real | 6.2 | 150 | Postgrad/Hospital Residents |
| J | The Lower Knoll | 3.6 | 200 | Undergraduate/Graduate |
| K | Lower Frenchman's | 2.2 | 2-18 | Faculty/Staff |
| L | Gerona/Junipero Serra Blvd. | 1.5 | 1-12 | Faculty/Staff |
| M** | Dolores | -- | -- | -- |
| N | Mayfield | 1.3 | 2-10 | Faculty/Staff |
| O | Stable Site | 37.8 | 304-570 | Faculty/Staff |
| **Total** | | **224** | **2655-3022** | |

Source: Stanford University General Use Permit Application, November 15, 1999 as amended April 19, 2000.

* Mayfield Avenue by the Florence Moore area.

** Site M (Dolores) was originally included in the GUP application. Stanford has removed Site M from the GUP application in a memorandum to the County dated April 19, 2000, and changed the proposed land use designation from Campus Residential – Moderate Density to Academic Campus.

# Table 2-2

## Academic Space

| Development District | Acres | Existing[1] GSF | Proposed Development | Additional[2] GSF | Total GSF |
|---|---|---|---|---|---|
| West Campus | 175 | 138,678 | N/A | 0 | 138,678 |
| Lathrop | 154 | 44,453 | Academic<br>Athletic & Student Activities | 15,000<br>5,000 | 64,453 |
| Foothills[3] | 2,090 | 14,000 | N/A | 0 | 14,000 |
| Lagunita | 183 | 1,008,717 | N/A | 0 | 1,008,717 |
| Campus Center | 390 | 7,165,384 | Academic & Cultural<br>Academic Support | 1,335,000<br>270,000 | 8,770,384 |
| Quarry | 25 | 75,560 | Academic<br>Academic Support | 40,000<br>10,000 | 125,560 |
| Arboretum | 126 | 839 | N/A | 0 | 839 |
| DAPER & Administrative | 194 | 689,801 | Academic Support<br>Athletic & Student Activities | 50,000<br>200,000 | 939,801 |
| East Campus | 234 | 3,089,591 | Academic<br>Academic Support | 60,000<br>50,000 | 3,199,591 |
| San Juan | 446 | 212,038 | N/A | 0 | 212,038 |
| **Totals** | **4,017** | **12,439,061** | | **2,035,000** | **14,474,061** |

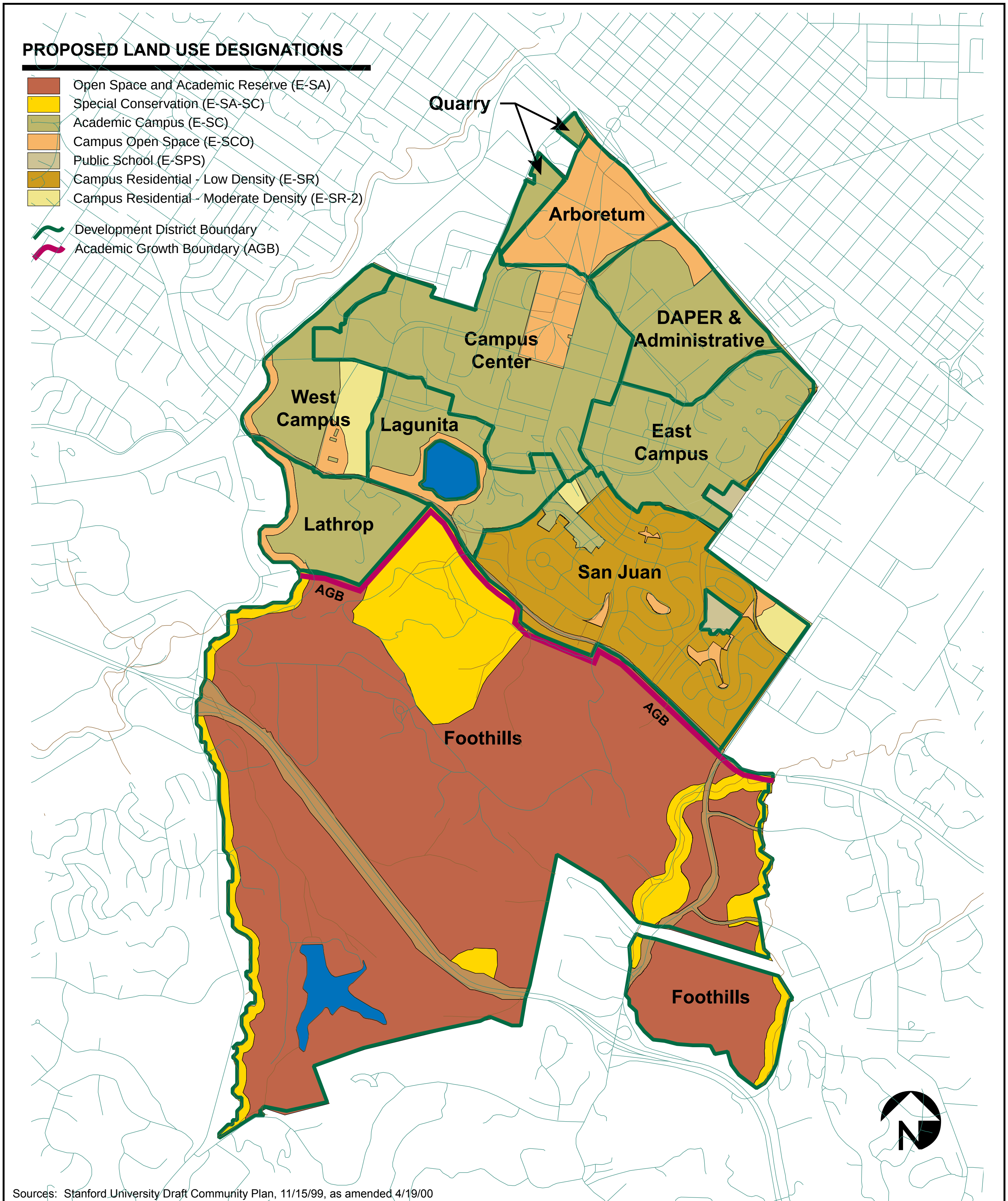
Source: Stanford University General Use Permit Application, November 15, 1999.

Notes:

1 This column includes both existing facilities and programmed development in gross square footage (GSF) allowable under the 1989 General Use Permit. (Existing GSF includes student housing, but additional GSF does not).

2 Additional gross square feet (GSF) are estimated. Additional gross square footage of student housing can be estimated by assuming 550 square feet per unit of student housing and 1,000 square feet per unit of resident/postdoctoral housing. This would result in an additional 1,450,000 GSF of housing within the Academic Campus area, or a total of 3,485,000 additional GSF (excluding faculty/staff housing).

3 No academic development is forecast in this district. Stanford CP – Open Space and Academic Reserve, and Special Conservation land use designations and related policies will govern.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# DEVELOPMENT DISTRICT BOUNDARIES

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 2-6

## Table 2-3

### Housing Units – Academic Campus

| Development District | Undergraduate | | | Graduate | | | Res/Post Grad. |
|---|---|---|---|---|---|---|---|
| | Exist Units | Add'tl[1] Units | Total Units | Exist Units | Add'tl[1] Units | Total Units | Additional Units |
| West Campus | | | | | | | |
| Lathrop | | | | | | | |
| Foothills | | | | | | | |
| Lagunita | 2,737 | 0 | 2,737 | 269 | 925 | 1,194 | |
| Campus Center | | | | | | | |
| Quarry | | | | | | | 350 |
| Arboretum | | | | | | | |
| DAPER/Admin. | | | | | | | |
| East Campus | 2,721 | 100 | 2,821 | 3,568 | 975 | 4,543 | |
| San Juan | 446 | 0 | 446 | 22 | 0 | 22 | |
| **Total** | **5,904** | **100** | **6,004** | **3,859** | **1,900** | **5,759** | **350** |

Source: Stanford University General Use Permit Application, November 15, 1999.

1. Additional units are estimated.

## Table 2-4

### Housing Units – Campus Residential for Faculty and Staff

| Development District | Exist Units | Proposed Acres | Potential Add'tl Units |
|---|---|---|---|
| West Campus (8-15 units/acre) | 0 | 38 | 302-567 |
| Lathrop | | | |
| Foothills | | | |
| Lagunita | 13 | | (13) |
| Campus Center | | | |
| Quarry | | | |
| Arboretum | | | |
| DAPER & Administrative | | | |
| East Campus (1-8 units/acre) | 0 | 9 | 9-75 |
| San Juan (1-8 units/acre) | 870 | 5 | 4-39 |
| **Total** | **883** | **52** | **302-668** |

Source: Stanford University General Use Permit Application, November 15, 1999, as amended April 19, 2000.

**Table 2-5**

Parking Supply

| Development District | Exist Parking Spaces | Estimated Additional Parking Spaces | Total Parking Spaces |
|---|---|---|---|
| West Campus | 191 | 0 | 191 |
| Lathrop | 0 | 0 | 0 |
| Foothills | 0 | 0 | 0 |
| Lagunita | 1,745 | 695 | 2,440 |
| Campus Center | 8,743 | (89) | 8,654 |
| Quarry | 1,058 | 570 | 1,628 |
| Arboretum | 134 | (134) | 0 |
| DAPER & Administrative | 2,209 | 1,267 | 3,476 |
| East Campus | 4,731 | 564 | 5,295 |
| San Juan | 540 | 0 | 540 |
| **Total** | **19,351** | **2,873** | **22,224** |

Source: Stanford University General Use Permit Application, November 15, 1999, as amended April 19, 2000.

Note: Does not include individual parking spaces for faculty/staff homes.

Stanford submitted a memorandum to the County on April 19, 2000, amending the CP/GUP application. Most of these amendments were minor corrections to background information. The two substantive changes were removal of Site M, Dolores, from the list of proposed housing sites (with a corresponding change in land use designation to Academic Campus), and a reduction in the proposed amount of parking from 3,095 to 2,873 spaces. The April 19, 2000 memorandum is available from the County Planning Office.

## 2.3 PROJECT OBJECTIVES

### 2.3.A Stanford Objectives

Stanford University's defined objectives for the CP/GUP are identified below:

#### *Academic and Academic Support*

- Provide state-of-the-art teaching and research facilities.
- Address critical deficiencies in teaching and library facilities that threaten Stanford's academic accreditation in key areas.
- Maintain national standing of academic schools and departments.
- Upgrade facilities to meet current safety and ADA code standards.
- Enhance interdisciplinary collaboration by creating facilities for scholars and scientists to share in new research initiatives, particularly in engineering, the sciences and medicine.

- Maintain flexibility to respond quickly to changes in educational or research technologies as well as to take advantage of new research opportunities.
- Maintain Stanford's ability to provide the surrounding community with venues for athletic and cultural experiences.
- Minimize the cost of project development by siting buildings and improvements as infill.

### *Housing*

- Maintain Stanford's ability to recruit and retain high quality faculty, staff and students.
- Provide attractive, affordable housing on or near the campus, to diminish regional traffic impacts.
- Increase housing availability near the campus to offset local housing shortage.
- Maintain ability to house all undergraduate students who desire to live on campus.
- Increase housing for graduate students up to 75%.
- Provide housing for 30-40% of Stanford's active teaching faculty.
- Increase housing options for postdoctoral fellows and hospital residents.
- Support development of community support facilities, e.g., child care, near campus housing.

### *Facility Siting*

- Locate new facilities to maximize pedestrian, bicycle and transit use and to take advantage of existing circulation and infrastructure.
- Locate new facilities to maximize opportunities for face-to-face academic interaction between related fields of study.
- Enhance the overall academic campus setting.

## 2.3.B County Planning Office Objectives

Because the project involves an amendment to the County General Plan regarding County policies for development on unincorporated Stanford lands, the County Planning Office also has defined broad objectives for the Community Plan. The County's objectives include:

- Compact urban development located within a defined Academic Growth Boundary;
- Conservation of natural resources; and
- Augmentation of the regional housing supply in a manner that meets housing needs and results in a regional reduction in the use of single occupant vehicles.

These objectives express the strategies and policies of the County General Plan.

# 3 PLAN CONSISTENCY

The CEQA Guidelines require that an EIR discuss any inconsistencies between the proposed project and applicable general plans and regional plans. The purpose of this analysis is to inform the lead agency of these inconsistencies so it might find ways to modify the project to reduce the inconsistencies (refer to section 15125 (d) of the CEQA Guidelines). To the extent potential inconsistencies are addressed in Chapter 4, Environmental Analysis, these issues are briefly noted in this chapter.

This chapter focuses on the consistency with land use plans. For discussion of consistency with plans related to environmental media (e.g., biology, noise) as well as a full analysis of the project's environmental impacts, mitigation measures and alternatives, the reader should refer to Chapters 4 and 5 of the EIR.

The Stanford University Community Plan/General Use Permit area falls under the direct jurisdiction of Santa Clara County. However, the CP/GUP area is immediately adjacent to the Cities of Palo Alto and Menlo Park. This section identifies each agency’s responsibility relative to the proposed CP/GUP. It also identifies the plans and policies with which the Stanford CP/GUP must comply or, in the case of the City jurisdictions, those policies which directly address issues pertinent to the CP/GUP.

## 3.1 SANTA CLARA COUNTY

The proposed Community Plan would amend the County’s General Plan. If the Community Plan is adopted, the County Board of Supervisors would be required to find that the General Use Permit is consistent with the General Plan as amended by the Community Plan prior to approval of the GUP. As proposed, the project would not result in an inconsistency with a proposed County plan or policy. The following table provides additional information about the project’s consistency with existing County General Plan policies prior to amendment by adoption of the Community Plan.

# Table 3-1

## Consistency of Proposed Project with the Santa Clara County General Plan

| Policy | Consistent | Rationale |
|---|---|---|
| **<u>Stanford University Lands – Campus</u> Description:**<br><br>**Policy R-LU 64.** On Stanford University Lands, the Campus designation applies to lands currently developed for academic uses, with a full complement of activities and densities that give them an urban character. | Yes | Stanford lands currently located in the Campus designation will continue to be used for academic uses, faculty, staff and student housing, and support services pursuant to the Community Plan. |
| **Development Policies:**<br><br>**Policy R-LU 66.** Urban services are the responsibility of the University.<br>**Policy R-LU 67.** Requests to add or delete lands from the "University Lands – Campus" General Plan land use designation shall be processed in accordance with General Plan amendment procedures. | Yes | Stanford University will continue to provide urban services to the land uses included within the Community Plan boundary. As identified in Section 4.10 – Public Services and Utilities, water and wastewater capacity may be exceeded from buildout of the development proposed in the GUP. However, mitigation measures have been recommended to require adequate water and wastewater capacity prior to allowing development that would cause capacity to be exceeded.<br><br>Stanford University proposes to add lands located in the West Campus and Lathrop Development Districts to the Academic Campus designation. These lands are already used for academic support services consisting of research facilities and the golf course. Stanford also proposes to add lands located in the Arboretum and DAPER and Administrative Development Districts to the Academic Campus designation. These lands (Arboretum Corner) are not presently used for academic support. |

## Table 3-1

### Consistency of Proposed Project with the Santa Clara County General Plan

| Policy | Consistent | Rationale |
|---|---|---|
| **<u>Stanford University Lands - Academic Reserve and Open Space</u>**<br>**Description:**<br>**Policy R-LU 68.** On Stanford University Lands, the Academic Reserve and Open Space designation is applied to lands outside of the campus area that currently have an open space character or use, or a low intensity use. These lands are important for their scenic beauty, visual relief, grazing, and wildlife values, as well as their academic potential. | Yes | With the exception of the golf course and research uses south of JSB, and a portion of the Arboretum, Stanford lands currently located in the Academic Reserve and Open Space designation will continue to be used for open space and low-intensity uses limited to instruction and research, and uses ancillary to the allowable uses pursuant to the Community Plan. Housing development proposed for the golf course north of JSB is in support of academic uses. Likewise, development proposed for lands adjacent to the existing research facilities south of JSB would be low-intensity and in support of existing research uses or the golf course. A change in the designation of lands south of JSB and in a portion of the Arboretum to Academic Campus is proposed.<br>Further, some Academic Reserve and Open Space lands located south of JSB will be changed to Special Conservation in order to afford them greater protection from future development. The proposed designation for the remainder of this area, Open Space and Academic Reserve, is somewhat more restrictive than the current designation. |
| **<u>Stanford University Strategy 1 – Accommodate Planned Growth</u>**<br>**Policy U-ST 1**. The use of Stanford lands in the unincorporated area of Santa Clara County shall be consistent with the County General Plan; the County Zoning Ordinance; a conditional use permit known as the Stanford University General Use Permit, as applicable; other use permits and approvals as required; and, the three-party interjurisdictional agreement. | Yes | The Stanford University CP/GUP application (1999) is proposed to replace the current policy direction and general use permit in place for Stanford lands in the unincorporated Santa Clara County. The CP policy direction supplements the current direction in the County General Plan and will be adopted as a General Plan amendment. The three-party interjurisdictional agreement will remain in place between Stanford, Santa Clara County and Palo Alto, but will require amendment to be consistent with new direction in the CP. For example, the four sub-areas with special land use controls will be abolished and replaced with more detailed land use designations. |
| **Policy U-ST 2.** Growth and development of affected Stanford lands shall be consistent with the University's General Use Permit from the County, as may be amended from time to time. | Yes | The Stanford University CP/GUP application will replace the existing 1989 GUP if adopted. If the CP/GUP is not adopted, the direction included in the County General Plan and 1989 GUP will remain in effect. |

## Table 3-1

### Consistency of Proposed Project with the Santa Clara County General Plan

| Policy | Consistent | Rationale |
|---|---|---|
| **Stanford University Strategy 2 – Mitigate and Monitor the Impacts of Growth**<br>**Policy U-ST 4.** Stanford University shall mitigate, as appropriate, significant environmental impacts of its growth and development in accordance with the conditions of the General Use Permit. | Yes | The Stanford University CP/GUP EIR has been prepared to identify significant impacts of the proposed action, and to develop mitigation measures and identify alternatives that will avoid or reduce the identified impacts. If impacts cannot be avoided or reduced to a less than significant level, the proposed action will either be denied, modified, or Findings of overriding considerations will be adopted by the County. |
| **Policy U-ST 5.** When reviewing any significant proposed future changes in the University's designation on the Land Use Map of the County's General Plan or in the General Use Permit, the County shall assess the impacts of these proposed changes on (a) the natural environment, and (b) adjacent jurisdictions, and shall require appropriate mitigation where necessary. | Yes | The Stanford University CP/GUP EIR has been prepared to identify significant impacts of the proposed action, and to develop mitigation measures and alternatives that will avoid or reduce the identified impacts. If impacts cannot be avoided or reduced to a less than significant level, the proposed action will either be denied, modified, or Findings of overriding considerations will be adopted by the County. |
| **Stanford University Strategy 3 – Meet Urban Service Needs**<br>**Policy U-ST 6.** The provision of urban services to the academic lands of Stanford University shall be the responsibility of the University. This may be accomplished through appropriate contractual relationships with local jurisdictions. | Yes | Stanford University will continue to provide or obtain urban services to the land uses included within the Community Plan boundary. As identified in Section 4.10 – Public Services and Utilities, water and wastewater capacity may be exceeded from buildout of the development proposed in the GUP. However, mitigation measures have been recommended to require adequate water and wastewater capacity prior to allowing development that would cause capacity to be exceeded. |
| **Policy U-ST 7.** Academic land uses, for which the University provides or obtains its own services, should not be required to annex to a city. | Yes | The CP/GUP does not require the annexation of any unincorporated Santa Clara County lands. |
| **Policy U-ST 8.** Open space and agricultural uses of land of the University held for future academic use should remain unincorporated. | Yes | The CP/GUP does not require the annexation of any unincorporated Santa Clara County lands. |
| **Policy U-ST 9.** Other non-academic uses of University land should be subject, in appropriate cases, to city annexation, as agreed to in the three-party interjurisdictional agreement. | Yes | The CP/GUP does not propose any non-academic uses of University lands. |

## Table 3-1

### Consistency of Proposed Project with the Santa Clara County General Plan

| Policy | Consistent | Rationale |
|---|---|---|
| **Stanford University Strategy 4 – Facilitate Local Planning Coordination**<br>**Policy U-ST 10.** The County shall, in accordance with adopted protocols and agreements, provide opportunities for the City of Palo Alto to review and comment upon projects and proposals involving Stanford University that may affect the City. | Yes | The 1985 three-party interjurisdictional agreement with Palo Alto, Santa Clara County and Stanford will remain in effect with the adoption of the proposed CP/GUP. In addition, Palo Alto has been included in the preliminary review of the proposed CP/GUP, and will be given an opportunity to comment on the CP/GUP and EIR prior to Planning Commission and Board hearings. |

## Table 3-2

### Consistency of Proposed Project with the Santa Clara County Trails Master Plan

| Policy | Consistent | Rationale |
|---|---|---|
| **Strategy 3 – Implement the Planned Trail Network**<br>**PR-TS 3.6.** In coordination with the County Parks and Recreation Department, cities, public entities, organizations, and private citizens should be encouraged to implement the trails plan where practical and feasible. | Yes | Stanford University has incorporated the two trail route alignments identified in the County Trails Master Plan into the proposed CP. These trail routes include the C1 (San Francisquito) and S1 (Matadero) corridors. CP policy (SCP-OS 7) requires Stanford to work with local agencies to define more precise trail alignments for the portion of the trails crossing Stanford lands as described in the Countywide Trail Master Plan Update. |
| **PR-TS 3.7.** Development projects proposed on lands that include a trail as shown on the Countywide Trails Master Plan Map may be required to dedicate and/or improve such trail to the extent that there is a nexus between the impacts of the proposed development and the dedication/improvement requirement. The dedication/improvement requirement shall be roughly proportional to the impacts of the proposed development. | No | Two trails that cross Stanford lands are included in the County Trails Master Plan; the Matadero Creek/Page Mill Trail (Sub-Regional Trail Route S1) and the San Francisquito/Los Trancos Creeks Trail (Connector Trail Route C1). Although trail routes are shown in the proposed Community Plan, Stanford has not indicated that the trail routes would be dedicated or improved as part of the GUP. The County is treating the proposed CP/GUP as a single development application for all Stanford lands in Santa Clara County, including foothill lands that will not be developed.<br>Analysis included in the Open Space, Recreation and Visual Resources, Traffic and Circulation, and Growth Inducement sections of this EIR conclude that the proposed CP/GUP will result in potentially adverse |

# Table 3-2

## Consistency of Proposed Project with the Santa Clara County Trails Master Plan

| Policy | Consistent | Rationale |
|---|---|---|
| | | effects to open space, recreational, and traffic and circulation resources. Mitigation measures, which include a recommendation to officially dedicate trail corridors included in the County Trails Master Plan, have been identified to reduce these impacts to a less than significant level.<br><br>The buildout of the proposed GUP will include up to 2,201 new faculty, staff and students, 3,018 new housing units, and 2,035,000 square feet of academic and related facilities on the Stanford owned lands in Santa Clara County. As documented in Chapter 5 - Growth Inducement, the indirect impact from this GUP proposed growth could result in the creation of 1,570 additional off campus jobs in the Stanford vicinity.<br><br>This level of GUP and GUP-induced growth will increase the density of uses and population in the campus center area. The resulting campus will assume a more urban character with the need for more recreational and transportation facilities and services for existing and new campus residents and users. This concentration of use calls attention to the need for access to open space areas, both within and outside of the campus boundaries. The dedication and future improvement of the trails included in the County Trails Master Plan would provide a location for hiking, biking, and jogging, and access to open space lands outside of the Stanford CP boundary. Trail dedication (assuming eventual improvement) will also provide an opportunity for students and employees living off-campus to bike or walk to campus, thereby helping to mitigate the project’s transportation impacts. In addition, the eventual connection of these trails to the regional trail network could curtail public uses in other more sensitive areas of the Stanford foothills. Thus, there is a nexus and rough proportionality between the project’s impacts and the trail dedication requirements, and dedication of the aforementioned trails could be required by the County as a GUP condition of approval. |

# 3.2 CITY PLANS

## 3.2.A City of Palo Alto

The Stanford Community Plan area lies within Palo Alto's Sphere of Influence, but is not within their city limits. Policies listed below are limited to those policies applicable to lands within Palo Alto's Sphere of Influence. Consistency with Palo Alto's Comprehensive Plan policies is not required for approval of the CP/GUP.

**Table 3-3**

Consistency of Proposed Project with City of Palo Alto Comprehensive Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy L-1. Continue current City policy limiting future urban development to currently developed lands within the urban service area. Retain undeveloped land west [south] of Foothill Expressway and Junipero Serra as open space, with allowances made for very low-intensity development consistent with open space character of the area. | Yes | With the exception of the golf course and research uses south of JSB, Stanford lands currently located in the Academic Reserve and Open Space designation will continue to be used for open space and low-intensity uses limited to instruction and research, and uses ancillary to the allowable uses pursuant to the Community Plan. Housing development proposed for the golf course north of JSB is in support of academic uses and the City of Palo Alto has recognized the potential for this development in the Sand Hill Road Development Agreement. Likewise, development proposed for lands adjacent to the existing research facilities south of JSB would be low-intensity and in support of existing research uses or the golf course. Mitigation measures for development in the Lathrop area also address this plan consistency issue (see mitigation measures OS-1 and OS-2).<br><br>Some Academic Reserve and Open Space lands located south of JSB will be changed to Special Conservation in order to afford them greater protection from future development. The proposed designation for the remainder of this area, Open Space and Academic Reserve, is somewhat more restrictive than the current designation. |

# Table 3-3

## Consistency of Proposed Project with City of Palo Alto Comprehensive Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy L-2. Maintain an active cooperative working relationship with Santa Clara County and Stanford University regarding land use issues. Development limitations on unincorporated Stanford Lands have been instituted and agreed on by all parties. | Yes | The Stanford University CP/GUP application (1999) is proposed to replace the current policy direction and general use permit in place for Stanford lands in the unincorporated Santa Clara County. The CP policy direction supplements the currently direction in the County General Plan and will be adopted as a General Plan amendment. The three-party interjurisdictional agreement will remain in place between Stanford, Santa Clara County and Palo Alto, but will require amendment to be consistent with new direction in the CP. For example, the four sub-areas with special land use controls will be abolished and replaced with more detailed land use designations. |
| Policy L-6. Where possible avoid abrupt changes in scale and density between residential and non-residential areas. | Yes | The Stanford CP/GUP proposes the development of academic facilities within lands designated as Academic Campus. These lands areas are consistent with past Planning documents, including the county General Plan, 1989 GUP and Palo Alto Comprehensive Plan. Proposed housing will either be located adjacent to existing housing uses or along roadways where existing non-residential uses will not result in abrupt changes in scale or density. |
| Policy L-7. Evaluate changes in land use in the context of regional needs, overall City welfare and objectives, as well as the desire of surrounding neighborhoods. | Yes | The Stanford CP/GUP proposes Campus Residential – Low Density along Stanford Avenue, which is currently designated as University Lands – Campus. The College Terrace neighborhood has expressed concern over the housing development proposed for the undeveloped land and drainage that parallels Stanford Avenue. The proposed housing density (up to eight units per acre) along Stanford Avenue would result in the loss of the existing undeveloped land along Stanford Avenue. However, the proposed housing would be consistent with both the housing densities of the College Terrace neighborhood and adjacent Escondido Village. Mitigation measures are included in the EIR to require the proposed housing units to access Olmsted Road rather than Stanford Avenue. This mitigation measure would reduce potential visual and circulation effects of the proposed housing. The housing component of the CP/GUP would also help address the regional jobs-housing balance need. |

## Table 3-3

Consistency of Proposed Project with City of Palo Alto Comprehensive Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy L-42. Encourage Employment Districts to develop in a way that encourages transit, pedestrian and bicycle travel and reduces the number of auto trips for daily errands. | Yes | Stanford University is considered an Employment District by the Palo Alto Comprehensive Plan. While not located within the City limits, the project area is closely tied to City services and traffic infrastructure. The Stanford CP/GUP includes the addition of academic facilities, and housing units to accommodate an increase in population of approximately 2,200. While the CP/GUP does not specifically specify support services such as shops or restaurants that would help cut down on vehicle trips, it does include provisions for increased transit services to connect the campus with adjacent Palo Alto services. |

### 3.2.B City of Menlo Park

The Stanford Community Plan area is located outside of Menlo Park's city limits and sphere of influence. However, portions of Stanford owned lands lie within Menlo Park's Planning Area Limits. Policies listed below are limited to those policies applicable to lands adjacent to Menlo Park's city limits and sphere of influence. Consistency with the Menlo Park General Plan is not required for approval of the CP/GUP.

## Table 3-4

Consistency of Proposed Project with City of Menlo Park General Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy I-G-8. The Bay, its shoreline, San Francisquito Creek, and other wildlife habitat and ecologically fragile areas shall be maintained and preserved to the maximum extent possible. The City shall work in cooperation with other jurisdictions to implement this policy. | Yes | The Stanford CP/GUP includes a Special Conservation land use designation that is intended to protect ecologically fragile areas at Stanford, including California tiger salamander habitat and San Francisquito Creek riparian corridor. |

# Table 3-4

## Consistency of Proposed Project with City of Menlo Park General Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy I-G-12. The maintenance of open space on Stanford lands within Menlo Park's unincorporated sphere of influence shall be encouraged. | N/A | Not applicable. These lands are located within San Mateo County. |
| Policy I-G-13. Regional and sub-regional efforts to acquire, develop, and/or maintain appropriate open space and conservation lands shall be supported. | Yes | The Stanford CP/GUP includes provisions to protect open space resources and this EIR recommends mitigation measures for protecting open space. Further, as a separate action from the CP/GUP, Stanford is proposing a Conservation and Use Plan for the Stanford Dish Area to restore disturbances from past use. |
| Policy I-I-5. The City shall carefully monitor any significant development proposals which are outside of Menlo Park's jurisdiction, including any development proposals along the Sand Hill Road corridor which are within the jurisdiction of the City of Palo Alto, to evaluate their potential impacts on the City of Menlo Park. It shall be the policy of the City to oppose any such development proposal(s) unless the City Council makes findings that the benefits of such proposal(s) outweigh all of the impacts to the City of Menlo Park. The City Council shall consider holding an advisory election on any such development proposal(s). | Yes | The City of Menlo Park is a responsible agency for this project and, thus, will be consulted with and involved in the project's environmental review. At this time, Menlo Park's decision regarding opposition to the project is not known. The specific proposals identified in this policy are not part of the scope of the CP/GUP. |

# Table 3-4

## Consistency of Proposed Project with City of Menlo Park General Plan Land Use Guidelines

| Policy | Consistent | Rationale |
|---|---|---|
| Policy II-A-4. New development shall be restricted or required to implement mitigation measures in order to maintain the levels of service and travel speeds specified in Policies II-A-1 through II-A-3 (see below).<br>II-A-1. LOS D (40 seconds average stopped delay per vehicle) or better shall be maintained at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Ave. and Middlefield Rd. and at intersections along Willow Rd. from Middlefield Rd. to US 101.<br>II-A-2. The City should attempt to achieve and maintain average travel speeds of 14 miles per hour (LOS D) or better on ECR and other arterial roadways controlled by the State and at 46 miles per hour (LOS D) or better on US 101.<br>II-A-3. The City shall work with Caltrans to ensure that average stopped delay on local approaches to State-controlled signalized intersections does not exceed LOS E (60 seconds per vehicle). | Yes | The Traffic and Circulation section of this EIR (Section 4.4) includes mitigation measures to reduce intersection levels of service and roadway delays to the acceptable levels identified in Menlo Park policies II-A-1 through II-A-3. The recommended mitigation measures include TR-5B (Trip Reduction and Monitoring), TR-5C (Cooperative Trip Reduction) and TR-5D (Tier 2 Intersection Capacity Expansion). Intersections in Menlo Park that require mitigation include:<br>• El Camino Real/Valparaiso<br>• El Camino Real/Ravenswood<br>• El Camino Real/Middle<br>• Junipero Serra Boulevard/Alpine/Santa Cruz<br>• Sand Hill Road/Sand Hill Circle/I-280<br>• Sand Hill Road/Santa Cruz<br>• Sand Hill Road/Oak<br>• Middlefield/Willow<br>The City Council of Menlo Park recently adopted Policy Resolution 99-3 which states that new projects that will contribute traffic to Sand Hill Road and/or to the Sand Hill Road/Santa Cruz Avenue intersection be analyzed on the assumption that the reconstruction and/or widening of the bridge and contemplated modifications to the intersection will not be constructed. The intersection of Middlefield and Willow is the only intersection listed above that is not affected by Policy Resolution 99-3. |
| Policy II-A-13. The City shall work with adjacent jurisdictions to secure adequate funding for improvements and to develop methods to reduce traffic impacts on a regional and subregional basis. | Yes | The Stanford CP/GUP includes provisions to increase the usage of transit services, and to reduce the dependence on the automobile. Where roadway and intersection improvements are necessary, Stanford's fair share cost to improve the roadway or intersection has been identified. |

# 4 ENVIRONMENTAL ANALYSIS

Each topic section (i.e., Section 4.1 - Land Use) in this Chapter is organized according to the following format:

## 4.0.A ENVIRONMENTAL SETTING

The Environmental Setting describes the existing conditions as they relate to the attributes of the environment that may be affected by the project. Pursuant to Section 15125 of the state CEQA Guidelines, the environmental settings have been prepared at a level of detail necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

## 4.0.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

This section identifies the relevant state, federal, and local environmental standards (i.e., water quality standards, air quality standards, zoning provisions, etc.) and other criteria by which a change in the environment can be assessed.

## 4.0.C IMPACTS AND MITIGATION MEASURES

The impact analyses in this chapter describe anticipated changes in the environment from construction and operation of the development that would be permitted by the proposed Stanford University Community Plan/General Use Permit Application. The impact analyses have been prepared to comply with Section 15143 of the CEQA Guidelines, which states that the “significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence.” The level of significance is identified for each impact based on a comparison with the impact evaluation criteria. Where the project results in impacts that are considered significant with respect to the impact evaluation criteria, mitigation measures are proposed to avoid or minimize the impact. Where impacts cannot be reduced to a level that is less than significant, the impact is identified as significant and unavoidable.

## 4.0.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative effects are discussed for each topic section when the project’s incremental effect is “cumulatively considerable,” as defined in section 15065(c) of the CEQA Guidelines. “Cumulatively considerable” means that the incremental effects of the project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Chapter 6 of this EIR includes a list of the past, current, and future projects that are used in the cumulative impacts analysis.

A cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts.

For many impacts, the cumulative impacts analysis in this EIR is based upon a list of past, present, and probable future projects producing related or cumulative impacts. The relevant list of projects can vary from impact to impact depending upon the nature of each environmental resource being examined, the location of the project, and its type.

In each impact discussion, the relevant projects for cumulative impacts purposes are identified along with a description of the geographic scope of the area affected by the cumulative effect and an explanation for the geographic limitation used.

To analyze cumulative impacts relating to traffic, air quality and traffic noise, this EIR relies upon a summary of projections rather than a list of projects. The traffic and circulation analysis is based upon the Countywide transportation model developed by the County Center for Urban Analysis, which identifies transportation use levels from the land use projections (through 2010) provided by the Association of Bay Area Governments. The cumulative analysis of air quality impacts is based upon the projections adopted by the Bay Area Air Quality Management District for the entire air basin. The cumulative analysis of traffic noise is based upon traffic volumes generated in the traffic and circulation analysis.

For each cumulative impact, this section (1) summarizes the expected environmental effects to be produced by the relevant past, present, and probable future projects; (2) analyzes the cumulative impacts of the impacts of those projects combined with the impacts of the CP/GUP; and (3) identifies any feasible options for mitigating or avoiding the project’s contribution to significant cumulative effects.

# 4.1 LAND USE

The purpose of this section is to evaluate potential impacts associated with land use compatibility issues. For example, locating an industrial facility next to a residential area may create land use conflicts. Such conflicts often result from physical environmental impacts, such as noise. This section of the EIR highlights these environmental issues. This section does not address impacts to agricultural lands, as no Class I or II agricultural lands exist within the project area. A full discussion of each environmental topic area is provided in the remaining sections of this EIR.

## 4.1.A SETTING

### 4.1.A.1 Existing Character

Stanford University owns 4,017 acres of land in unincorporated Santa Clara County (Figure 4.1-1). The remainder (4,163 acres) of Stanford's 8,180 acres are located in Palo Alto, Woodside, Menlo Park, Portola Valley, and unincorporated San Mateo County. 1,161 acres of Stanford's lands have been developed for non-academic uses and have been annexed to the City of Palo Alto. These lands, which include the Stanford Research Park, Stanford hospitals, and Stanford Shopping Center, are under the City's land use authority. The core campus area and most of the foothills east of Alpine Road are unincorporated and are under the jurisdiction of Santa Clara County. The foothills located west of Alpine Road are mostly unincorporated and are under the jurisdiction of San Mateo County.

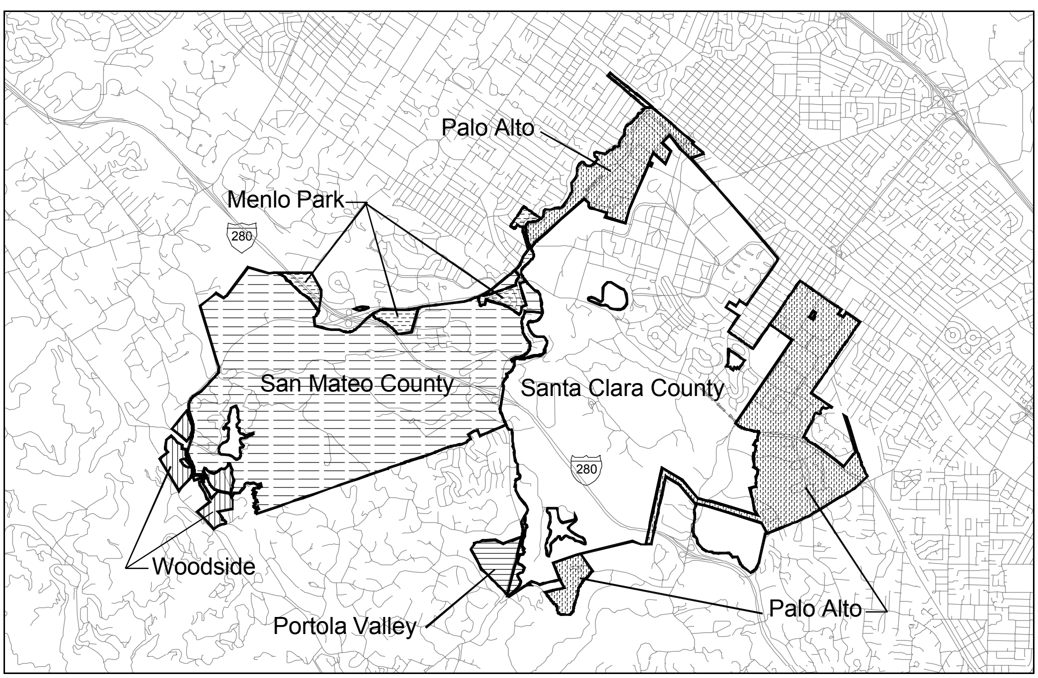
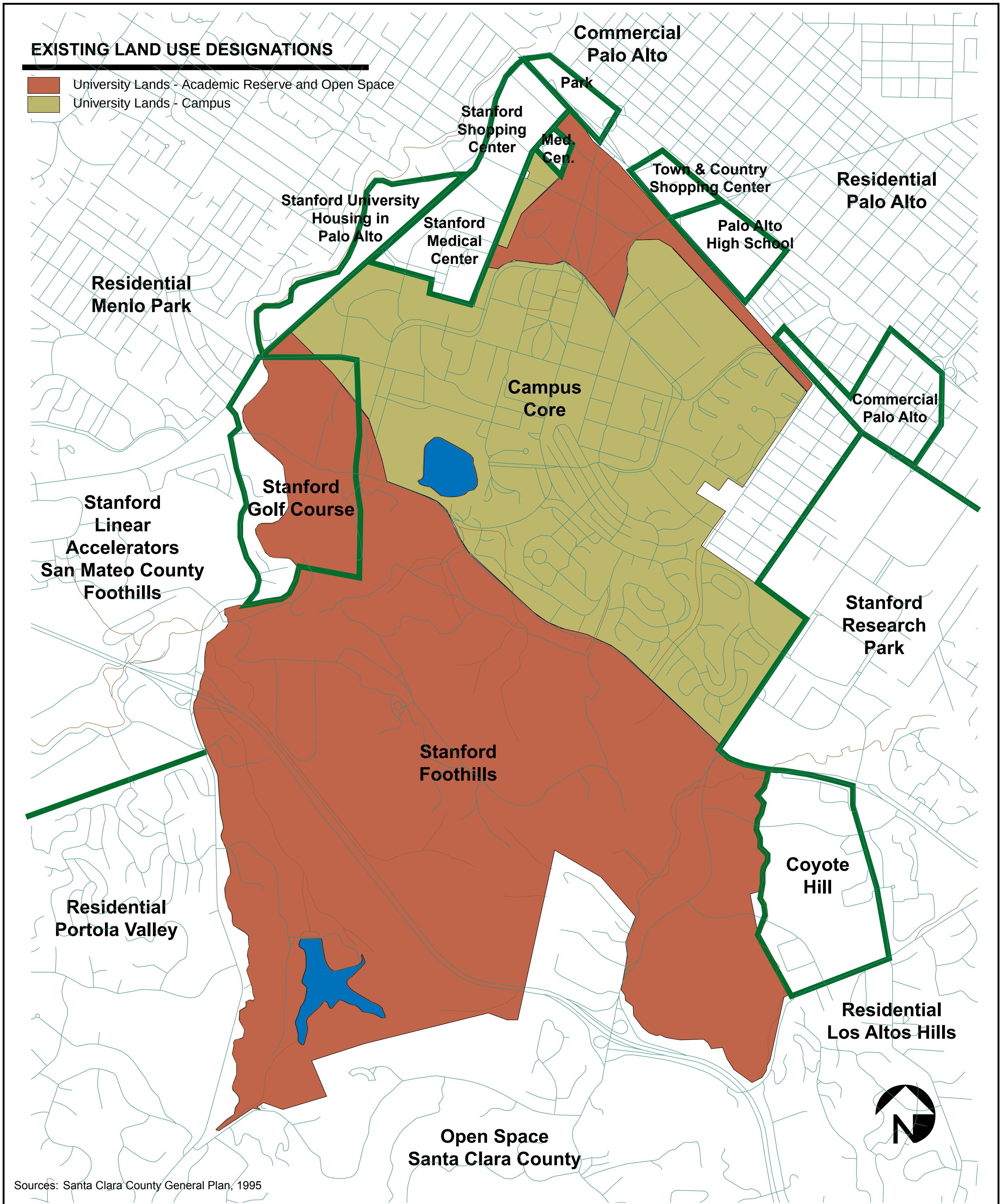



**Figure 4.1-1 Governmental Jurisdictions**




Sources: Santa Clara County General Plan, 1995

Stanford University
CP/GUP Project EIR

# EXISTING DEVELOPMENT AREAS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.1-2

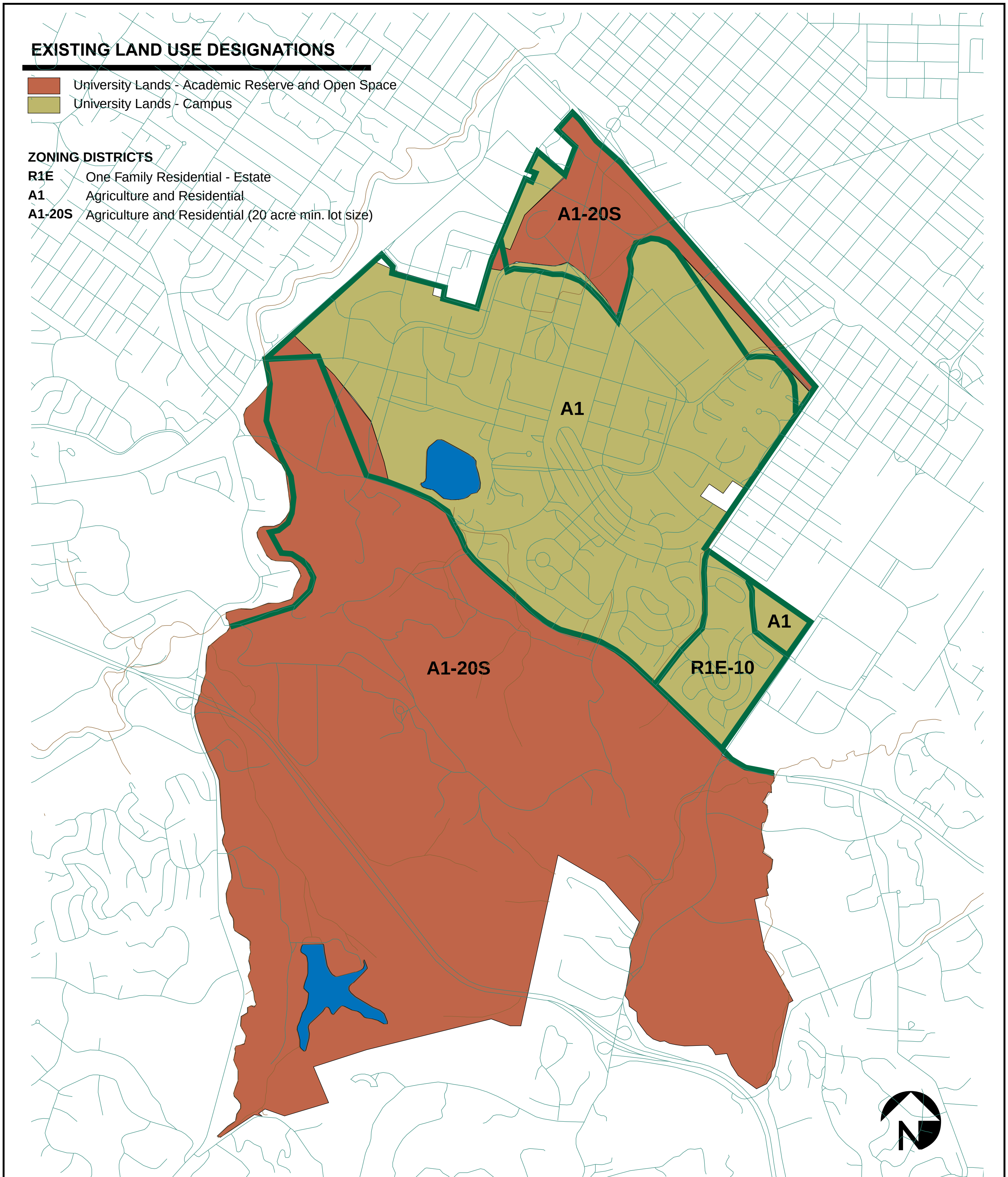
Stanford has six distinct areas within its boundaries including the core campus, undeveloped portions of Santa Clara County foothills, medical center, shopping center, research park, and San Mateo County lands (Figure 4.1-2). Only the core campus and undeveloped portions of the Santa Clara County foothills are located within the proposed boundaries of the Stanford University Community Plan.

### *Core Campus*

The core campus area of the University is within Palo Alto's urban service area and is considered an "urban unincorporated area" in the Santa Clara County General Plan. Land uses within this area north of Junipero Serra Boulevard are currently designated University Lands/Campus (see Figure 2-4) under the County General Plan and mostly zoned A1 (see Figure 4.1-3), which allows academic facilities as a conditional use. Land uses within the core campus area consist of academic uses, athletic facilities, academic support services (such as libraries) and housing. The General Plan designation allows academic and academically-related uses – instruction and research, faculty, staff and student housing and support services. Permitted uses in the A1 Zoning District include agricultural uses, residences for farm workers, single-family residences, golf courses and country clubs (which require a use permit), parks and playgrounds, home occupations, accessory buildings to permitted uses, and mobile homes for occupation by the landowner. Other uses consistent with the General Plan designation are subject to issuance of a use permit by the County. The zoning ordinance contains specific development standards for the A1 zone. Therefore, academic projects at Stanford require a Use Permit, as well as Architectural and Site Approval.

The southeastern area of the core campus bordered by Page Mill Road, Junipero Serra Boulevard (JSB), Stanford Avenue, and Peter Coutts Road is developed with single family faculty housing and two elementary schools, and is primarily zoned R1E (One Family Residential – Estate). The corner of Page Mill Road and Peter Coutts Road is zoned A1. This entire area is designated University Lands/Campus in the General Plan. The intent of the R1E zoning district is to "provide opportunities for low density residential uses in combination with more liberal use of agricultural uses than is appropriate in other residential districts" (Santa Clara County Zoning Ordinance, 1937). Permitted uses include one-family dwellings (including mobile homes), townhouses, golf courses and country clubs, crops and tree farming, nurseries/greenhouses, necessary agricultural uses, home occupations, accessory buildings and boarding homes Currently, however, there are no non-residential uses within this area.

File: 736167\graphics\ExLU Date: 6/20/2000




Sources: Santa Clara County General Plan, 1995
Santa Clara County Zoning Ordinance

Stanford University
CP/GUP Project EIR

**EXISTING ZONING**

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.
Figure 4.1-3

The northern area of the core campus and the golf course are currently designated as University Lands/Academic Reserve and Open Space in the Santa Clara County General Plan. This designation is applied to the land bordering El Camino Real, the golf course, and the main entrance to the campus bordered by Serra Street, Lomita Drive and Lasuen Street, known as the Arboretum. This General Plan designation allows uses which are compatible with the existing character of land and its resources – open space and low intensity uses limited to instruction and research; faculty, staff and student housing; and uses ancillary to the allowable uses. The zoning is A1.

### *Foothills in Santa Clara County*

The Stanford foothills in Santa Clara County are located south of Junipero Serra Boulevard and mostly between Alpine Road on the west and Page Mill Road on the east to the Palo Alto city limits. However, additional Santa Clara County foothill lands are located east of Page Mill Road from JSB to Interstate 280. The General Plan land use designation for the foothills is Academic Reserve and Open Space. County zoning for these areas is A1-20S, which is a slope density combining district with the same allowed uses as the A1 Zoning District. However, the average land area per dwelling unit or parcel is determined by a formula calculating the average slope of the parcel as a percentage. Where the average slope is in excess of 50 percent, the average land area per dwelling unit is 160 acres. The minimum lot size for any development is 20 acres.

The Academic Reserve and Open Space designation is described as lands outside of the core campus area which currently have an open space character or use, or a low-intensity academic use. These lands are identified as important for their scenic beauty, visual relief, grazing, and wildlife values, as well as their academic potential.

Stanford lands south of Junipero Serra Boulevard are largely undeveloped. Existing land uses include a small row of single family homes along JSB, portions of the Stanford golf course, and research facilities, which include the Center for the Advanced Study in the Behavioral Sciences, and an observatory. Although the foothills are not formally designated for recreational use, many campus residents and other community members use the foothills for that purpose.

### *Stanford Lands in City of Palo Alto*

#### *Medical Center*

The Stanford University Medical Center is located within the City of Palo Alto and includes portions of the School of Medicine, Stanford Hospital, the Lucile Salter Packard Children's Hospital, and associated clinics. The medical center's land use designation is Major Institution/Special Facilities and includes institutional, academic, governmental, and community services and lands that are either publicly owned or operated as non-profit organizations. The Medical Center is located to the west of the core campus area and mostly between Campus Drive West and Welch Road.

### *Shopping Center*

The Stanford Shopping Center opened in 1956 and is located within the City of Palo Alto. The shopping center includes 70 acres of Stanford lands located to the south of El Camino Real and west of Quarry Road. The shopping center's land use designation is Regional/Community Commercial. This land use designation includes larger shopping centers and districts that have wider variety goods and services than neighborhood shopping areas. The shopping center is accessed from El Camino Real, Sand Hill Road, Arboretum Road, and Quarry Road.

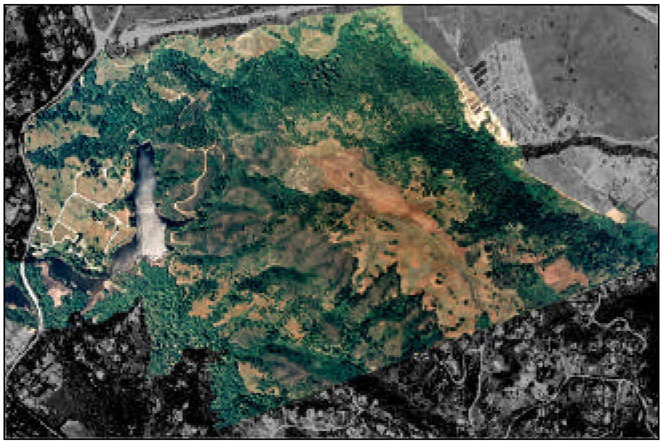
### *Research Park*

The Stanford Research Park was created in 1951 in response to the demand for industrial land near university resources and an emerging electronics industry tied closely to the School of Engineering. Today, the park is home to more than 150 companies in electronics, software, biotechnology and other high-tech fields. Research and development and service companies occupy some 10 million square feet in more than 160 buildings. The research park is located within the City of Palo Alto and has a land use designation of Research/Office Park. This land use designation includes office, research, and manufacturing establishments whose operations are buffered from adjacent residential areas. Other uses that may be included are educational institutions, child care facilities, and compatible commercial services.

## ***San Mateo County Lands***

San Mateo County lands include the area immediately west of the Santa Clara County line on both sides of Interstate 280. Most of these lands are undeveloped with the exception of the Stanford Linear Accelerator Center (SLAC). SLAC is operated by Stanford under contract with the U.S. Department of Energy. A staff of about 1,300 includes 150 Ph.D. physicists. Typically 800 physicists from universities and laboratories around the world participate in the high-energy physics program, and another 800 scientists from universities and industries are active in the synchrotron radiation program.

In addition to SLAC, Stanford owns and maintains the 1,190-acre Jasper Ridge Biological Preserve. The Preserve is located in the eastern foothills of the Santa Cruz Mountains. The Preserve provides refuge to native plants and animals, educational experiences to students and docent-led visitors, and a rare natural laboratory for researchers from all over the world. The Preserve encompasses remarkable geologic, topographic, and biotic diversity within its boundaries, including one of the few formally preserved serpentine grasslands in the world and the only freshwater lake in California managed primarily for research and instruction. These unique features, along with the Preserve's chaparral slopes, mixed evergreen forests, oak woodlands, and freshwater wetlands, provide researchers, students and visitors with an opportunity to experience many of the ecosystems that were once extensive in this part of California.



*Aerial view of the Jasper Ridge Biological Preserve, located immediately south of SLAC in San Mateo County.*

### 4.1.A.2 Adjacent Land Uses

Land uses bordering Stanford's Santa Clara County lands are primarily residential, with some commercial along El Camino Real (Figure 4.1-4). Residences are located east of Alpine Road, adjacent to the Stanford Golf Course; west of Sand Hill Road across from the Stanford Community Farm in Menlo Park; north of El Camino Real in Palo Alto; and east of Stanford Avenue in Palo Alto.

The California Avenue commercial area, Palo Alto High School, Town and Country Shopping Center, and Palo Alto Medical Foundation, are also located north of El Camino Real across from the campus.

### 4.1.A.3 Existing General Use Permit

Stanford University's 1989 General Use Permit (GUP) with Santa Clara County established the existing conditions for additional growth in the Central Campus area within unincorporated Santa Clara County jurisdiction. The GUP allows continuation of existing uses in their present locations and allows the University to develop up to an additional 2,100,300 square feet for academic uses, academic support, and housing. The GUP allows the Adjusted Daytime Population on campus to increase to 33,905 and parking to increase by 1,200 spaces. The adjusted daytime population includes all persons on the Stanford campus, including General Campus, Medical Center, SLAC, and Other (including commercial activities, general visitors, vendors, construction workers, independent centers, and non-resident conferees).

In addition to the building area, population and parking limits, the 1989 GUP establishes several conditions for continued campus development, including the requirement for an Annual Report from Stanford to the County and review procedures for individual building projects. The 1989 GUP also identifies four "Special Condition Areas" where separate use permits are required for proposed projects. The 1989 GUP special condition areas are shown on Figure 4.1-5.

File: 736167\Graphics\LandUse Date: 6/20/2000


## MAP KEY

1. Lucille Nixon School
2. Escondido School
3. Stanford Research Park
4. College Terrace (residential)
5. California Avenue Commercial
6. Palo Alto Residential (mostly single family)
7. Palo Alto High School
8. Town & Country (commercial)
9. Palo Alto Medical Foundation
10. Commercial
11. El Camino Park
12. Menlo Park (single family residential)
13. Oak Knoll School
14. Sharon Heights Residential
15. Stanford Hills Residential
16. Happy Hollow Residential

Stanford CP/GUP
Project EIR

# SURROUNDING LAND USE

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.1-4

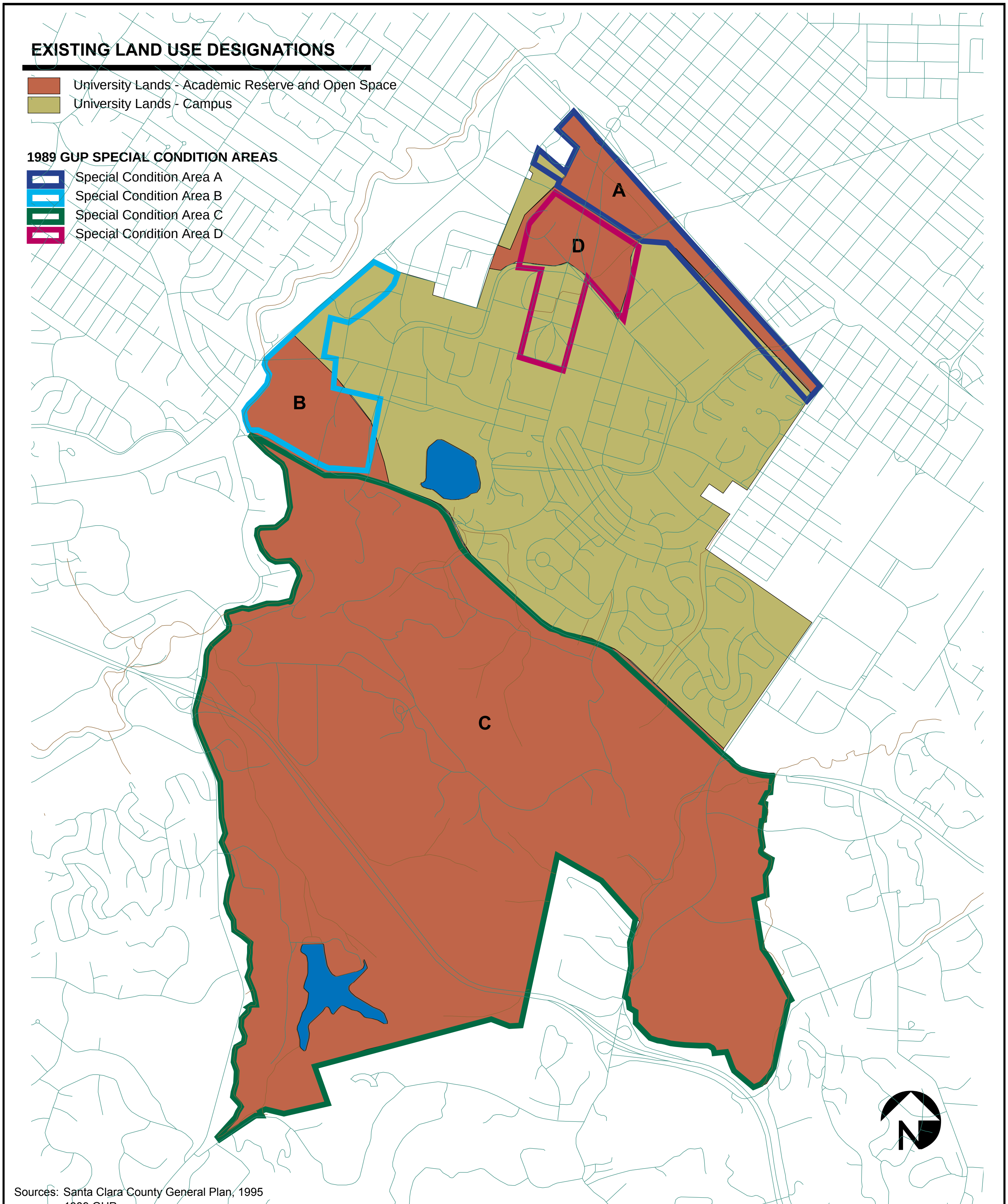
The GUP Conditions of Approval state that when the total adjusted daytime population on campus reaches 33,400 (excluding dependents), or the square footage in the use permit area reaches 1,425,000 square feet, Stanford shall submit a status report to the planning commission discussing development trends on the campus to that point, the expectations for the remaining increment, and development plans beyond the limits of the use permit (1989 GUP). In the Stanford University, Santa Clara County General Use Permit, Annual Report #9, for 1996-1997, the square footage developed under the GUP was reported to be 1,626,388. Based upon this level of development, Stanford began preparing annual status reports, starting with Annual Report #9.

### 4.1.A.4 Current Population and Square Footage Levels

Stanford has documented adjusted daytime population and square footage in their General Use Permit Annual Reports. The latest Annual Report (#11, for the period of September 1, 1998 through August 31, 1999) placed the adjusted daytime population at 32,965, which is 940 below the population threshold established in the 1989 GUP. Campus facilities that were developed under the existing 1989 GUP are shown in Figure 4.1-6. The key to Figure 4.1-6 is provided in Table 4.1-1. Stanford added approximately 298,500 gross square feet to the central campus area during 1998-1999, increasing the cumulative gross square feet constructed or approved under the 1989 GUP to 1,951,933. As a result, 148,367 square feet of the current General Use Permit threshold of 2,100,300 square feet remain. The total academic space anticipated with the buildout of the 1989 GUP is estimated to equal 12,439,061 square feet.

Campus facilities developed on unincorporated Santa Clara County land since 1989 that were not developed under the 1989 General Use Permit include:

- Psychiatry Building (75,575 gsf), which was outside the General Use Permit area and received a separate use permit;
- 26 single family homes at Ryan Court and 8 single family homes at San Juan Hill that are exempt from conditions of the use permit;
- Foothills Reservoir Number 2, which was approved through a separate Use Permit in December 1998 because it is in Special Condition Area C; and
- Stock Farm Road Extension and Palo Road Improvement projects, which are road network components of the Sand Hill Road Corridor Projects approved by the City of Palo Alto as lead agency.




Sources: Santa Clara County General Plan, 1995
1989 GUP

Stanford University
CP/GUP Project EIR

# 1989 GUP SPECIAL CONDITION AREAS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.
Figure 4.1-5

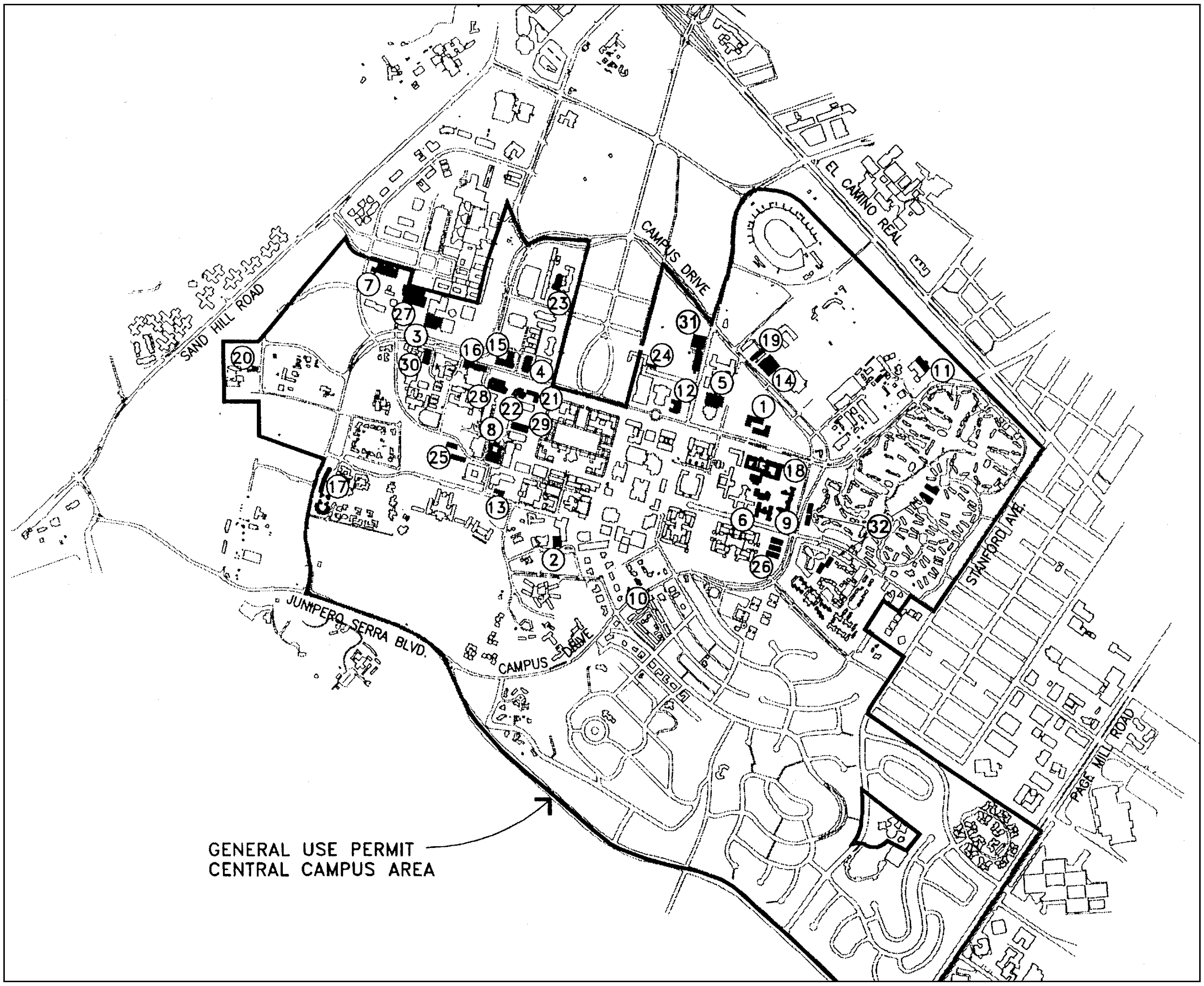



**Figure 4.1-6 Development Approved Under the 1989 GUP**

## 4.1.A.5 Development Trends

Through the first 11 years of the GUP, Stanford averaged 177,450 gross square feet (gsf) per year in new space within the Central Campus Area, including deductions for demolished buildings that were replaced. Approximately 135,000 gsf of this annual development was for academic, athletic, and support facilities, with the remainder for housing.

# Table 4.1-1

## Key to Figure 4.1-6

| Fiscal year | | Project | Net size (gsf) | Subtotal |
|---|---|---|---|---|
| Annual Report #1 | 1 | Serra Complex | 84,000 | |
| (1988-89) | 2 | Tressider Expansion | 10,000 | |
| | 3 | RAF II | 49,000 | |
| | 4 | Gilbert Biology | 100,000 | |
| | 5 | Ford Field House | 67,000 | |
| | | demo Ryan Lab | (22,476) | |
| | | | | 287,524 |
| Annual Report #2 | 6 | Kimball | 60,500 | |
| (1989-90) | | demo Manzanita Trailers | (20,768) | |
| | 7 | MSLS/MRS | 112,567 | |
| | 8 | Green Earth Sciences | 77,000 | |
| | | demolition | (40,487) | |
| | | | | 188,812 |
| Annual Report #3 | | Golf Maintenance Shed | 4,370 | |
| (1990-91) | 9 | Manzanita II | 63,000 | |
| | | demo Manzanita Trailers | (38,704) | |
| | | HEPL office space | 5,000 | |
| | | | | 33,666 |
| Annual Report #4 | 10 | Haas Public Service Center | 16,000 | |
| (1991-92) | 11 | Stanford Auxillary Library | 35,000 | |
| | 12 | Econ/CEPR | 45,000 | |
| | | | | 96,000 |
| Annual Report #5 | | HD&S Shop | 2,437 | |
| (1992-93) | 13 | Thornton Engineering | 11,500 | |
| | 14 | Arrillaga Family Sports Center | 107,415 | |
| | | | | 121,352 |
| Annual Report #6 | | Econ/CEPR addition | 2,450 | |
| (1993-94) | 15 | Gates Computer Science | 160,800 | |
| | 16 | CIS Extension | 53,000 | |
| | | | | 216,250 |
| Annual Report #7 | | HS&S Shop II | 5,575 | |
| (1994-95) | | HEPL Annex II | 5,000 | |
| | 17 | Governor's Corner | 105,584 | |
| | | | | 116,159 |
| Annual Report #8 | | GP-B Modular | 8,640 | |
| (1995-96) | | demo old GP-B modular | (6,224) | |
| | | demo old Ginzton modular | (2,880) | |
| | 18 | Schwab Center | 158,000 | |
| | | demo Manzanita Trailers | (50,967) | |
| | 19 | Tennis Stadium expansion | 24,000 | |
| | 20 | ESF Annex | 6,500 | |
| | | | | 137,069 |

## Table 4.1-1 Cont.

### Key to Figure 4.1-6

| Fiscal year | | Project | Net size (gsf) | Subtotal |
|---|---|---|---|---|
| Annual Report #8 | 21 | Statistics | 22,000 | |
| (1995-96) | | demo old Sequoia Hall | (16,000) | |
| (continued) | 22 | Regional Teaching Facility | 28,000 | |
| | | demo Applied Electronic Labs | (29,400) | |
| | | demo Electronic Research Lab | (64,100) | |
| | | demo HEPL slice | (3,300) | |
| | 23 | Stanford Museum Expansion | 43,709 | |
| | | demo museum trailers | (12,903) | |
| | | | | (31,994) |
| Annual Report #9 | 24 | Littlefield Annex | 14,000 | |
| (1996-97) | 25 | Roble mods (convert from EQ) | 23,200 | |
| | 26 | Wilbur mods (convert from EQ) | 27,360 | |
| | 27 | CCSR | 229,600 | |
| | | Lucas Center Expansion | 5,600 | |
| | 28 | Electrical Engineering | 123,000 | |
| | 29 | McCullough Annex | 57,000 | |
| | | demo Bloch Hall | (16,000) | |
| | | demo McCullough North Wing | (5,000) | |
| | | Terman Expansion | 2,790 | |
| | | | | 461,550 |
| Annual Report #10 | | Lagunita Court Dining Expansion | 6,990 | |
| (1997-98) | 30 | Chiller Plant Expansion | 19,032 | |
| | | Demolition of Shultz Auditorium | (4,618) | |
| | | Coffee Kiosk | 504 | |
| | | Littlefield Annex basement | 5,134 | |
| | | | | 27,042 |
| Annual Report #11 | | 664 San Juan demo | (14,200) | |
| (1998-99) | | 650 San Juan demo | (13,000) | |
| | | Carnegie Institution Storage | 3,000 | |
| | 31 | Alumni Center | 115,600 | |
| | | Alumni building demos | (20,873) | |
| | 32 | Escondido Village Grad Student Hsg | 231,776 | |
| | | Escondido Village demos | (8,708) | |
| | | DeGuerre Aquatics | 4,908 | |
| | | | | 298,503 |
| Total | | | | **1,951,933** |

Source: Stanford University GUP Annual Report # 11, August 31, 1999.

Projects anticipated through the end of the existing General Use Permit include a Chemistry/Biology lab, the Clark Center for Biomedical Engineering and Sciences, a Mechanical Engineering lab, and the Cowell Health Center replacement. Space for these facilities would be available through the remaining 148,367 square feet of 1989 GUP development, the building area credit of six Unreinforced Masonry buildings (which have been removed from use), and other miscellaneous demolitions.

Projects that would be developed outside the General Use Permit include a facility proposed by the Carnegie Foundation south of Junipero Serra Boulevard (Special Condition Area C) and the Center for Jewish Life located near the intersection of Campus Drive East and Mayfield Avenue. This project would require a separate Use Permit because it includes the conversion of a residential use to a non-residential use.

### 4.1.A.6 Land Use Planning History and Interjurisdictional Agreements

The original plan for the Stanford campus was created by collaboration between Leland and Jane Stanford and the landscape architect Frederick Law Olmsted and the architect Charles Coolidge. Changes to the original plan occurred early and continued over the next 75 years. Stanford has made efforts in the last decade to reaffirm the original principles and intent of the campus design in development of the campus.

Following World War II, the Board of Trustees decided to lease for commercial purposes lands that were not needed for near-term development. At this time the Board also created the university planning office to oversee future development. In the 1950s, the Stanford Shopping Center and the Research Park opened and were annexed to the City of Palo Alto. In 1956, the President’s Land Use Committee issued a report recommending that the Jasper Ridge and Searsville Lake areas be designated a biological preserve, and in 1973, the 1,200 acre Jasper Ridge Biological Preserve was created in unincorporated San Mateo County. The Stanford medical school and hospital were also added to the Stanford campus in the 1950’s. The hospital traces its roots to 1858 when it was the medical department of the University of the Pacific in San Francisco. The department became the Cooper Medical College in 1882 and was adopted as Stanford University's School of Medicine in 1908. It remained in San Francisco until 1959 when the medical school and the hospital moved to the Stanford campus.

In 1962, Stanford and Santa Clara County entered into a General Use Permit (GUP). The 1962 GUP designated land use types for different parts of the Stanford lands, but did not specify or limit the permitted density for each designation.

In 1974, the City Services Zone Agreement was established between the City of Palo Alto and Stanford University. This agreement recognizes that Stanford is responsible for providing municipal services to its academic facilities either directly or through service contracts. In recognition of that fact, the County adopted an exemption to its “City Services” zoning ordinance, which states that if development requires municipal services, it has to be approved, and possibly annexed, by the city in whose urban service area the property is located.

Three Special Condition Areas (which were of particular concern to the City) were identified and added to the 1962 GUP through an amendment to ensure that development would be restricted pursuant to the City Services Zone Agreement. Area A (the El Camino Real frontage) was restricted from any building construction; Area B (between Campus Drive West and Sand Hill [Willow] Road) was restricted from building construction over 5,000 sf; and area C (the foothills south of Junipero Serra Boulevard) was restricted from building construction over 5,000 sf or any housing without a separate use permit approved by the Planning Commission. The University agreed to notify the City of Palo Alto of all development proposals on Stanford land in Santa Clara County and the city agreed to inform Stanford of any proposals in the City of Palo Alto, which might affect Stanford.

Also in 1974, the Stanford University Board of Trustees adopted a new land use policy, which was revised in 1989, reserving most of the University's remaining open lands as an academic reserve to be held for future educational needs. The Land Use policy was updated in 1980 and again in 1989 to reflect contemporary issues concurrent with Stanford's 1980 Land Use Plan and the 1989 GUP. To implement the 1980 Land Use Policy and the Land Use Plan prepared by the University in the same year, Stanford worked with the City of Palo Alto, City of Menlo Park, San Mateo County and Santa Clara County to identify land use designations appropriate to Stanford. A major element of the 1980 Plan is the concept that future development on Stanford lands "must balance academic need and the suitability of potential sites." The 1980 Land Use Plan was not formally adopted by any jurisdiction.

In order to encourage development with a minimum of environmental cost, Stanford developed a Land Suitability Analysis for lands outside the central campus area as part of the 1980 Plan. The land suitability analysis identifies and evaluates features such as topography, flooding potential, public safety or hazards, aesthetic and cultural resources, and takes these characteristics together to identify the most and least suitable areas for development. The Land Use Plan is one of several plans or guidelines, which guide planning on the campus. Other plans focus on outdoor lighting, vegetation management, landscape design, circulation, signage, and historic resources.

The County of Santa Clara, the City of Palo Alto and Stanford University cooperate to implement and maintain the Land Use Policy Agreement and Stanford Protocol. These documents, created in 1985, revised in 1990 to reflect the 1989 GUP, and last revised in 1998, outline all adopted land use designations, regulations, restrictions, and review and referral procedures. The 1998 Protocol stipulates that the staffs will continue to refer development applications to each other and will, as necessary and appropriate, join in requests to other jurisdictions.

### 4.1.A.7 Plans and Policies

The use of Stanford land in the unincorporated area of Santa Clara County must be consistent with the following:

- Santa Clara County General Plan;
- the County Zoning Ordinance;
- the Stanford University General Use Permit issued by the County;

- the Land Use Policy Agreement between the County, the City of Palo Alto, and Stanford; and
- other use permits and approvals as required.

The key strategies included in the Santa Clara County General Plan related to land use, growth, and development at Stanford are discussed in Chapter 3. If the proposed CP is adopted by the County (with or without modification), these strategies would be replaced with goals and policies included in the CP as adopted by the County.

## 4.1.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

An impact is considered to be significant if it meets any of the following criteria:

**Table 4.1-2**

Evaluation Criteria with Points of Significance – Land Use

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the Project increase potential for conflict as a result of incompatible land uses? | Lineal feet of incompatible uses; or number of housing units of incompatible use | Greater than 0 lineal feet or 0 housing units | Santa Clara County General Plan<br>Santa Clara County Environmental Evaluation Checklist Item I(b) |

## 4.1.C IMPACTS AND MITIGATION MEASURES

**IMPACT: LU-1: Will the project increase potential for conflict as a result of incompatible land uses?**

Analysis: *Less than Significant*

Chapter 2 – Description of Proposed Project describes the proposed land use designation changes included in the CP, and the development that is proposed in the GUP application. The Community Plan proposes to replace the two existing County General Plan land use designations for Stanford lands with seven land use designations to describe and establish current and intended land uses in different areas of the CP boundary. The seven land use designations include the two existing designations (Academic Campus and Open Space and Academic Reserve) plus Campus Residential – Low Density, Campus Residential – Moderate Density, Campus Open Space, Special Conservation, and Public School. The existing and proposed land use designations are shown in Chapter 2 on Figure 2-4.

The GUP application includes a map of the proposed Development Districts. The Development Districts (Figure 2-6) have been created to provide locational information for the proposed GUP development. The GUP would add up to 2,350 additional undergraduate, graduate, and postgraduate housing units within the Lagunita, Quarry, and East Campus Development Districts (Table 2-2), and 302 – 668 additional faculty/staff housing units in the West Campus, East Campus, and San Juan Development Districts (Table 2-3). The GUP would increase total housing units on campus by up to 28 percent. This increase breaks down as follows: up to 68 percent increase in faculty/staff housing, 2 percent increase in undergraduate housing, and 61 percent increase in graduate and postgraduate housing. The GUP would increase academic space by 2,035,000 gross square feet (GSF) from an existing 12,439,061 GSF to 14,474,061 GSF, a 16 percent increase. These proposed facilities represent a substantial increase in campus development. However, the proposed development would not result in significant conflicts with existing or adjacent land uses.

**West Campus Development District.** The proposed GUP development would add 302-567 units of moderate density faculty/staff housing to an area that contains undeveloped lands and portions of the Stanford Golf Course. Existing residential and academic facilities are located to the east of the proposed housing along Campus Drive West. The golf course, residential units, and an open field are located to the west of the proposed housing. The proposed housing development would not conflict with or divide existing land uses in the vicinity. The addition of housing in close proximity to the academic campus land uses would provide a benefit to faculty, staff and students, and help minimize traffic, air quality, and traffic-related noise impacts.

**East Campus Development District (Residential).** The GUP development would add 9 to 75 faculty/staff residential units adjacent to Escondido Village along Stanford Avenue. The surrounding area is primarily residential, with densities of about 6 units per acre. Maximum development of this site would not result in land use conflicts, but could result in traffic and circulation congestion if multiple driveways were constructed and accessed from Stanford Avenue. The Traffic and Circulation section (Impact TR-6) addresses this concern by requiring site specific traffic studies for large GUP projects, such as the Stanford Avenue housing. The GUP would also add 250 graduate student housing units to an undeveloped site along El Camino Real near the Stanford Avenue intersection. These units would increase the visual contrast of the site as viewed from El Camino Real, but would not result in incompatibility with adjacent residential and light commercial land uses that are located along the El Camino Real corridor.

**East Campus Development District (Academic).** The East Campus District consists of dormitories, sorority houses, the student health center and Escondido Village. Up to 110,000 GSF of academic and academic support facilities are proposed in this district, which would be a 4 percent increase in existing GSF from

3,089,591 to 3,199,591 square feet. This development and use would be consistent with the residential and support facilities that currently exist, and would not conflict with offsite residential uses that are buffered by Escondido Village.

**San Juan Development District.** The GUP development would add 4 to 39 units of low-density Campus Residential infill housing in an area of existing residential development (approximately 870 total units). Development of CP housing site N (Mayfield) would remove undeveloped lands and replace them with up to 10 of the faculty/staff housing units. The entire area surrounding this site consists of low-density faculty/staff housing and rental housing units along Mayfield Avenue. The construction of housing at this site would result in the loss of open space that may be unwelcome to adjacent residents. However, the conversion would not result in land use incompatibility as the proposed housing density would be consistent with existing units along Mayfield Avenue. This issue is discussed further in Chapter 3.

Up to 29 of the proposed faculty/staff units would be constructed on CP housing sites L and K. These sites are located to the north of Junipero Serra Boulevard and adjacent to existing low-density single family housing. Construction of housing at these sites would also result in the conversion of undeveloped land to residential uses. However, the use would not result in impacts to existing access and circulation, visual contrast, or neighborhood character due to its similarity with existing development.

**Lathrop Development District.** The GUP development would increase gross square footage of Academic Space in this district by 45 percent from 44,453 to 64,453 GSF. The proposed land use is consistent with existing land uses in the area, which include low-intensity academic and research facilities. The Lathrop Development District includes the golf course, low-intensity research areas, and open space lands that provide habitat for sensitive biological resources that have been recommended for protection. Potential effects and recommended mitigation measures for open space and biological resources are addressed in their respective sections of the EIR. Therefore, potential conflicts associated with GUP development would be less than significant.

The proposed CP designation for the Lathrop Development District is Academic Campus, which is a change from the existing land uses designation of Academic Reserve and Open Space. While the GUP only proposes 20,000 square feet of additional development, the CP designation would allow for the consideration of future development that is consistent with the Academic Campus designation. Such future development could result in the need to relocate the golf course. Additional academic development in this development district would have the potential to conflict with natural resources protection and open space uses that are afforded in the surrounding area. In addition, access to this development district is currently limited, and would likely require additional capacity to accommodate additional development. However, it is anticipated that these uses could be provided in the development district without conflicting with adjacent non-Stanford land uses because of existing buffers, including portions of the golf course, San Francisquito Creek, and Alpine Road. Therefore, potential land use conflicts associated with future CP development would be less than significant. Other impacts associated with this change in land use designation are analyzed in Chapter 4.2 – Open Space.

**Campus Center Development District.** The GUP development would increase gross square footage of Academic Space in this district by 22 percent from 7,165,384 to 8,770,384 GSF. The additional development would intensify existing land use, but would not result in land use conflicts.

**Quarry Development District.** The GUP development would increase gross square footage of Academic Space in this district by 66 percent from 75,560 to 125,560 GSF. This area contains the Psychiatry Academic and Clinic Building and parking lots. The GUP would also add 150 postgraduate housing units to an undeveloped site along El Camino Real near the Quarry Road intersection. These units would increase the visual contrast of the site as viewed from El Camino Real, but would not result in incompatibility with adjacent park and commercial land uses that are located along the El Camino Real corridor.

**DAPER & Administrative.** This area of campus contains Stanford Stadium and a variety of student and athletic activity buildings. Development would consist primarily of athletic and student activity buildings, and would increase by 36 percent from 689,801 GSF to 939,801 GSF. The proposed development is consistent with both the type and density of existing on-site uses, and would not conflict with adjacent Palo Alto residential uses that are located across the heavily traveled El Camino Real.

Mitigation: No mitigation is necessary.

## 4.1.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

There are no land use impacts associated with the CP/GUP that would be considered significant when included with past, present, and probable future projects such as the Sand Hill Road buildout, proposed Carnegie Foundation and Stanford Medical Center projects. These projects are all considered compatible with their surrounding land uses, as analyzed in their respective environmental documents.

# 4.2 OPEN SPACE, RECREATION AND VISUAL RESOURCES

This section addresses the effect the project would have on open space and recreational resources. Changes in land use designation from open space to other uses are discussed, and the potential loss of existing recreational areas (whether formal or informal) is evaluated. In this context, changes in use in currently designated "Special Condition Areas" are discussed. The possible visual impacts of proposed development are evaluated from the perspective of both public and private views.

## 4.2.A SETTING

### 4.2.A.1 Existing Character

Stanford University is one of the largest private owners of undeveloped land in Santa Clara County. Nearly two-thirds of the University's 8,180 acres have an open space character. The 4,107 acres of campus in unincorporated Santa Clara County consist of the central campus and other areas of development between El Camino Real and Junipero Serra Boulevard, and the foothills east of Los Trancos Creek and south of Junipero Serra Boulevard. Within the Community Plan area there are 2,244 acres of open space south of Junipero Serra Boulevard, 175 acres of largely undeveloped land in the West Campus area, and 126 acres of open space in the Arboretum, as well as numerous small undeveloped and open space areas scattered through the campus.

Stanford University has a notable heritage of architecture and design. Leland Stanford hired the landscape architect, Frederick Law Olmsted to design a master plan for the campus. The architect, Charles A. Coolidge, designed the original buildings. Stanford insisted that the campus be constructed on a flat site with a formal arrangement of buildings. The core campus area is based on a formal design with a major north-south axis defined by Palm Drive, a mile long approach to the campus lined with palm trees.

The original plan envisioned a series of similar quadrangles aligned on an east-west axis, with the Main Quad and Memorial Church at the center. The Quads were to be linked with continuous streets on axis. The campus has generally spread from east to west, although half of the original axes are blocked by major buildings that were, at the time they were built, thought to define the outer limits of the built campus. Leland Stanford insisted on building the university on the open plains rather than in the foothills so there would be "unlimited level space on which to expand." Today construction has reached the edges of that level space in some locations.

The campus center is characterized by the scale and Romanesque character of the quadrangle buildings sited to form courtyards, the enclosed walkways, the sandstone building material, and the red tiled roofs. The land on both sides of Palm Drive, north of Serra Street, is known as the Arboretum and has generally been left open, retaining the striking initial view of the campus.

There is an absence of high-rise buildings, with the exception of the Hoover Tower and several residential towers. Most academic campus buildings are four stories or less.

The Stanford campus consists of two distinct landscape types:

- A rural landscape with remnants of the original agricultural activities that took place on the "Farm", and open land in the foothills south of the campus that has not been developed; and

*Stanford foothills beyond the central campus as viewed from the Hoover Tower.*

- An urban landscape of "plazas, courtyards, playfields, pathways and ornamental gardens associated with academic facilities and housing." (Stanford Planning Office 1989).

*Central campus buildings and courtyards as viewed from the Hoover Tower.*

Stanford's open space lands are held in the University's private ownership under the Founding Grant of the University, which states that the land be used for the "foundation and maintenance" of the University. It is University policy that all lands that are not currently in academic use, including Stanford Shopping Center and Stanford Research Park, are being held in reserve for future academic use.

The Stanford foothills contribute to the scenic backdrop that defines the edge of urbanization in northern Santa Clara County. Besides the aesthetic value, the foothills also provide biological habitat for a variety of species, and recreational opportunities for Stanford faculty, students and the general public. The foothills are currently designated “Academic Reserve and Open Space” in the Santa Clara County General Plan. This designation allows uses which are consistent with the open space character of the land, including low intensity instruction and research.

Stanford lands include the following open space resources. These resources are shown on Figure 4.2-1.

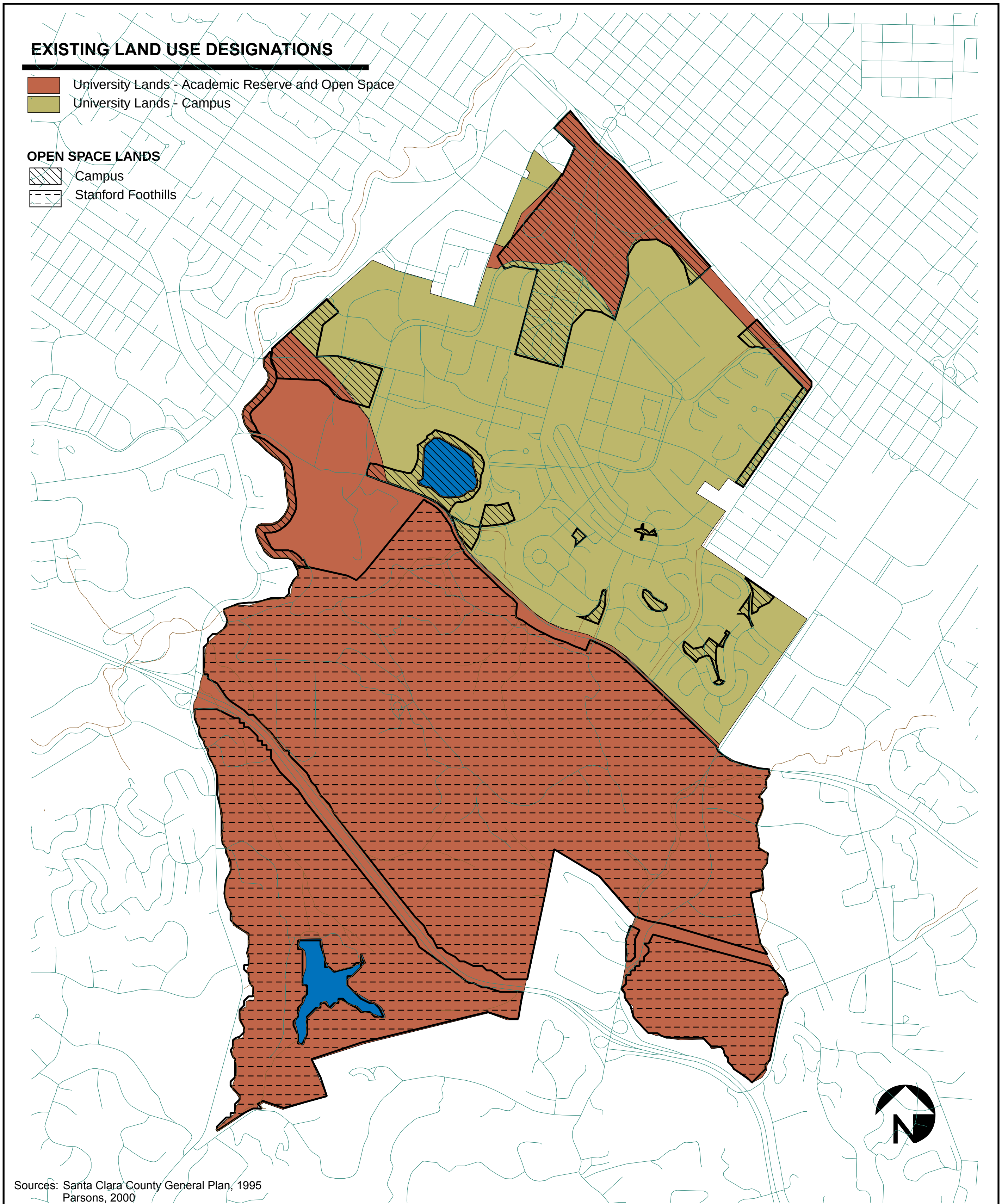
### *Foothills*

These lands are located south of Junipero Serra Boulevard, extending across Interstate 280 and into San Mateo County. The foothills consist of grassland, mixed woodland, and riparian areas, and are largely undeveloped. They are used for research and agricultural leases, most notably “the Dish.” They are not officially designated for recreational use, but are commonly used by the public for jogging and hiking. While Stanford currently has a policy restricting public use to designated trails, this policy has not been enforced. Stanford recently announced its intentions to limit access and enforce trail use restrictions through its Conservation and Use Plan for the Dish area, as described below. The Stanford foothills provide a scenic backdrop to the central campus area. This area is currently designated as Special Condition Area C under the 1989 GUP, where development regulations require a separate County Use Permit for all non-residential buildings in excess of 5,000 square feet and all residential buildings other than caretaker housing units.

*Views of the foothills are documented in the photograph above, and in the background of this photograph of the intersection of Page Mill Road and Junipero Serra Boulevard.*

### *Central Campus Open Space*

This open space includes major open space areas in the central campus, such as the Oval and Arboretum. Some of these areas are currently in Special Condition areas where a separate County Use Permit is required for any building in the area. The Arboretum contains many oak and eucalyptus trees and also serves as a detention area for storm water runoff from the central campus. Another major central campus open space, Lake Lagunita, is also important habitat for the California tiger salamander.




Stanford University
CP/GUP Project EIR

# EXISTING OPEN SPACE LANDS

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.2-1

*The Oval and portions of the Arboretum as viewed from the Hoover Tower.*

### *Undeveloped Tracts*

Tracts of undeveloped lands of varying sizes are located in the central campus, north of Junipero Serra Boulevard. These sites are primarily on the west side of the central campus, with others located in the faculty subdivision. Development is limited in many of these areas due to their status as Special Condition areas, which requires a County Use permit for any construction. Figure 4.2-2 shows Special Condition Areas. Some of these areas are being considered for residential development in the Community Plan.

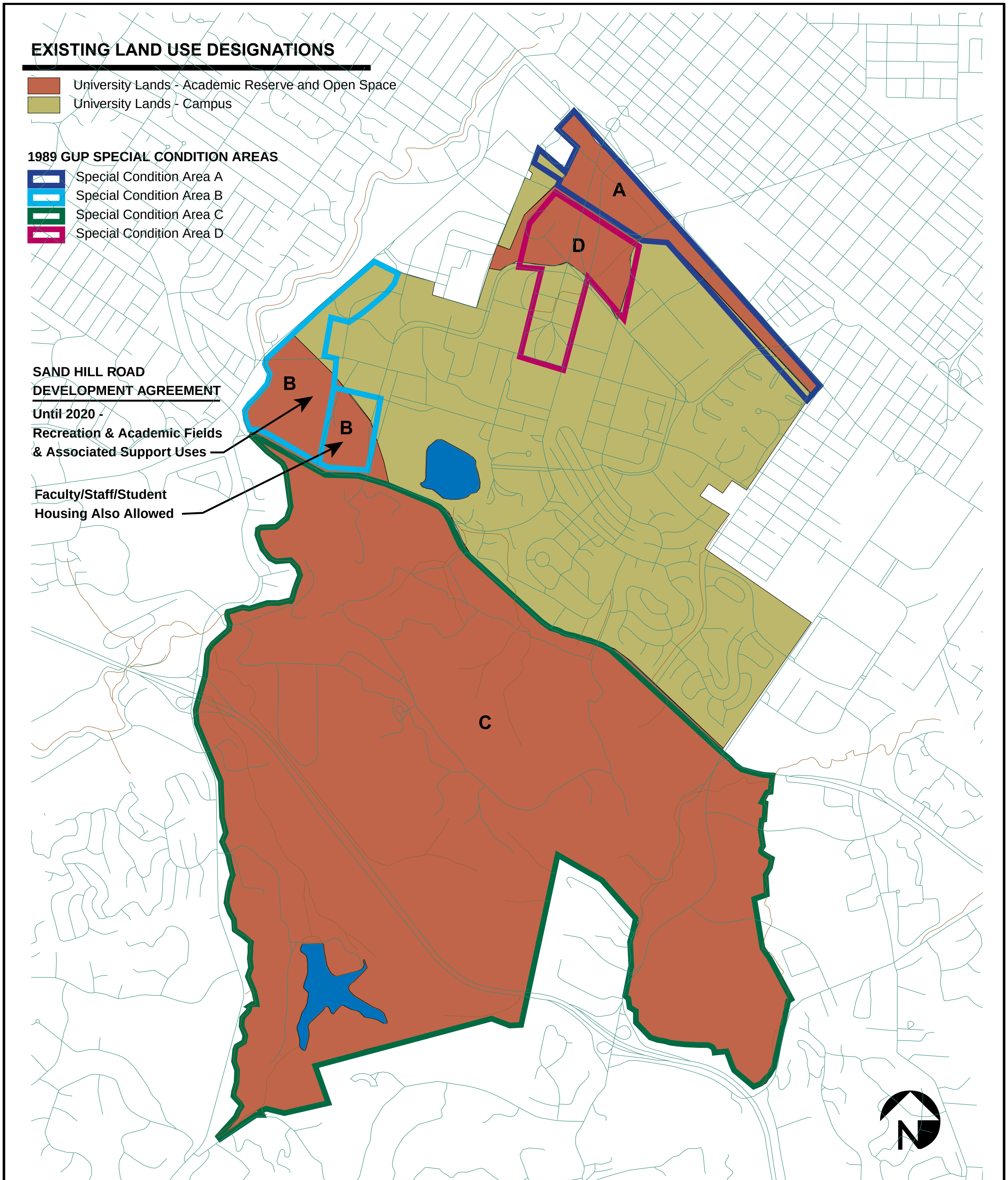
*Open space lands located on the west side of the campus center near the Red Barn and Stable site.*

The most notable of these areas is the existing GUP Special Condition Area B on the west side of campus. Development has been limited in this 139-acre area as part of the Sand Hill Road Development Agreement with the City of Palo Alto (Figure 4.2-2). This area includes the Stable Site, a proposed housing site; residential development in this location would be consistent with the development agreement.

### *Athletic Facilities*

These facilities, primarily playing fields, are considered by the University to be academic in nature. Some of these facilities, such as the driving range, are open for public use, while others are available only to Stanford faculty, staff and students. Figure 4.2-3 shows athletic facilities on campus.

File: 736167\graphics\ExLU Date: 6/20/2000




Sources: Santa Clara County General Plan, 1995
1989 GUP

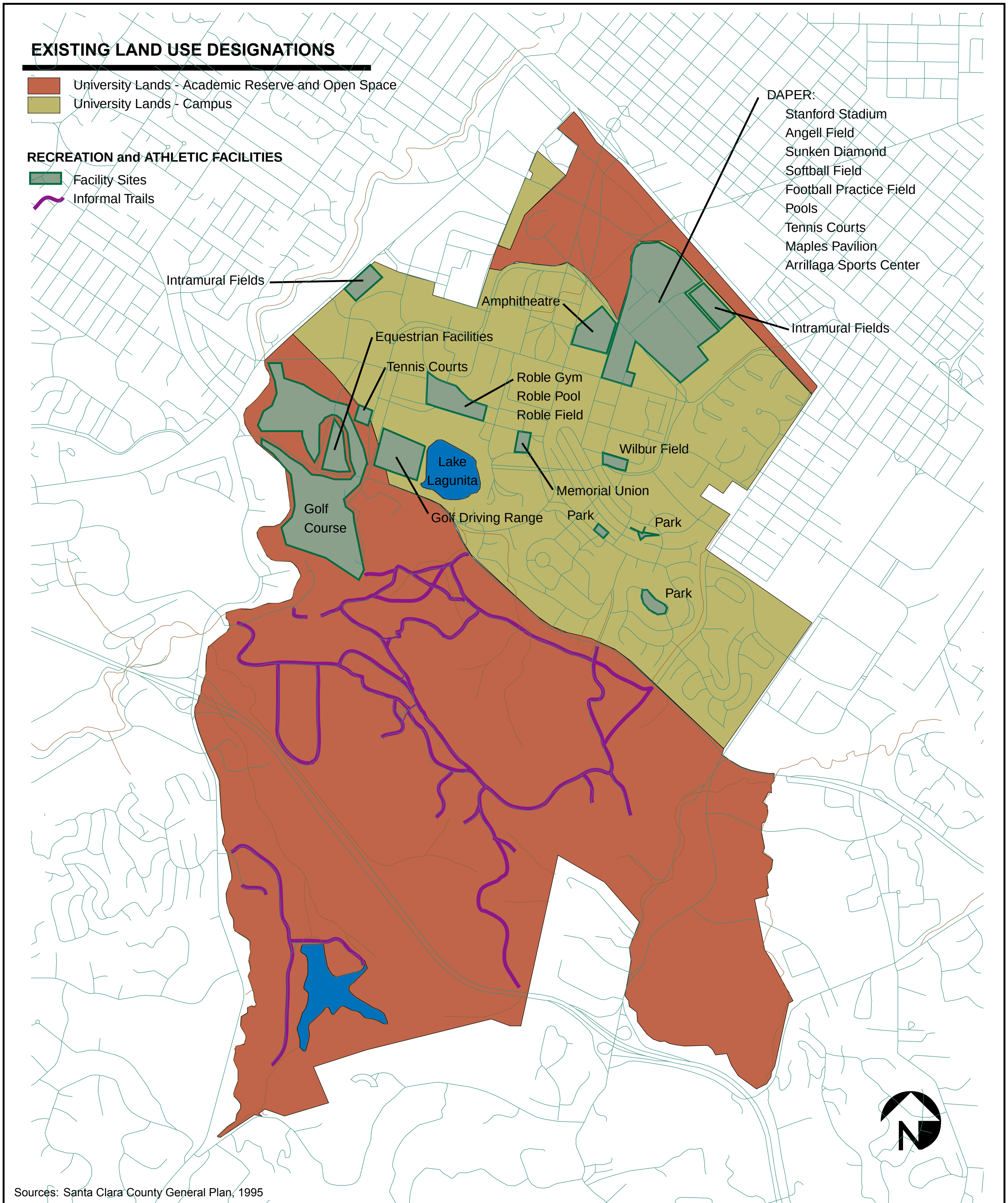
Stanford University
CP/GUP Project EIR

**SPECIAL CONDITION AREAS and SAND HILL ROAD DEVELOPMENT AGREEMENT**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.2-2

File: 736167\graphics\ExLU Date: 6/20/2000




Stanford University
CP/GUP Project EIR

# EXISTING RECREATION and ATHLETIC FACILITIES

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.
Figure 4.2-3

### *Recreational Facilities for Campus Residents*

These include facilities such as Wilbur and Roble Fields and playgrounds within Escondido Village and the faculty subdivision (see Figure 4.2-3). Table 4.2-1 provides an inventory of campus recreational facilities. The list includes Department of Athletics facilities (generally available for students, faculty and staff), recreational areas associated with student and faculty staff housing areas, and significant Campus Open Space areas. Not included are facilities used exclusively for intercollegiate athletics, Jasper Ridge Biological Preserve in San Mateo County where docent-lead hikes are available, and various leased equestrian facilities on outlying lands. The Stanford Equestrian Center at the Red Barn is a 25-acre on-campus site proposed for Campus Open Space designation. It is a campus cultural feature and does provide some instruction to Stanford students but is leased primarily for private equestrian use.

*View of the "Mayfield Playfield" located along Mayfield Avenue in the faculty subdivision.*

### *Recreational and Open Space Facilities Outside Stanford Lands*

Outside of Stanford lands there are a variety of nearby open space and recreation areas. In the immediate vicinity there are a number of city parks. Bayfront Park, Sharon Hills Park, Sharon Park, Nealon Park, Willow Oaks Park, Burgess Park, Seminary Oaks Park, Stanford Hills Park, and Flood County Park are located in Menlo Park.

City Parks in Palo Alto include the Baylands Athletic Center, Bol Park, Boulware Park, Bowling Green Park, Briones Park, Byxbee Park, Cogswell Park, Don Jesus Ramos Park, Don Segundino Donaldina Cameron Park, Robles Park, El Camino Park, El Palo Alto Park, Eleanor Pardee Park, Esther Clark Park, Frederick W. Weisshaar Park, Greer Park, Henry W. Seale Park, Hoover Park, J. Bowden Park, Johnson Park, Mayfield Park, Mitchell Park, Monroe Park, Peers Park, Rinconada Park, Scott Street Park, Terman Park, Wallis Park, and William C. Werry Park. In addition to these neighborhood-oriented city parks, the City of Palo Alto also owns and operates two parks with regionally significant open space areas: the Palo Alto Baylands Nature Preserve, located along the edge of San Francisco Bay, and Foothills Park located off Page Mill Road. Foothills Park is open only to Palo Alto residents and their guests.

## Table 4.2-1

### Recreational and Athletic Resources at Stanford University

| Facility | Use | Size/Quantity | Comments |
|---|---|---|---|
| Athletic Dept. play fields | Intramural sports, club sports, general recreation | • 13 acres at DAPER<br>• 10 acres at Sand Hill<br>• 3.5 acres at Roble Field | Intramural & club sports by reservation, general recreation by Stanford community & public when not reserved for athletics. |
| Athletic Dept. tracks | General recreation | • Two 0.25 mile ovals at Angell field and Stanford Stadium<br>• One 0.5 mile flat jogging circuit in Arboretum | Tracks open daily 8 am to dusk.<br>Jogging circuit available daily during daylight hours. |
| Athletic Dept. courts | Tennis | • Eight at Taube<br>• Six at Encina<br>• Eight at West Campus | Available for sign-up M-Th when classes not scheduled and all day F-Su.<br>Reserved for faculty and staff M-F from 12-1. |
| | Sand Volleyball | • Two at Ford Quad | Available during daylight hours. |
| Golf Course and driving range | Golf and golf practice | • 18 holes<br>• 55 hitting tees | Course available to faculty, staff and students by reservation. Range open to public when classes not scheduled. |
| Athletic Dept. pools | Swimming | • One 25m training and one 50 yard recreational pool at Avery Aquatic center<br>• One 25 yard recreational pool at Roble | Avery – open to faculty, staff and students M-F from 12 – 2. Open for recreational use M-F from 2-6 and Sa-Su from 12-6.<br>Roble – open to faculty and staff M-F from 12-1. Open for recreational use M/W/F from 3-5. |
| Housing play fields | General Recreation | • 4 acres at Wilbur<br>• 2 acres at Mayfield<br>• 15 acres at Escondido Village<br>• 1 acre at Governor's Corner | Includes approximately 8 –10 tot-lots or play structures. |
| Housing courts | Tennis Courts | • Three at Escondido Village | |
| | Paved Basketball / Volleyball | • 15 to 20 at various locations including Cowell, Wilbur, Manzanita., Branner, Eating Clubs, Lake Houses, Mayfield Row, Roble Hall, EV, Rains | |

## Table 4.2-1

### Recreational and Athletic Resources at Stanford University

| Facility | Use | Size/Quantity | Comments |
|---|---|---|---|
| | Sand Volleyball | • Three at Governor's Corner, Lake Houses, Mayfield Row | |
| Residential Parks | General Recreation | • 2.7 acres at Lathrop Park<br>• 1.2 acres at Alvarado Park<br>• 1.5 acres at Frenchman' Park<br>• 1 acre at Ryan Park | All include tot-lots or play structures. |
| Residential Greenbelts | Landscape buffer and some casual recreation | • Approximately 60 acres | Includes some walking paths, habitat and cultural features. Sites identified for potential housing infill are not included. |
| Arboretum and Oval | Landscape buffer and some casual recreation on informal trail network, some habitat and cultural features. Oval lawns are used for active recreation; picnic facilities in oak groves | • Approximately 185 acres including approximately 5 acres at the Oval and Oak Grove "Ears" | Proposed Campus Open Space designation. |
| Lagunita | Swimming and boating, casual recreation and picnic sites on lake berm and perimeter | • 45 to 50 acres including the lake | Proposed Campus Open Space designation. Water activities are seasonal March to June. Cultural and habitat features present. |
| Dish recreational route | Walking, jogging | • Approximately 4 miles | Recreational access is allowed on portions of existing service roads in "dish" area of foothills. |
| Outdoor sculpture | | • Rodin Sculpture garden at Cantor Art Center, New Guinea Sculpture Garden near Lagunita, and 25 to 30 installations throughout campus | All sites are open to the public. Free tours provided once a month. |

Source: Stanford University, 2000

Significant regional open space resources are owned and operated by the Midpeninsula Regional Open Space District (MROSD). The MROSD was formed in 1972 to acquire and preserve large areas of open space land in the Santa Cruz Mountains and along the bay. It operates 24 open space preserves that total nearly 45,000 acres of foothill and bayland open space. Open space preserves located near Stanford include the Ravenswood Open Space Preserve along San Francisco Bay, and numerous preserves in the foothills: Teague Hill Open Space Preserve, Thornewood Open Space Preserve, Arastradero Preserve, Windy Hill Open Space Preserve, La Honda Open Space Preserve, El Corte de Madera Creek Open Space Preserve, Foothills Open Space Preserve, Los Trancos Open Space Preserve, Monte Bello Open Space Preserve, Skyline Ridge Open Space Preserve, Russian Ridge Open Space Preserve, and Rancho San Antonio Open Space Preserve.

### 4.2.A.2 Existing Plans and Policies

#### *Santa Clara County General Plan*

Open spaces and lightly developed Stanford land under Santa Clara County's jurisdiction are currently designated "Academic Reserve and Open Space" in the Santa Clara County General Plan. This designation allows uses consistent with open space character, including low intensity instruction and research. Under the current General Use Permit, the University is required to obtain an additional use permit for development in these areas, or in the Arboretum and open lands along Sand Hill Road and El Camino Real (Santa Clara County, 1989).

Two documents that help form a foundation to County Open Space policy are the *Urban Development Open Space Plan* (1973) and *Open Space Preservation: A program for Santa Clara County* (1987) (Preservation 2020 Report). Formal County policies on urban growth management and open space preservation derive from the 1973 Urban Development/Open Space Plan of cities and County. The Plan envisioned that urban development be confined to cities allowing other lands to remain in open space, rural, and agricultural uses. The Preservation 2020 report outlined a long-range strategy for preserving Santa Clara County open space. Two major recommendations, formation of an open space district and a land trust, have been implemented. The Stanford lands south of Junipero Serra Boulevard were located in a study area and given high priority for open space preservation. The report stated, "Stanford University's plan and policies for the undeveloped lands it owns in this area should continue to be monitored by the County to ensure the protection of these open space areas where feasible".

Open Space policies are contained throughout the County General Plan, and are most concentrated in the chapters on Growth and Development, Parks and Recreation, Resource Conservation, and Health and Safety. In addition, the General Plan includes policies that address scenic highways. Open space strategies and policies that apply to Stanford's lands are addressed in Chapter 4.

### *Stanford University Landscape Design Guidelines, March 1989*

The Landscape Design Guidelines prepared by the Stanford Planning Office focus on site planning, vegetation and water management. The guidelines have two goals: 1) to help conserve the "essential elements of the Stanford landscape "; and 2) to guide development as it occurs on campus. These guidelines have not been adopted by the County or other jurisdictions containing Stanford land. The guidelines describe Stanford's landscape character as an expression of five broad concepts:

- Grand Scale. This concept refers to the size (over 8,000 acres) and varied topography of Stanford's land.
- Response to Climate. The Olmsted design for the campus was climate-based and included deep shaded arcades, enclosed courtyards, a compact building layout, and drought tolerant plants.
- Juxtaposition. This term is illustrated in many ways on the campus. The open foothills contrast with the urbanized central campus; the unruly look of the Arboretum contrasts with the order of Palm Drive; and unmowed meadows surround manicured lawns.
- A Place Apart. Open lands and fields buffer the central campus from surrounding roads and cities. This buffer remains intact in the Arboretum, Lake Lagunita, and the West Campus area.
- Permanence. The design and selection of building materials are intended to reflect the longevity of the University as an institution.

The document presents guidelines for creating an urban/rural mosaic from a broad site planning perspective down to detailed design scale. It presents guidelines for implementing design and construction of new facilities, and management of undeveloped land. Currently, Stanford's review of the adherence to the guidelines and planning for open space occurs during the development of individual projects and in coordination meetings between the Capital Planning and Management Office, University Architect/Planning Office, and Facilities Operation Units. The guidelines have not been adopted by the County and are not considered in the County's evaluation of projects at Stanford.

## 4.2.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

An impact is considered to be significant if it meets any of the following criteria:

## Table 4.2-2

### Evaluation Criteria with Points of Significance – Open Space, Recreation and Visual Resources

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the Project be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways? | a. Level of visual contrast (change in form, line, color, texture, scale of landscape)<br><br>b. Obstruction (loss of view) of middle or foreground views<br>c. Degradation in visual quality of a specific scenic resource[3] | a. Strong visual contrast[1]<br><br>b. Obstruction in viewed area[2]<br><br>c. Any loss or alteration | Santa Clara County General Plan<br>Santa Clara County Environmental Evaluation Checklist Item A(b) |
| 2. Will the Project result in loss of recognized open space? | Loss of open space, especially any open space rated as high priority for acquisition in the "Preservation 20/20" report | Loss of lands resulting in a substantial net reduction in amount or quality of public or recognized open space | Santa Clara County Environmental Evaluation Checklist Item M(f) |
| 3. Will the Project adversely affect recreational opportunities for existing or new campus residents and facility users? | Loss of areas currently used for recreation. | a. Substantial limitation or prohibition of use of a publicly used recreation resource (park, open space or trail)<br>b. Substantial change in quality of public recreational experience<br>c. Substantial increased demand for other public recreation resources | Santa Clara County Environmental Evaluation Checklist Items M (c) and (e) |

# Table 4.2-2

## Evaluation Criteria with Points of Significance – Open Space, Recreation and Visual Resources

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 4. Will the Project cause an adverse effect on foreground or middle ground views from a high volume travel way[4] (excluding scenic routes and scenic highways), recreation use area[5], or other public use area[6]? | a. Level of visual contrast (change in form, line, color, texture, scale of landscape)<br>b. Amount of view obstruction (loss of view)<br>c. Degradation in visual quality | a. Strong visual contrast[1]<br>b. Obstruction in viewed area[2]<br>c. Loss or alteration of a specific scenic resource[3] | Principles of visual management (e.g., Caltrans Environmental Procedures, US Forest Service Visual Management System, Federal Highway Administration Visual Impact Assessment Manual, and Bureau of Land Management Visual Resource Management System)<br>Santa Clara County Environmental Evaluation Checklist Item A(a) |
| 5. Will the Project cause an adverse effect on foreground views from one or more private residences or significantly alter public views? | a. Level of visual contrast and alteration of original view (change in form, line, color, texture, scale of landscape)<br>b. Degradation in visual quality | a. Strong visual contrast[1]<br>b. Loss or alteration of a specific scenic resource[3] | California Environmental Quality Act Case Law<br>Santa Clara County Environmental Evaluation Checklist Items A(c) and (g) |
| 6. Will the Project create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists? | High intensity light or glare directed towards private residences, passing pedestrians or motorists | Greater than 0 residences affected | Santa Clara County Environmental Evaluation Checklist Item A(b) |

Notes:

1. Strong Visual Contrast (one or more of the following) regraded landforms are flat with little or no contour line. Major ridgeline is altered and not consistent with surrounding ridgelines or minor ridgelines are eliminated. Inconsistent color with adjacent landscape character; elimination of landscape texture created by exposed soil or removal of vegetation. Form of Project grossly exceeds scale of natural landforms.
2. Viewed area defined as area of landscape (i.e., everything except sky) as shown in a photograph from the closet sensitive viewpoint, taken with a normal (50 mm) lens.

3. Specific Scenic Resource – (one or more of the following): landscape component that creates striking feature. Landform- steep (>60%) undulating/dissected slopes, distinctive rock outcrops, or pronounced ridgelines. Water – major bodies of water that provide reflective qualities and irregular shorelines, or major/permanent streams/rivers with diversity of meanders, flows, rapids, rock outcrops, or river-banks. Vegetation – mature stands of native or cultural species (oaks and eucalyptus) in natural groves or distinct planted patterns (i.e. eucalyptus along roads or as planted windbreaks); Man-made development – historic structures.
4. High volume travel ways: State highways and 2-lane County highways serving direct connections with settlements named on the USGS quad maps;
5. Recreation use areas: Designated recreation sites, parks, trails, or other areas managed for public recreation.
6. Public use area: Downtown areas, cemeteries, and community centers attracting the public on a daily or regular basis.

## 4.2.C IMPACTS AND MITIGATION MEASURES

**IMPACT: OS-1: Will the project be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways?**

Analysis: *Less than Significant*

Interstate 280 is a state scenic route in San Mateo County and is proposed but not designated in Santa Clara County. There is no GUP development proposed that would be visible from Interstate 280, although the CP proposed the potential to apply for additional use permits in this area.

Junipero Serra Boulevard (JSB) is a County-designated scenic road. Thirty-eight acres of housing (an estimated 302-567 additional units) would be constructed in the West Campus development district, which borders JSB on the north. Twenty thousand square feet of academic space would be developed in the Lathrop development district, which borders JSB on the south. Two pockets of proposed residential development, Gerona/Junipero Serra Boulevard (designated site L), and Lower Frenchman's (designated site K) have been sited adjacent to JSB between Campus Drive and Frenchman's Road. Proposed housing at Gerona/JSB would consist of 1-12 units on 1.5 acres, and Lower Frenchman's would consist of 2-18 units on 2.2 acres.

The Stanford Golf Course borders JSB to the north and south in both of the development districts mentioned above. A thick grove of trees screens views of the golf course from most of the viewpoints along JSB. However, any proposed development within 100 feet of the JSB right of way is subject to design review by the County (Santa Clara County Revised Zoning Ordinance, Chapter 3.40). Therefore, design review would likely be required for the housing development proposed for the Stable Site. This housing would result in the relocation of hole number 1 of the Stanford golf course to an area immediately north of hole numbers 2 through 7 along Sand Hill Road.

New structures associated with the CP/GUP could result in potential impacts on the scenic quality of the JSB corridor between the intersections of Alpine Road and Frenchman's Road. Faculty/staff housing north of JSB and the academic development proposed south of JSB could change the views of these two development districts by adding structures with form, color and texture that are inconsistent with existing open space and landscape views afforded from JSB. While the degradation of a specific scenic resource is not expected to occur from implementation of the proposed development, existing middle and foreground views could potentially be obstructed by the new development. In order to ensure that new development does not result in significant visual impacts along JSB, any structure within 100 feet of JSB shall be subject to design review as required by the County zoning ordinance. Implementation of design review for projects along JSB would reduce this impact to a level that is less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: OS-2: Will the project result in the loss of recognized open space?**

Analysis: *Significant*

The Report of the Preservation 2020 Task Force, *Open Space Preservation: A Program for Santa Clara County*, discusses acquisition and other means of preserving open space in the County. The report lists study areas in the order of priority for park acquisition. The Los Trancos/Felt Lake area is listed as number 10 out of 46. This area is located southwest of Junipero Serra Boulevard and "consists primarily of steep, heavily wooded slopes from the foothills to the crest (county line) of the Santa Cruz Mountains. Substantial portions of this area are protected as either Midpeninsula Regional Open Space Preserves or City of Palo Alto Parks." The Report states that "Stanford University plans and policies for the undeveloped lands it owns in this area should continue to be monitored by the County to ensure the protection of these open space areas where feasible."

*Community Plan*

The Community Plan proposes the removal of several areas from the existing County General Plan Academic Reserve and Open Space designation. Several of these areas are also currently designated as "Special Condition Areas" under the existing GUP. The proposed CP/GUP does not include the Special Condition Areas. The following areas would be changed from Academic Reserve and Open Space to Academic Campus (Figure 4.2-4). The acreage of these areas is provided in Table 4.2-3 for the CP/GUP and Alternative land use components:

- The entire Lathrop Development District (currently in Special Condition Area C);
- The portion of the golf course north of Junipero Serra Boulevard and other athletic facilities and undeveloped lands on the west side of campus (currently in Special Condition Area B);
- The proposed housing sites along El Camino Real (sites D and I) and lands adjacent to El Camino Real and between the housing sites (currently in Special Condition Area A); and

- The "Arboretum Corner" located between Campus Drive and Galvez Street (currently in Special Condition Area D).

## Table 4.2-3

### Academic Reserve and Open Space Lands Proposed for Academic or Residential Use[1]

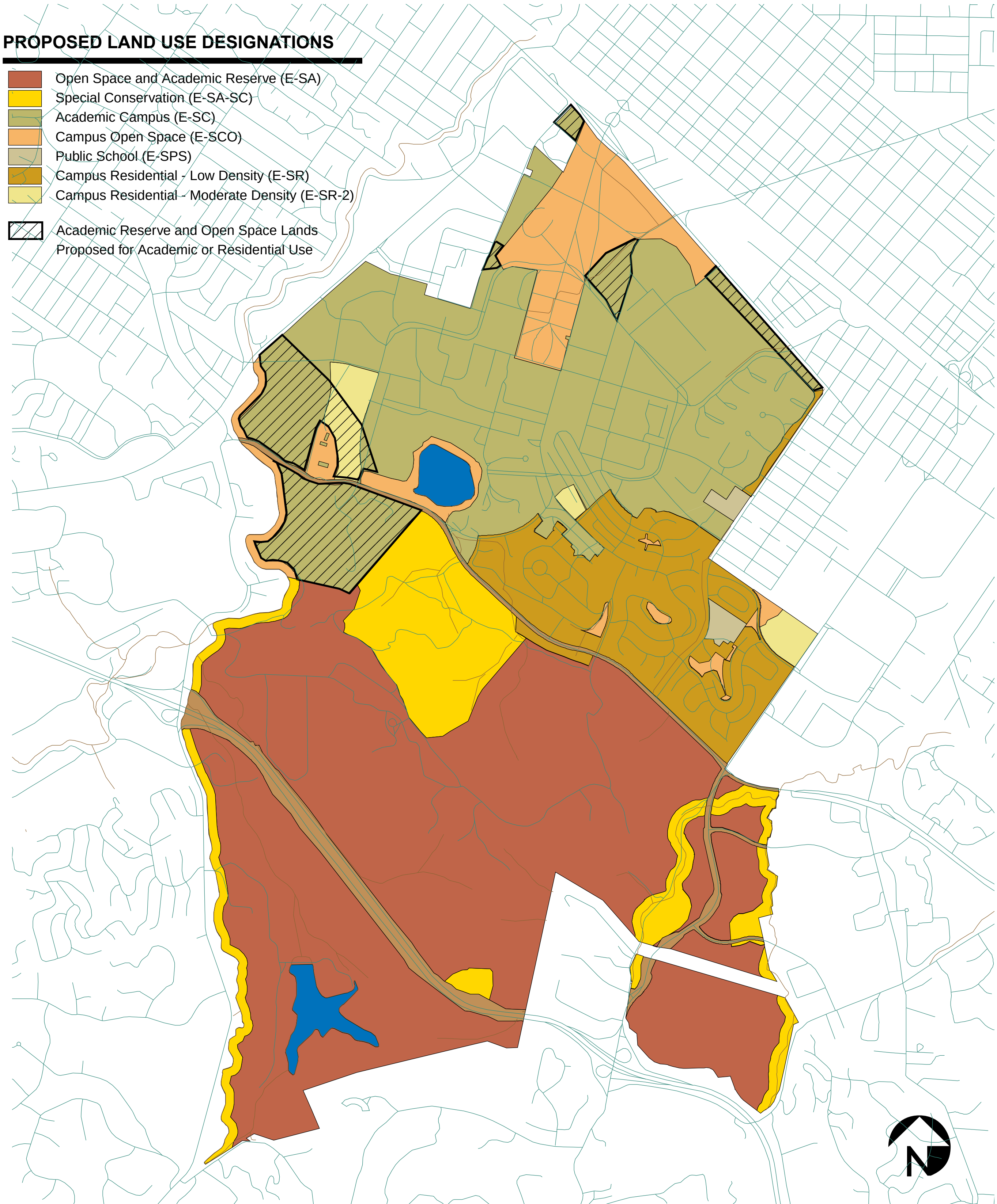
| Site Location | Proposed CP Land Use | Approx. Acreage Converted | Alternative LU-A Land Use[2] | Approx. Acreage Converted |
|---|---|---|---|---|
| Lathrop District[3] | E-SC | 130 | E-SC, E-SCO and E-SFR | 20 |
| West Campus District | E-SC and E-SR-2 | 105 | E-SCO and E-SR-2 | 30 |
| Arboretum Corner | E-SC | 22 | E-SC | 22 |
| El Camino Frontage | E-SC | 18 | E-SC | 18 |
| Quarry District | E-SC | 6 | E-SC | 6 |
| Campus Center | E-SC | 3 | E-SC | 3 |
| **Total** | | **284** | | **99** |

Source: Parsons, September 2000

1 Refer to Figure 4.2-4 for a depiction of the Academic Reserve and Open Space lands proposed for academic or residential use in the CP/GUP.

2 Alternative LU-B would reduce conversion in the Lathrop District to 0 acres, and would include the same acres as the CP/GUP in all other areas, for a total conversion of 154 acres.

3 The Lathrop District acreage does not include the Special Conservation land use designation along San Francisquito Creek.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

**ACADEMIC RESERVE and OPEN SPACE LANDS PROPOSED FOR REDESIGNATION**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.2-4

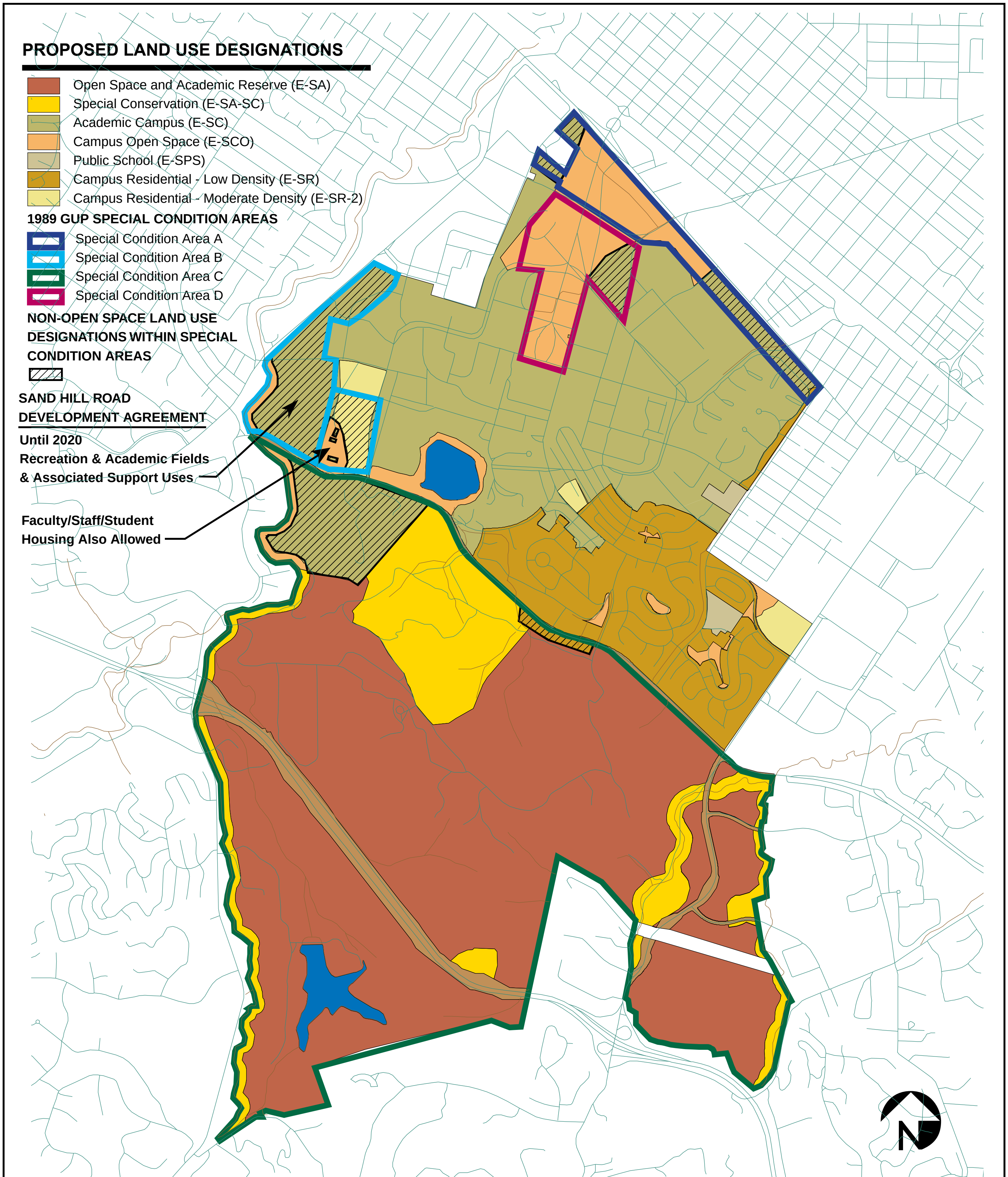
In addition, the Stable site is being proposed for faculty staff housing (a portion of which is currently in Special Condition Area B) that would change the land use designation from Academic Reserve and Open Space to Campus Residential – Moderate Density. The Sand Hill Road development agreement addressed future development of this area for residential use, which has been anticipated for a number of years. The remainder of the existing Special Condition Area B (to the north of the golf course and Stable site) is precluded from development under the development agreement for Sand Hill Road.

Removal of proposed development sites from Special Condition areas has no direct open space impact because development was already allowed in these areas with a separate County Use Permit. It would, however, make it easier for future development to occur in those areas. Proposed housing sites within these areas are very likely to be developed in the next ten years, and the total number of housing units in the GUP application reflects Stanford's intention to develop these sites.

Stanford has proposed that open space in the central campus area be preserved under a new "Campus Open Space" designation. Lands proposed for this designation are not in all cases those lands currently in GUP Special Conditions Areas. Figure 4.2-5 compares the existing Special Condition Areas to proposed Open Space and Academic Reserve, Campus Open Space and Special Conservation areas. Areas that would be removed from Special Condition status and would not receive some form of open space designation are highlighted. Proposed Campus Open Space areas would include:

- The Arboretum;
- Palm Drive;
- The Oval;
- The Stable area (only the immediate environs of the Red Barn, Stable, Little Stable and Covered Riding Ring; the remainder of the area is proposed as a housing site);
- Lake Lagunita and surroundings; and
- Several small open areas within the faculty/staff residential development.

With designation of these areas, open space will be retained within the central campus at a higher level of protection than currently afforded to the Special Condition Areas. Some areas, such as Lake Lagunita and its surroundings and the open spaces within the faculty subdivision, had no formal open space protection in the past. This open space designation offsets the removal of the golf course north of JSB, the proposed El Camino Real and Stable housing sites, and the Arboretum Corner from their current designation of Academic Reserve and Open Space.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# SPECIAL CONDITION AREAS COMPARED to OPEN SPACE AREAS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.
Figure 4.2-5

*General Use Permit*

No GUP development is proposed on the majority of Stanford owned lands south of JSB. However, the CP/GUP does propose 20,000 square feet of academic development in the Lathrop Development District south of Junipero Serra Boulevard. This development would be constructed within the area bounded by the San Francisquito Creek on the west, the golf course on the south, and the Center for Advanced Study of Behavioral Sciences on the east. This is within the area designated as Academic Reserve and Open Space in the General Plan and in Special Condition Area C under the existing GUP. The potential for low-intensity development in this area is recognized in the General Plan. Although 20,000 square feet in a 154-acre area is a very low intensity of development, the distribution of the development throughout the Lathrop district could affect the character of the area if new buildings were widely scattered, leading to a need for new roads and fragmentation of the existing golf course.

Stanford maintains delineated trails in the foothills area that are open to the public. None of the trails that are open to the public traverse the Lathrop District. Therefore, construction of the proposed 20,000 square feet of development in the Lathrop District will not limit or prohibit the use of an open space resource. Depending on where it is located, the proposed development could be visible from one or more of the trails elsewhere in the foothills. This would not, however, substantially change the quality of the public recreation experience because similar structures already exist in the vicinity. However, redesignation of the Lathrop area to Academic Campus would create the potential for future development in this 154-acre area beyond the proposed GUP buildout period. This issue is also discussed in Chapter 5, Growth Inducing Impacts.

Mitigation: **OS-2: Cluster Development in Lathrop Development District**

To mitigate for potential loss of open space in the Lathrop District, the 20,000 square feet of development proposed in the GUP shall be clustered in areas identified in the GUP conditions of approval. Structures that are not for the purposes of occupancy, such as fences or golf course access bridges, may be permitted in other areas of the Lathrop District in accordance with the requirements of the Santa Clara County Zoning Ordinance.

In addition to this measure, areas proposed as Campus Open Space in the CP will offset loss of existing Academic Reserve and Open Space areas within the central campus. Additional measures to mitigate for impacts of housing on El Camino Real are discussed below under Impact OS-4.

After Mitigation: *Significant*

Implementation of Measure OS-2: Cluster Development in Lathrop Development District would preserve the existing open space character of a majority of the Lathrop Development District and would not substantially impact existing open space views or uses. The clustering of the 20,000 square feet of proposed GUP development would reduce the GUP-related impacts to open space to a less than significant level. However, the proposed CP land use designation (Academic Campus) for the Lathrop Development District would allow for much greater future development of this area in subsequent development proposals. The land use designation would essentially remove the open space protections afforded by the existing land use designation and GUP on the 154-acre Lathrop District. Although an additional use permit or revision of the GUP would be required for additional development in this area, the range and intensity of development permissible in the proposed Academic Campus designation is much greater than that allowed in the existing Academic Reserve and Open Space designation. The alternatives analysis (Chapter 7) includes an alternate Academic Growth Boundary component (AGB-A) and alternate land use designation component (LU-A) that would allow for the proposed GUP development in Lathrop, but would prohibit future growth outside of the AGB, or on the golf course south of JSB. Adoption of either of these alternative components would reduce this impact to a less than significant level.

**IMPACT OS-3: Will the project adversely affect recreational opportunities for existing or new campus residents and facility users?**

Analysis: *Significant*

Stanford proposes development of housing at a number of sites that are now used for recreation. These sites include:

- Housing site B (Mayfield/Row), which is proposed on a field now used for informal student recreation;
- Housing site F (Driving Range), which will displace use of the Driving Range;
- Housing site O (Stable Site), which will remove current equestrian activities and hole number one of the golf course; and
- Infill housing sites in the faculty/staff subdivision (Sites K, L, and N) which will displace informal open space areas, including the Mayfield Playfield.

Some of these recreational opportunities will be replaced by relocation of facilities. The proposed sites for relocation of the driving range and hole number one of the golf course are shown in Chapter 7, Alternatives in Figure 7-3. Relocation of these facilities would result in the loss of undeveloped lands east of Sand Hill Road, and could reduce the potential habitat value of these areas (see Section 4.8).

Loss of informal open space areas is partially mitigated by Stanford's proposal to designate 18.4 acres of land within and adjacent to the existing faculty/staff residential areas as Campus Open Space. This designation exceeds the maximum 5 acres per 1,000 population ratio that can be required under State law. However, recreational opportunities in these some of these areas will be limited without additional efforts (such as improvement of parks in the faculty subdivision) to make these areas accessible and useable to the local residents.

In addition to housing development in recreational areas, Stanford proposes to engage in habitat and environmental restoration in the portion of the foothills known as the “Dish”. Consistent with the goals of habitat management, existing recreational opportunities will be restricted by the establishment of formal trails in order to avoid habitat degradation that results from uncontrolled access as part of Stanford’s Conservation and Use Plan for the Dish area. This Plan calls for restoration of degraded portions of the foothills, restriction of use to 4.5-mile trail loop, and prohibition of dogs in the area. This plan is not a part of the CP/GUP project, and is not guaranteed to happen. It is also subject to change.

By limiting access to existing informal trails and adding to the resident and worker population of the Stanford campus (up to 3,018 housing units and 2 million square feet of academic development are proposed in the GUP), the CP/GUP will reduce the availability of recreational facilities while increasing the demand for such facilities. This impact is therefore considered to be significant.

Mitigation: **OS-3A: Improvement of Parks**

In addition to designating lands for use as parks, Stanford shall improve parks in the faculty area in such a way as to provide suitable recreational opportunities for the campus population and shall continue to provide neighborhood recreation opportunities in new residential areas. At a minimum, the park improvement shall provide facilities equal or greater to those lost from development of proposed GUP housing sites.

**OS-3B: Dedication of Trails**

To replace and expand recreational opportunities in the foothills, Stanford shall also dedicate the trail easements shown on the County Trails Master Plan. Stanford will work with the County Parks Department to clarify the process for developing the easement agreement, to identify the general location and type of uses that will be permitted for the trails being dedicated, and to discuss future construction and management considerations. The proposed location of the trail corridors will need to address conflicts with existing agricultural leases and sensitive riparian habitats along the adjacent creeks. Dedication of the trail corridors does not include a requirement for Stanford to make any improvements to the trail corridors at this time, but such improvement may be agreed to by Stanford and the County Parks Department. Dedication shall be phased as academic and residential development under the GUP proceeds.

After Mitigation: *Less than Significant*

Implementation of Measure OS-3A: Improvement of Parks and OS-3B: Dedication of Trails, would result in suitable replacement and expansion of recreational opportunities. Improved parks and dedicated trail corridors will provide a higher quality of recreational experience for users, replacing the informal recreational areas that will be converted to other uses. This measure would reduce the impact to less than significant.

**IMPACT: OS-4: Will the project cause an adverse effect on foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas?**

Analysis: *Significant*

State and Federal Highways from which Stanford lands are visible are Route 82 (El Camino Real), and Interstate 280 (Junipero Serra Freeway). County highways that afford views of Stanford lands include Page Mill Expressway; Foothill Expressway, which becomes Junipero Serra Boulevard (JSB) when it borders the campus; and Sand Hill Road. The Quarry/El Camino Real housing area (Community Plan Site I) includes 6.2 acres (150 units) of postgraduate and hospital resident housing along El Camino Real in the Quarry Development District. Also bordering El Camino Real, north of Escondido Village, is 4.3 acres (250 units) of proposed graduate housing at the Escondido Village/El Camino Real Frontage housing area (CP Site D).

Development of housing in areas adjacent to El Camino Real would decrease the open space character of the campus as viewed from the roadway. Currently, there are no Stanford structures fronting directly on El Camino Real between Quarry Road and Stanford Avenue. As stated above in Impact OS-1, housing development at the campus edges could cause an adverse effect on foreground views depending on the design and density of the proposed housing. The design, density and location of the housing developments have not been identified at this time. The level of visual contrast may change depending on the form, texture and color of the new structures, and the setback distances from the roadway. Degradation of a specific scenic resource (modified oak woodland along El Camino Real) may occur because views of natural open space lands would be replaced with urban housing development. This is a potentially significant impact.

El Camino Park, which borders Route 82 (El Camino Real), and the Matadero Creek Trail, which goes between JSB and Interstate 280, are the only designated recreational sites, parks, trails, and other areas managed for public recreation which have foreground views onto Stanford CP lands. However, there are a number of regional recreational areas from which distant views of Stanford lands are available. There will not be any CP/GUP development proposed within the vicinity of the Matadero Creek Trail. El Camino Park is located directly across El Camino Real from the Stanford Shopping Center, next to a commercial development. Views of the Stanford Campus will be changed by the construction of proposed housing at the corner of El Camino Real and Quarry Road. Additional future academic development could also occur on El Camino Real between Serra Street and the Stadium because the CP proposes to change the land use designation from Academic Reserve and Open Space to Academic Campus, and the GUP proposes to remove the Special Condition area limitations. However, because of its location on a busy thoroughfare, surrounded by housing and commercial development, changes in the views from the park of proposed housing units (GUP Site I) and other potential future development are not considered to be significant. This is justified by the minimal change in the level of contrast, amount of view obstruction, and degradation of foreground views that would result from development in this location.

The Countywide Trails Master Plan shows a proposed trail route following San Francisquito Creek. San Francisquito/Los Trancos Creek is shown on the Stanford Community Plan Land Use map as Campus Open space where it borders the golf course, and as Special Conservation south of the golf course. However, these trail facilities are not officially designated, nor do they abut proposed GUP development.

Mitigation: **OS-4: Protect Visual Quality Along El Camino Real**

Stanford University shall develop an overall design for the streetscape on the south side of El Camino Real. The development of CP housing sites "I" and "D" shall be incorporated into this overall design. Landscaping with drought resistant native plants should be encouraged. This overall design shall be prepared in consultation with the City of Palo Alto Planning Division, and shall be submitted to the County Planning Office for approval prior to, or in connection with the first application for development along El Camino Real. Stanford is encouraged to incorporate a 25-foot setback from El Camino Real into the design, consistent with City of Palo Alto zoning requirements for multifamily housing along arterial streets.

After Mitigation: *Less than Significant*

Implementation of Measure OS-4: Protect Visual Quality Along El Camino Real, would result in appropriate set backs and design of streetscapes along El Camino Real, reducing this impact to less than significant.

**IMPACT: OS-5: Will the project cause an adverse effect on foreground views from one or more private residences or significantly alter public views?**

Analysis: *Less than Significant*

Housing development is proposed for three locations in or near Escondido Village. Escondido Village Infill development (Site C) consisting of 725 units of graduate housing would occupy 116.5 acres. On the El Camino Real frontage, 250 units of graduate housing would occupy 4.3 acres (Site D), and faculty/staff housing consisting of nine to 75 units would be constructed on the 9.4-acre strip of land bordering Stanford Avenue (Site E).

Olmsted Road and a landscaped area that varies from 25 to 100 feet in width currently separate the existing housing in Escondido Village from private residences along Stanford Avenue (College Terrace neighborhood). Proposed housing development along Stanford Avenue (Site E) would remove the existing undeveloped land buffer between College Terrace and Stanford land uses. This loss of undeveloped land would result in minor changes to foreground views from the College Terrace neighborhood. However, these changes would be consistent with the existing neighborhood character as long as proposed housing densities would not be substantially greater than the existing density of College Terrace (approximately six units per acre, with additional density from the subdivision of single family homes into multiple units). The housing proposed along Stanford Avenue has a range of density of one unit per acre up to eight units per acre. Densities are thus relatively similar, and this impact is considered to be less than significant. Development within sites C and D would not result in any additional potential effects because of their distance from the adjacent residences and existing screening, such as trees and apartments.

Housing development is proposed within the San Juan development district on Mayfield Street (Site N), and in two locations along JSB. Development of these sites would change foreground views from existing residences. Proposed development in these locations would present a contrast and alteration from the existing open landscape area. However, the change would be consistent with the existing residential character of the area and there would be no degradation in visual quality based on loss or alteration of a specific scenic resource, because no scenic resource, as defined in the evaluation criteria, would be involved. This impact is therefore considered to be less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: OS-6: Will the project create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists?**

Analysis: *Significant*

Proposed CP/GUP development could create a light source of high intensity or glare affecting residences, pedestrians, or motorists. Public streets that may be affected include El Camino Real, Stanford Avenue, and JSB. Streets and pedestrian paths within the campus could be similarly impacted. Light and glare from new development in Escondido Village may affect residents of the College Terrace neighborhood. New development on Gerona and Frenchman's Roads, along Campus Drive, or in Manzanita Park and Escondido Village could potentially affect existing residences on campus. This impact is therefore considered to be significant.

Mitigation: **OS-6: Control Light and Glare**

A lighting plan shall be prepared and approved by the County for each development project that would include exterior light sources. The plan shall show the extent of illumination that would be projected from proposed outdoor lighting. State of the art luminaries shall be used where necessary, with high beam efficiency, sharp cut-off, and glare and spill control. Upward glow shall not be allowed in residential or academic uses.

After Mitigation: *Less than Significant*

Implementation of Measure OS-6: Control Light and Glare, would ensure that an appropriate lighting plan for each proposed new development is prepared. This would reduce impacts to less than significant.

## 4.2.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

Of the reasonably forseeable projects within Stanford lands, both the Sand Hill Road Projects and the Carnegie Foundation Research/Office Facility would have direct impacts to open space. The Carnegie project would entail an additional 20,000 square feet of academic development in the foothills, in what is currently a Special Condition area. The project site is accessed from Junipero Serra Boulevard, but is set back well from the roadway. The Sand Hill Road Projects would build housing on an undeveloped site. This impact is mitigated through the open space contained in the Sand Hill Road development agreement. Indirect cumulative impacts could, however, result from the growth in population on campus, which will place an additional burden on recreational resources in the area. Off-campus projects are not located where they would affect scenic corridors.

**IMPACT: OS-C1: Will the project combined with other cumulative projects be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways?**

Analysis: *Less than Significant*

The CP/GUP would add incrementally to development along JSB. However, standard measures (County design review) have been identified to ensure proper design of these projects. Other foreseeable projects in the Stanford vicinity would not be located within 100 feet of or in areas visible from JSB, therefore, no additional cumulative impacts would occur.

Mitigation: No mitigation is necessary.

**IMPACT: OS-C2: Will the project combined with other cumulative projects result in the cumulative loss of recognized open space?**

Analysis: *Significant*

The CP/GUP would not result in the loss of potential publicly owned open space as defined by the County. The proposed 20,000 square feet of development in the Lathrop District would, however, constitute new construction in the foothills. In the Lathrop District, there are 44,453 gross square feet of existing development. When the Notice of Preparation for this project was published, the Carnegie Foundation had applied to construct an additional 20,000 square feet of academic development in the same area. Together, the past, current and probable future projects combined with the proposed CP/GUP development total 84,453 square feet of development in the 2,244 acres of Stanford-owned land in the Santa Clara

County foothills. Given the large scale of the open space lands south of Junipero Serra Boulevard and the very limited amount of development that has occurred to date and is proposed to occur in the future, the combined projects will not result in a substantial cumulative net less of potential public open space land.

Nevertheless, the change in designation of the Lathrop Development District from Academic Reserve and Open Space to Academic Campus creates the opportunity for more development in that area under future General Use Permits. It is reasonably foreseeable that the change in designation has been requested to allow for a greater degree of future development in that area. This would be a significant impact.

Mitigation: **OS-2: Cluster Development in Lathrop Development District**

After Mitigation: *Significant*

Mitigation measure OS-2: Cluster Development in Lathrop Development District would reduce impacts from implementation of the proposed GUP-related development. The Carnegie development would also be located adjacent to existing development in the Lathrop district. However, the proposed CP land use designation (Academic Campus) for the Lathrop Development District would allow for much greater future development of this area in subsequent development proposals. Therefore, this impact is considered to be significant and unavoidable.

**IMPACT OS-C3: Will the project combined with other cumulative projects adversely affect recreational opportunities?**

Analysis: *Significant*

Cumulative population growth at Stanford will combine with regional population growth to place additional demand on recreational resources. The project will also induce additional growth due to the multiplier effect of new jobs on campus. This will contribute to the increase in demand for recreational opportunities.

Mitigation: Mitigation measure OS-3A: Improvement of Parks and OS-3B: Dedication of Trails provides suitable mitigation for Stanford's contribution to this cumulative impact. No further mitigation is necessary.

After Mitigation: *Less than Significant*

**IMPACT: OS-C4: Will the project together with other cumulative projects cause an adverse effect on foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas?**

Analysis: *Significant*

As discussed under Impact OS-4, the proposed housing development along El Camino Real would add incrementally to urban development visible from El Camino Real. Mitigation measures are proposed to reduce the potential impacts from the CP/GUP. Other foreseeable projects in the vicinity include the proposed Stanford University Medical Center, Center for Cancer Treatment and Prevention; Carnegie Foundation Research/Office Facility; and Sand Hill Road Corridor Projects. They would not include development visible from El Camino Real. However, there has been extensive development and redevelopment in recent years on El Camino Real within the City of Palo Alto, which could continue over the next 10 years. Therefore, this impact is considered to be significant in its effect on views from El Camino Real.

Mitigation: The project's incremental contribution to this significant cumulative impact would be mitigated by Mitigation Measure OS-4, Protect Visual Quality Along El Camino Real. No further mitigation is necessary.

After Mitigation: *Less than Significant*

**IMPACT: OS-C5: Will the project along with other cumulative projects cause an adverse effect on foreground views from one or more private residences or significantly alter public views?**

Analysis: *Less than Significant*

The proposed housing development along Stanford Avenue would change views from private residences in the College Terrace neighborhood and within University lands. However, these changes are not considered to be significant. Other foreseeable projects in the vicinity would not include development visible from Stanford Avenue or JSB. Therefore, this impact is considered to be less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: OS-C6: Will the project along with other cumulative projects create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists?**

Analysis: *Significant*

The CP/GUP would add incrementally to light and glare on campus and within surrounding communities. Other foreseeable projects such as the Stanford Medical

Center and Carnegie projects could also contribute to light and glare impacts in the vicinity. This impact is therefore considered to be significant.

Mitigation: The project's incremental contribution to this significant cumulative impact would be mitigated by Mitigation Measure OS-6, Control Light and Glare. Other cumulative projects would also be required to implement standard County and City mitigation measures to reduce light and glare effects. No further mitigation is necessary.

After Mitigation: *Less than Significant*

# 4.3 POPULATION AND HOUSING

This section provides the general context for population, housing, and employment in which potential impacts of the Stanford University Community Plan and GUP will be evaluated. Stanford University is located in four cities (Palo Alto, Menlo Park, Woodside and Portola Valley), two unincorporated county areas (Santa Clara County and San Mateo County), and is within close proximity to several other cities (Los Altos, Los Altos Hills, East Palo Alto, and Redwood City). The setting section focuses on the characteristics of those areas (Palo Alto, Menlo Park, and unincorporated Santa Clara County) that have the potential to be most immediately and significantly affected by the Stanford University Community Plan.

The purpose of this section is to provide a general understanding of how the proposed project could affect population growth, housing demand, and employment growth. While these impacts are not environmental changes that require an impact analysis and mitigation under CEQA, it is important to understand the project's effects on population and housing for three reasons:

- Population growth from the project could create secondary impacts, relating to factors such as traffic, air quality, noise, and public services. These impacts are discussed in other sections of the EIR relating to those issues. The potential for growth resulting from the project to stimulate additional growth in the area is addressed in Chapter 5, Growth Inducing Impacts of the Proposed Project.
- The information will aid in the assessment of policies that seek a balance between employment growth and the availability of housing to meet the needs of current and future workers.
- The information will aid in the assessment of local policies that seek to provide additional affordable housing for low- and moderate-income households.

## 4.3.A SETTING

### 4.3.A.1 Population

#### *Population Growth*

The population of the nine-county San Francisco Bay region in which Stanford is located was about 6.9 million in January 2000 (California Department of Finance). There has been modest population growth since 1990 in the area surrounding Stanford University, although at a lower rate than the region as a whole. Table 4.3-1 shows the 1990 and 2000 populations of the Stanford CDP (Census Designated Place) and the surrounding jurisdictions, and compares population growth between 1990 and 2000. The two cities adjacent to the primary developed areas of Stanford, Palo Alto and Menlo Park, are mature communities with little developable vacant land suitable for residential use, with the exception of Stanford West in the City of Palo Alto. As a consequence, population growth has resulted primarily from intensification and redevelopment of existing land uses, infill development on small lots, and small increases in average household sizes.

According to the Association of Bay Area Governments (*Projections 2000)*, population growth will remain moderate in the communities surrounding Stanford, about seven percent growth over twenty years. Countywide, population should increase by about 15 percent, to two million in 2020. Table 4.3-2 shows projected population in Santa Clara County between 2000 and 2020. ABAG projects the growth in household population to be about the same as for the total population, indicating the resident growth from university and other institutional group quarters housing (including housing at Stanford University) is not expected to exceed that of the population at large although these projections do not incorporate projected growth under the GUP.

### *Ethnicity*

The ethnic composition of Stanford residents is similar to that of all Santa Clara County, with the exception of persons of Hispanic Origin. The U.S. Census Bureau (1990 Census) reported that about 70 percent of Community residents identified themselves as white, while 21% identified themselves as of Asian or Pacific Islander origin. About eight percent of Stanford residents identified themselves as being of Hispanic origin, while 21 percent of county residents were of Hispanic origin. Table 4.3-3 compares the ethnicity of the Stanford Community residents, Palo Alto residents, and County residents as reported by the Census Bureau in 1990.

## Table 4.3-1

Population of the Stanford Community and Nearby Jurisdictions (1990-2000)

| Jurisdiction | 1990 Population | % of Area Population | 2000 Population | % of Area Population | % Increase 1990-2000 |
|---|---|---|---|---|---|
| Stanford CDP* | 18,097 | <1% | 12,358** | N/A | N/A |
| Palo Alto*** | 55,900 | 3% | 61,500 | 2.5% | 10% |
| Menlo Park | 28,403 | 1% | 31,800 | 1.3% | 12% |
| Portola Valley | 4,195 | <1% | 4,620 | <1% | 10% |
| Woodside | 5,034 | <1% | 5,650 | <1% | 12% |
| Total Santa Clara & San Mateo Counties | 2,147,200 | 100% | 2,466,700 | 100% | 15% |

Sources: U.S. Census Bureau, 1990 Census; California Department of Finance, Stanford University web site

* The Stanford Census Designated Place (CDP), a U. S. Census Bureau geographical designation that includes lands within the City of Palo Alto, thus the population number for 1990 is higher than the actual population of the campus.

** Comparable information was not available for 2000 regarding the total number of residents on the Stanford campus.. Stanford University reported in its GUP Annual Report #11 that 9,354 students resided on campus in undergraduate and graduate student housing (some possibly with spouses and/or children, although the exact number is unknown and Stanford was unable to provide an exact count). According to housing facts on the University's web site, about 9,100 students resided on campus in 1997-98, of which 8,300 were single, 440 were couples without children, and 360 were parents with children. The Census Bureau reported that families with children in the Stanford CDP had an average of 1.7 children per household. The CDP includes faculty housing, so the actual ratio of children per households for student families might be different No information is available for student families only, however Assuming the same percentage of couples, students with children, and the number of children per household, and applying those rates to the 9,354 student population reported by the University for the year 2,000, the following estimate of students, spouses/partners, and children is developed:

9,354 total students, of which:

8,532 are single students (undergraduates and graduate students)

452 are students with 452 spouses/domestic partners

370 are students with 629 children

Total estimated student/family population for 2000 is: 10,435

There were also 989 faculty/staff housing units in 2000. Assuming a 0.3% vacancy rate for these units (the rate reported by the Census Bureau in 1990) and an average household size of 1.95 (as reported by the Census Bureau in 1990), another 1,923 individuals would reside in these dwelling units. According to the 1990 Census, about 15 percent of households in the Stanford CDP had children (excluding students living in group quarters, which do not constitute households). A 1992 Stanford Campus Residential Leaseholder's Survey (SCRL) and a more recent Emergency Plan estimate that about 2,600 individuals live in the 989 faculty/staff housing units, or 2.62 persons per household. California Department of Finance estimates for Palo Alto and Menlo Park show an average household size or approximately 2.4, which would yield a population of 2,373 persons. This same survey found that 20% of faculty/staff households have children.

The total campus residential population, based on these assumptions, would be 10,435 + 1,923, or 12,358 total campus residents. If the SCRL assumptions are used, the total campus population is estimated to be 13,035. Total campus ADULT population is estimated to be 12,358, less 629 children in student housing, less 252 children in faculty/staff housing, or 11,477. If the SCRL assumptions are used, there could be as many as 488 K-12 school-aged children, 236 more than using the 1990 Census as the basis for population assumptions. The estimated ADULT population would be 11,918 under the higher, SCRL survey assumption This number is similar (139 more adult residents) to the assumption included in Table 4.4-18 of Section 4.4, Traffic and Circulation.

*** Includes residents of Stanford campus residing within the city limits of Palo Alto. According to the Census Bureau, 760 Palo Alto residents lived in college dormitories in 1990. These dormitory residents may actually have resided outside the city limits of Palo Alto, but within its Sphere of Influence.

## Table 4.3-2

### ABAG Population Projections for Santa Clara County (2000 – 2020)

| Jurisdiction | 2000 Population | % of County Population | 2020 Population | % of County Population | % Increase 2000 – 2020 |
|---|---|---|---|---|---|
| Palo Alto Subregion* | 81,800 | 5% | 86,600 | 4% | 6% |
| Los Altos | 31,900 | 2% | 35,000 | 2% | 10% |
| Los Altos Hills | 8,600 | <1% | 9,200 | <1% | 7% |
| Santa Clara County | 1,755,300 | 100% | 2,016,700 | 100% | 15% |

Source: *Projections 2000*, Association of Bay Area Governments

* Palo Alto subregion includes Stanford and the City of Palo Alto Sphere of Influence.

**Table 4.3-3**

Comparative Ethnicity (1990)

| Jurisdiction | Racial Categories* | | | | | Hispanic Origin** |
|---|---|---|---|---|---|---|
| | White | Asian/ Pacific Is. | Black | Native American | Other | |
| Stanford CDP | 70% | 21% | 5% | 1% | 3% | 8% |
| City of Palo Alto | 85% | 10% | 3% | <1% | 2% | 5% |
| Santa Clara County | 70% | 17% | 4% | 1% | 9% | 21% |

Source: U. S. Census Bureau, 1990 Census

* Racial/Ethnic categories as defined by the Census Bureau.

** Includes all persons of Hispanic origin regardless of racial categories shown above

### *Age*

As would be expected of a college community, Stanford is composed primarily of young adults. According to the 1990 Census, the Stanford CDP included over 13,000 individuals between the ages of 18 and 29, nearly three-fourths of the residential population. The University reported 9,354 students among its year 2000 residential population (See Table 4.3-1). In addition, campus residential population includes spouses/partners of students, faculty, and staff, many of whom are also in the 18-29 age group (although the exact number is not available). In contrast, about 16 percent of Menlo Park's residents and 17 percent of Palo Alto's residents were in the 18-29 age group in 1990. These are not high percentages of college-aged individuals. Statewide and countywide, over 20 percent of all individuals are between the ages of 18 and 29.

### *Household Characteristics*

As would be expected in a campus setting, the Stanford community has substantially different household characteristics overall than its adjacent communities. Table 4.3-4 summarizes key household characteristics, such as household composition, average size, and family status. Because the majority of residents in the Stanford community are single students, 1990 Census data reveal that the Stanford population has a substantially smaller percentage of families and a lower average household size. (Note: the U. S. Census counts as households all individuals living in separate dwelling units. In contrast, the Census does NOT count individuals living in dormitories, convalescent hospitals, nursing homes, military barracks, correctional institutions, and other group quarters as part of the household population). While much of Stanford's graduate housing stock consists of apartments, housing available to undergraduates consists almost entirely of dormitory group quarters.

According to ABAG *Projections 2000*, the average household size has increased slightly, between five percent and nine percent, in the communities surrounding the Stanford campus. Average household sizes are projected to decline slightly in Palo Alto by 2020, but continue to slowly increase (about four percent) in other nearby communities. This increase suggests two possible trends (that could occur simultaneously): 1) an increase in the number of families with children (and the number of children per households), and/or 2) an increase the average number of unrelated individuals sharing dwelling units.

**Table 4.3-4**

Household Characteristics (1990)

| Jurisdiction | % Population in Households | % Population in Families | Average Household Size | % Single-Person Households | Families with Children |
|---|---|---|---|---|---|
| Stanford CDP | 50% | 27% | 1.94 | 41% | 15% |
| City of Palo Alto | 97% | 69% | 2.24 | 32% | 22% |
| City of Menlo Park | 96% | 70% | 2.28 | 33% | 23% |

Sources: U. S. Census Bureau, 1990 Census

### 4.3.A.2 Income

Stanford University is located in an affluent area of a region with above-average incomes relative to the State as a whole. Although income levels in the University community itself are substantially below regional levels (due to the predominance of students), income levels in the neighboring cities are well above regional and state levels (see Table 4.3-5). Depending on the income measure used—all households, families only, unrelated individuals (non-family households), or per-capita—income levels in Menlo Park and Palo Alto were between five percent and 60 percent higher than countywide income levels and between 40 percent and 100 percent above statewide income levels. Because of the high percentage of students in the Stanford CDP, that area had the lowest median and per capita income—less than half of the income level of the surrounding communities. The median income, a frequent measure used to compare income levels among communities, represents the level of annual earnings at which half of the population is below and half is above.

According to the U.S. Department of Commerce Bureau of Economic Analysis, the per capita personal income in Santa Clara County in 1998 was $37,856, an increase of 85% over the countywide per capita income of $20,423 reported by the Census Bureau for 1989.

The Association of Bay Area Governments estimated the mean household income in Palo Alto in 1995 at $90,000, rising to $103,700 by the year 2000. If the 1995 estimate and 2000 projection are accurate, then the gap between local incomes and countywide income will increase from about 14% in 1989 to 24% in 2000. The income gap in many surrounding communities (Los Altos and Los Altos Hills for example) will be even greater.

## Table 4.3-5

### Comparative Income Levels (1989)

| Jurisdiction | Median Household Income* | Median Family Income* | Median Non-Family Household Income* | Per Capita Income |
|---|---|---|---|---|
| Stanford CDP | $26,702 | $52,734 | $15,054 | $14,177** |
| City of Palo Alto | $55,333 | $68,790 | $36,139 | $32,489 |
| City of Menlo Park | $50,468 | $64,560 | $37,022 | $30,130 |
| Santa Clara County | $48,115 | $53,670 | $33,249 | $20,423 |
| State of California | $ 35,798 | $40,559 | $24,052 | $16,409 |

Sources: U. S. Census Bureau; 1990 Census

* A household is any group of individuals sharing living accommodations and costs. A family is a household of individuals related by kinship, marriage, or legal custody. A non-family household consists of unrelated individuals living as a household unit.

** Per capita income of individuals living on campus in group quarters was $4,187; for all others, $24,076. Group quarters residents are single students (graduates and undergraduates) residing in dormitory and similar housing. Graduate student apartments are not considered to be group quarters.

According to the federal Bureau of Economic Statistics (BES), the per capita income in Santa Clara County was $37,856 in 1997 (the most recent year for which BES income data was available), an increase of 85 percent over eight years, or about eight percent annual income growth. Income data is not available on a sub-county basis from BES. The *Projections 2000* report from ABAG estimates the 2000 average household income in Palo Alto at $107,100 an increase of 28 percent since 1990 (in constant 1995 dollars). The countywide estimated average household income in 2000, $86,300, increased by 23 percent since 1990 (in constant 1995 dollars). ABAG projects that household income will increase in Palo Alto by another 36 percent by 2020 (in constant 1995 dollars), while the same figure countywide will be 22 percent. All indications are that the average Palo Alto household has become, and will continue to be, more affluent than the average Santa Clara County household.

Another measure frequently used to compare income levels among communities is the percent of households within each of four commonly-defined income groups:

- Very low income (less than 50% of the county median household income)
- Low income (51-80% of the county median household income)
- Moderate income (81-120% of the county median income household income)
- Above moderate income (121% or more of the county median household income)

Table 4.3-6 shows the distribution of households by income group in 1989, as reported in the 1990 Census, the most current comprehensive source for this information. As would be expected, Palo Alto and Menlo Park have substantially higher percentages of above moderate income households than the countywide average, and Stanford CDP has the highest percent of very low and low income households (two thirds of all households). Other significant conclusions are:

- Incomes in the Stanford CDP were skewed to the extremes of low and high incomes—the percentage of moderate income households was small compared to the surrounding region and the county as a whole. Such a skewed income distribution is a natural result of a high student population combined with a smaller population of mostly higher income faculty and staff who own homes in the Stanford community.
- Both Menlo Park and Palo Alto had similar percentages of very low and low income households to Santa Clara County as whole, even with the increases in housing costs since the 1970s. This could be explained by: 1) a high proportion of older homeowners with lower incomes who moved to the area before rapid inflation in housing prices, 2) a substantial percentage of students living off campus, and 3) a substantial percentage of lower income households who chose to remain in the area even if they had to pay more than 30% of their income for housing and/or live in overcrowded conditions.
- Palo Alto had a substantially higher percentage of above moderate income households than the county as a whole, as would be expected in an area with significantly higher housing costs than the regional average.

**Table 4.3-6**

Percent of Households by Income Group (1989)*

| Jurisdiction | Very Low Income | Low Income | Moderate Income | Above Moderate Income |
|---|---|---|---|---|
| Stanford CDP | 47% | 19% | 8% | 26% |
| City of Palo Alto | 20% | 15% | 18% | 47% |
| City of Menlo Park | 21% | 16% | 20% | 43% |
| Santa Clara County | 21% | 18% | 22% | 39% |

Sources: U. S. Census Bureau; 1990 Census

* In a statistically "normal" population distribution, 40% of the population will be in the very low and low income categories, 20% in the moderate income category, and 40% in the above moderate income category. Significant variances from these statistically "normal" percentages indicate that economic or other factors have affected the income levels of the local population. For example, an area with housing prices substantially higher than the regional average will tend to experience an upward shift in incomes commensurate with the upward trend in housing prices, particularly as new households move into the local area. Over time, the percentage of very low and low income households would fall well below the 40% expected in a "normal" population distribution. Conversely, the percentage of above moderate income households would substantially exceed the 40% expected in a "normal" distribution.

### 4.3.A.3 Housing

Table 4.3-7 compares the growth in the housing stock during the 1990s among the Stanford campus, surrounding cities, and Santa Clara County. Although the number of housing units has increased in the region during the 1990s, this increase has not kept pace with population and job growth, resulting in low vacancy rates throughout the area (a vacancy rate of five percent is typically considered the minimum needed to assure adequate housing choices in a growing region).

## Table 4.3-7

Growth in the Housing Stock 1990 - 2000

| Jurisdiction | 1990 Housing Units | 1999 Housing Units* |
|---|---|---|
| Stanford | 956 faculty/staff units<br>8,564 students housed | 989 faculty/staff units<br>9,354 students housed |
| City of Palo Alto | 25,188 | 25,952 |
| City of Menlo Park | 12,428 | 12,723 |
| Santa Clara County | 540,240 | 581,532 |

Sources: U. S. Census Bureau; California Department of Finance; Stanford University

*Data for Stanford is from 1999 Annual Report #11 for the period September 1998 through August 1999.

*(Note: Stanford housing unit data are based on academic years. 1990 Census housing unit data for Palo Alto, Menlo Park, and Santa Clara County are as of April 1990. 1999 housing unit data for Palo Alto, Menlo Park, and Santa Clara County are from California Department of Finance estimates as of January 1, 1999.)*

At the time of the 1990 census, vacancy rates in the communities surrounding Stanford University ranged from 2% to 4%. According to background information in the Palo Alto and Santa Clara County general plans, the availability of housing has decreased since 1990. Persistently low vacancy rates generally indicate an imbalance of housing supply and demand. This imbalance usually causes housing prices and rents to rise much faster than local incomes, the general rate of inflation, and regional or statewide housing prices. Table 4.3-8 contains a comparison of housing prices and rents in 1990. This table clearly shows that housing costs in the area surrounding the Stanford campus are higher, and have increased faster, than in the region.

At the time of the 1990 Census, the median housing value reported by homeowners in Santa Clara County was $289,400. In the cities adjacent the academic campus (Palo Alto and Menlo Park), the median value was approximately $460,000, about 60% higher than the countywide median. Local and regional rents exhibited a similar, although not quite as extreme relationship. The countywide median contract rent was $715 in Santa Clara County in 1990 compared to $820 in the communities adjacent to Stanford University. The median rent in the surrounding area was 15% higher than the countywide median.

Housing costs in the communities adjacent to the Stanford have risen faster since 1990 than the county as a whole. The median housing price in the vicinity of the University increased by 35% between 1990 and 1999. Based on information from the California Association of Realtors®, the median price of homes sold countywide in the first quarter of 2000 was $399,000. The comparable figure for the Palo Alto/Menlo Park area was $700,000, a difference of 75%.

## Table 4.3-8

### Comparison of 1990 Housing Costs

| **Median Housing Unit Value** | |
|---|---|
| Santa Clara County | $289,400 |
| Palo Alto/Menlo Park | $460,000 |
| Percent Difference | 60% |
| **Median Contract Rent** | |
| Santa Clara County | $715 |
| Palo Alto/Menlo Park | $820 |
| Percent Difference | 15% |

Source: U. S. Census Bureau, 1990 Census

Table 4.3-8 includes information only for the cities adjacent to the primary residential areas of Stanford University. Other cities in the vicinity of the University—Los Altos, Los Altos Hills, Woodside, Portola Valley, Redwood City, Atherton and Mountain View—have a range of housing costs that are either nominally lower, about the same, or substantially higher than those in Palo Alto and Menlo Park (U. S. Census Bureau, California Association of Realtors®). The one exception is the City of East Palo Alto, which has housing costs that are substantially lower than other communities in the region. No other community in the area contains a sizeable stock of lower-cost housing. Table 4.3-9 compares median housing costs in 1990 and median housing prices in 1999 in these communities.

Table 4.3-9 shows increases ranging from 20 percent to over 120 percent between 1990 and 1999. The actual difference is likely to be much smaller. The 1990 data are based on the Census Bureau's report of all homeowners who provided an *estimate of the value* of their homes (not actual sales data). The 1999 data are based on actual sales between the first quarter of 1999 and the first quarter of 2000, and may not be representative of the entire housing stock.

According to the Association of Bay Area Governments (*Silicon Valley Projections 99*, September 1999), the average home price in southern San Mateo County and Northwest Santa Clara County (which includes the area surrounding Stanford campus) jumped from the mid-to high- $300,000s in 1995 to the low-$500,000s in 1999. The median rent in San Mateo and Santa Clara counties increased from about $900 in 1994 to over $1,300 in 1999. To afford a rental unit of $1,300 would require and income of at least $5,000 per month ($60,000 per year) based on the assumption that no more than 30% of a renter's income should be spent on housing, including rent and utilities.

**Table 4.3-9**

Housing Costs in Communities Near Stanford University Area (1990 and 1999)

| Jurisdiction | Median 1990 Value | Median 1990 Rent | Median 2000 Price*** | Percent Change | Median 1999 Rent |
|---|---|---|---|---|---|
| Redwood City | $349,500 | $670 | $446,000 | 28% | **** |
| Atherton | Over $500,000* | Over $1,000** | $1,945,000 | --- | **** |
| East Palo Alto | $159,700 | $532 | No Information | --- | **** |
| Los Altos | Over $500,000* | Over $1,000** | 949,000 | --- | **** |
| Los Altos Hills | Over $500,000* | Over $1,000** | 1,753,000 | --- | **** |
| Portola Valley | Over $500,000* | Over $1,000** | No Information | --- | **** |
| Woodside | $349,500 | $944 | $780,000 | 123% | **** |
| Mountain View | $347,000 | $715 | 416,000 | 20% | **** |

Sources: U. S. Census Bureau, 1990 Census; California Association of Realtors®

* Median value in these communities was reported by the Census Bureau as $500,001 because more than half of the homeowners responding to the census question reported an estimated value of greater than $500,000. The exact percent change cannot be calculated because the exact 1990 median home value was not reported by the Census Bureau.

** Median contract rent in these communities was reported by the Census Bureau as $1,001 because more than half of the renters responding to the census question reported a rent greater than $1,000.

*** Based on the average of the median prices reported between the first quarter of 1999 and the first quarter of 2000.

**** Insufficient number of listed rental units to calculate a representative median.

### *Affordability and Availability of Housing*

Stanford University provides affordable housing, defined as 30 percent of gross income, on campus and in university-sponsored developments to virtually all undergraduate students who desire such housing (92 percent), nearly half of graduate students (45 percent), and nearly one-third of faculty members (30 percent). Most of the housing is in group quarters residences such as dormitories and suites, but also included are 989 faculty and staff dwelling units. In addition, the University is constructing 480 dwelling units for single graduate students and 628 rental dwelling units at Stanford West, for which faculty and staff will have priority occupancy. Once these units are completed, Stanford will have housing for over 10,000 students and potentially over 1,600 faculty/staff. Once these projects under construction are completed, Stanford will have provided affordable housing for nearly three-fourths (72 percent) of the approximately 14,200 students enrolled on campus. Housing will potentially be provided for about 13 percent of its campus faculty and staff (excluding employees at Stanford Medical Center and Stanford Research Park—

see Chapter 5, Growth Inducing Impacts) and 157 of these units will be rented at below market rates.

Stanford attempts to ensure the affordability of its housing by providing accommodations at below cost, financial aid to financially needy students, low-cost loans to faculty and staff, and other forms of assistance. The affordability and availability of housing is therefore primarily a concern for graduate students, post-graduates, faculty, and staff who would like to live on or near campus but cannot afford to do so and cannot be accommodated by existing university housing or nearby community housing.

Current information on University employee salaries or household incomes for Stanford campus residents is unavailable. It is therefore not possible to compare the cost and availability of housing in relation to incomes of University graduate students, faculty, and staff.

For those unable to obtain campus or University-assisted housing, the majority will face housing costs greatly disproportionate to their incomes. Table 4.3-10 compares the percentage of housing units affordable to the four income groups in relation to each group's proportion of the population. Although this comparison cannot show whether any particular number of housing units are available and affordable to any particular group, one can draw conclusions about the general availability and affordability of housing from the comparison shown in Table 4.3-10. This table does not provide an accurate measure of the availability and affordability housing for low- and moderate-income large families who need homes with three or more bedrooms. Such homes are the most expensive and least likely to have prices or rents affordable to families.

The percentages of affordable homes shown in Table 4.3-10 are cumulative because homes that are affordable to a group of households in one income category are also affordable to households in each higher income category.

Table 4.3-10 shows the substantial decline in the percentage of dwelling units affordable to low- and moderate-income households since 1990, from about 45% to 22%. In 1990, the largest affordability/availability gap was for very low-income households, about 12% (the difference between the percentage of such households in the local area and the percentage of dwelling units affordable to this income group). The gap narrowed, but did not disappear, for low-income (9% gap) and moderate-income (8% gap) households. Although information was not available for 1999 on the percentage of households in each income group, given the substantial decline in overall housing affordability since 1990, it is likely that the affordability gap for low- and moderate-income households has increased in the cities surrounding Stanford University.

Table 4.3-10 includes information only for Palo Alto and Menlo Park because these two communities include the housing market most directly impacted by university-generated housing demand. It should be noted that the Stanford Community itself contains 5,839 undergraduate and 3,515 graduate housing units (including dormitory units). Without this affordable housing stock, the gap between the percentage of low-income households in the two communities and the percentage of affordable housing units would be much greater—perhaps 50% to 100% greater depending on the assumptions about student, faculty, and staff incomes and the number of individuals now housed on campus who would live in the two communities.

The 1999 column in Table 4.3-10 includes only market rate housing advertised for sale or rent. Approximately 2,500 units of assisted low-income housing (including campus housing located within the City of Palo Alto sphere of influence) are available in Palo Alto and Menlo Park, increasing the supply of affordable units by six percentage points. Even with these units, however, the percentage of the housing stock affordable to low-income households has declined by nearly one-fourth since 1990.

## Table 4.3-10

### General Comparison of Market Rate Housing Costs and Income Levels, 1990 and 1999

*(For The Cities Of Palo Alto And Menlo Park)*

| 1990 Income Levels | % of Units Affordable*** | 1999 Income Levels* | % of Units Affordable*** |
|---|---|---|---|
| Very Low Income *($0-$24,100)* | 8% | Very Low Income *($0 -$37,150)* | 8% |
| Low Income *($24,101-$38,500)* | 26% | Low Income *($37,151-$47,800)* | 13% |
| Moderate Income *($38,501-$57,700)* | 45% | Moderate Income *($47,801-$89,200)* | 22% |
| Above Moderate Inc. *(more than $57,700)* | 100% | Above Moderate Inc. *(more than $89,200)* | 100% |

Sources: U. S. Census Bureau; U. S. Department of Housing & Urban Development, *San Jose Mercury News; Palo Alto Daily News*

* Based on U. S. Department of Housing and Urban Development Income Guidelines for a 3-person household.

** Information on the percentage of households in each income group was not available for 1999.

*** Affordability is based on the following assumptions: that monthly housing costs should not exceed 30% of a household's gross monthly income and the cost of home should not exceed three times a household's annual income. Percentages are cumulative: units affordable to very low-income households are also counted as affordable to low-income households, etc. Excludes approximately 2,500 assisted low-income units in Palo Alto and Menlo Park as information was not available on the distribution of these units among very low and low income categories.

Another measure of housing affordability and availability is a comparison of the percentage of households paying more than 30% of their income for housing expenses. Most government housing agencies and many private housing analysts consider 30% the maximum percentage of income that the average household can afford to spend on housing without cutting expenditures for other necessities. Although information on the percent of income expended for housing is not available for 1999, the 1990 Census did report on housing costs relative to household income. Table 4.3-11 summarizes this information.

As Table 4.3-11 shows, very low income households, particularly renters, had the highest incidence of overpayment. Between three-fourths and nearly 90% of these lowest income renters paid more than 30% of their income for housing in 1990. In contrast, above moderate income renters had the lowest incidence of overpayment.

Moderate and above moderate income homeowners in all communities had a substantial incidence of overpayment, between one-in-five and one-in-four homeowners. An especially high percentage of homeowners residing in the Stanford community overpaid for housing in 1990—four of every five homeowners. Extraordinarily high housing prices in relation to local incomes is the primary reason for high housing payments even among many households with higher incomes.

Among the three communities, residents of Menlo Park had the highest housing expenses in relation to their incomes for the population as a whole in 1990. The difference was particularly high among low and very low income homeowners.

Although more current information on overpayment is not available, it is likely that overpayment among low and moderate-income households has increased since 1990, since housing prices have increased faster than incomes.

**Table 4.3-11**

Percentage of Households Paying More Than 30% for Housing Expenses (1990)

| Jurisdiction | Very Low Income | | Low Income | | Moderate Income | | Above Mod. Income | |
|---|---|---|---|---|---|---|---|---|
| | Owners | Renters | Owners | Renters | Owners | Renters | Owners | Renters |
| Stanford CDP | * | 78% | * | 30% | 80% | 0% | 18% | 0% |
| City of Palo Alto | 40% | 85% | 25% | 63% | 23% | 29% | 22% | 5% |
| City of Menlo Park | 50% | 88% | 40% | 62% | 18% | 36% | 24% | 4% |

Source: U. S. Census Bureau, 1990 Census

* Insufficient data. Census reports indicate that there were no very low income and only six low income homeowners in the Stanford CDP in 1990.

### 4.3.A.4 Employment

Refer to Chapter 5 – Growth Inducing Impacts of the Proposed Project for information on employment and employment/housing balance.

## 4.3.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

The evaluation criteria and impact analysis are included for informational purposes to characterize potential effects that may trigger physical environmental effects covered under CEQA. However, the physical impact of housing unit loss is a CEQA impact. The cost and availability of housing, in and of itself, is not a physical environmental impact to be evaluated and mitigated. However, a lack of suitable and affordable housing may contribute to physical consequences (for example, increased commuting and commuting distances) that could cause envromental impacts that are analyzed elsewhere in this EIR.

The evaluation criteria and points of significance were developed from a variety of federal, state, and local sources, including policies contained in the proposed Stanford University Community Plan, Palo Alto General Plan, and Santa Clara County General Plan. Points of significance relating to housing need and the potential loss of affordable housing have been established at low thresholds in light of the following policy statements in local plans:

- That the supply of multifamily rental housing relative to the demand is so limited that all such existing housing should be maintained if possible and the supply increased. (*Palo Alto General Plan, Policy H-8*.)
- That existing affordable housing should be preserved through financial and regulatory incentives. (*Palo Alto General Plan, Policy H-13*.)
- That existing rental housing shall be protected from conversion to ownership housing according to the needs of each community *(Santa Clara County General Plan, 1993 Housing Element Update Policy #9.)*
- That developers of employment-generating commercial and industrial development should be required to contribute to the supply of affordable housing. *(Palo Alto General Plan, Policy H-29.)*
- That the supply of housing in each part of the county should be increased to a level consistent with existing employment…*(Santa Clara County General Plan, 1993 Housing Element Update Policy #3.)*
- That the supply and diversity of housing, particularly affordable housing, should be increased in each part of the urban county *(Santa Clara County General Plan, Policy C-HG1.)*

All of the plans acknowledge that the shortage of affordable housing is so severe, and the regional imbalance of jobs and housing so great, that nearly any action that decreases the supply of, or increases the demand for, affordable housing is of serious concern.

# Table 4.3-12

## Evaluation Criteria with Points of Significance – Population and Housing

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the Project result in a net loss, through conversion or demolition, of homes occupied by low- or moderate-income households? | Number of year-round dwelling units occupied by low- or moderate-income households or seasonal farm worker housing units lost | Greater than zero dwelling unit occupied by a low- or moderate-income household or farmworker | Santa Clara County General Plan, Policy C-HG 19<br>California Health & Safety Code, Section 33413 (for redevelopment areas)<br>Santa Clara County Environmental Evaluation Checklist Item K(b) |
| 2. Will the project result in a net loss, through conversion or demolition, of multifamily rental housing? | Number of multifamily rental housing units lost or converted | Greater than zero net units lost | Palo Alto General Plan, Chapter 4, Policy H-8<br>Santa Clara County General Plan, 1993 Housing Element Update Policy #9<br>Santa Clara County Environmental Evaluation Checklist Item K(b) |
| 3. Will the project increase the demand for housing, thereby causing indirect environmental impacts? | Number of additional housing units required | More than zero additional housing units | Santa Clara County General Plan, Policy C-HG 19<br>Santa Clara County Environmental Evaluation Checklist Item K(b)<br>Palo Alto General Plan, Chapter 4, Policy H-8<br>Santa Clara County General Plan, 1993 Housing Element Update Policy #9 |

## 4.3.C IMPACTS AND MITIGATION MEASURES

**IMPACT: PH-1: Will the Project result in a net loss, through conversion or demolition, of homes occupied by low- or moderate-income households?**

Analysis: *No Impact*

The CP/GUP proposes to construct 2,000 new housing units for students, 350 apartments for hospital residents and postgraduate fellows, and up to 668 housing units (a mixture of single family homes, townhomes, condominiums, and apartments) for faculty and staff. These housing units will be located on undeveloped sites or sites presently containing non-residential uses. To construct the proposed housing, it is estimated that up to 13 single family units in the Searsville Block (CP Site G) and an undetermined number of older low-density apartments in Escondido Village will have to removed. However, there will be net gain of dwelling units (at least 725 in Escondido Village), including affordable housing for low- and moderate-income households. Therefore, no adverse impact on the overall supply of affordable housing is anticipated.

An additional 2,035,000 square feet of academic and support facilities will be constructed under the plan. These facilities will be located in non-residential areas of the campus and not on any sites occupied by housing. No dwelling units will be demolished or converted to construct the planned academic and support facilities. Therefore, this impact is considered to be less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: PH-2: Will the project result in a net loss, through conversion or demolition, of multifamily rental housing?**

Analysis: *No Impact*

See analysis for Impact PH-1.

Mitigation: No mitigation is necessary.

**IMPACT: PH-3: Will the project increase the demand for housing thereby causing indirect environmental impacts?**

Analysis: *Significant*

Stanford proposes to construct up to 3,018 housing units for faculty, staff and students. The Univesity estimates that graduate and post-graduate enrollment will increase by 1,266, and faculty/staff employment by 935. Table 4.3-13 compares the proposed increases in housing and population. Table 4.3-13 shows that additional student housing will more than accommodate the additional planned enrollment of graduate students, whereas the additional faculty/staff and postgraduate housing will, at most, just accommodate the proposed increase in faculty/staff employment and postgraduates (using the Santa Clara County ratio of 1.56 jobs per dwelling unit). The existing shortfall of faculty/staff housing at Stanford will not be substantially reduced.

## Table 4.3-13

### Comparison of Additional Housing and Population (Estimated) Included in the GUP

| Housing Unit Type | Number of Units (maximum proposed) | Number of Additional Individuals |
|---|---|---|
| Students | 2,000 | 683 |
| Hospital Residents/Postgraduates | 350 | 583 |
| Faculty/Staff | 668 | 935 |

Housing demand is not a physical environmental change covered by CEQA per se. However, CEQA and County policies recognize that changes in housing demand, the supply of housing, or the availability of housing for low- and moderate-income households can lead to physical environmental effects that require analysis and potential mitigation in other areas (for example, traffic and transportation). These impacts are analyzed in relevant sections of the EIR. The net increase in graduate student housing proposed by the University will exceed the projected increase in student enrollment. Any net increase in housing demand resulting from the project is therefore anticipated to occur from employment gains rather than student enrollment increases.

This analysis documents the current severe shortage of housing, particularly for low- and moderate-income households. The proposed project includes 2,035,000 gross square feet of additional academic, administrative, and support space. The non-housing part of the project has the potential to directly generate nearly 1,000 (935) new employees.

Santa Clara County assumes that a housing unit will be needed for each 1.56 jobs created. At this ratio, the additional employment that could result from the project would lead to a demand for about 640 additional housing units for faculty and staff, which is nearly the maximum number of additional faculty/staff housing units (668) proposed to be constructed by the University. The proposed project includes 350 units for postgraduate fellows and hospital residents, with an anticipated increase of 583 persons. Assuming 1.56 jobs per unit, this population increase creates a need for 374 units, or 24 more units than proposed.

Even if the University constructs the maximum amount of planned faculty/staff and postgraduate housing, the current severe shortfall of such housing, evidenced by the overall housing shortage and high prices, will not be effectively diminished.

Although housing is proposed in the GUP, the construction of this housing is not guaranteed by Stanford.

Mitigation: **PH-3A: Identify Additional Housing Sites**

In conjunction with neighboring communities, Stanford shall continue to identify additional sites, on- and off- campus, that are suitable for housing development and could accommodate additional housing units over and above the number included in the project. Such sites should be developable within the time period covered by the project and be suitable for the types of housing that would address the current and future shortfall of faculty/staff and postgraduate housing.

**PH-3B: Condition New Academic Space on the Construction of Housing**

As a condition of approval for additional academic space, Stanford shall be required to construct housing prior to, or concurrently with, any increase in academic space. Stanford shall provide a cumulative net increase in housing commensurate with academic development that counts toward the GUP building area cap as specified below:

| Academic Development (gsf) | # of Housing Units |
|---|---|
| 500,000 | 605 |
| 1,000,000 | 1,210 |
| 1,500,000 | 1,815 |

This housing shall be provided on Stanford land in unincorporated Santa Clara County in compliance with the Community Plan. For additional academic development between 1,500,000 and 2,035,000 feet that counts toward the GUP building area cap, Stanford shall provide a net increase in housing a a rate commensurate with academic development by providing 1 additional housing unit for each 884 square feet of development.

After
Mitigation: *Less than Significant*

Mitigation measure PH-3A: Identify Additional Housing Sites and PH-3B: Condition New Academic Space on the Construction of Housing would reduce the impacts of GUP-related academic and employment increases by linking the construction of housing to academic development.

## 4.3.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

**IMPACT: PH-C1&2: Will the project have a cumulative potential to result in a net loss of homes occupied by low- or moderate-income households or a net loss of multifamily rental housing?**

Analysis: *No Impact*

Implementation of the CP/GUP will result in a net increase of dwelling units for low- and moderate-income students, faculty and staff. The total net addition to the housing stock could be up to 3,018 units if the proposed housing is actually constructed. None of the proposed projects will directly or indirectly through cumulative effects result in a loss of dwelling units, if at least as many dwelling units are constructed at price/rental ranges as are removed to accommodate new housing. Since housing is only proposed for removal in areas where new housing will be built, it is unlikely that there will be net loss of homes occupied by low- or moderate-income households.

Other known projects in the general area of the Stanford CP boundary include:

- Stanford Sand Hill Road Corridor Project, consisting of 630 rental apartments, 388 senior housing units, a 70-room assisting living facility, and a 80,000 square foot shopping center expansion.
- The Stanford University Medical Center Cancer Center, a 218,000 square foot facility.
- The Carnegie Foundation Reseach/Office Facility, a 21,000 sqaure foot research facility.
- Various project proposals in the City of Palo Alto that include 460 housing units and 390,000 square feet of office space.
- Various projects in City of Menlo Park that include approximately 386,000 square feet of office space, 25,000 square feet of mixed office/retail, 100,000 square feet of mixed office/residential, 13,000 square feet of day care and adult day support facilities, and 91,000 square feet of warehouse and storage facilities.

Mitigation: No mitigation is necessary to address the potential loss of housing, as no Stanford-owned rental or low/moderate-income housing will be lost to the housing stock

**IMPACT: PH-C3: Will the project plus cumulative projects increase the demand for housing thereby causing indirect environmental impacts?**

Analysis: *Significant*

Combined with the other projects proposed at Stanford and in Palo Alto and Menlo Park, the new employment generated in the area would far exceed the additional housing supply. This impact is therefore considered to be significant.

Mitigation: **PH-3A: Identify Additional Housing Sites, and**

**PH-3B: Condition New Academic Space on the Construction of Housing**

These mitigation measures would fully mitigate Stanford's contribution to the local demand for housing. Indirect housing demand generated by Palo Alto and Menlo Park projects would require additional mitigation by those jurisdictions.

After
Mitigation: *Less than Signficant*

# 4.4 TRAFFIC AND CIRCULATION

## 4.4.A INTRODUCTION

This section of the EIR provides an evaluation of potential impacts associated with the proposed CP/GUP on the multi-modal transportation system available in the Palo Alto and Menlo Park areas. The potential impacts are evaluated relative to the operation of public transportation, bicycle and pedestrian transportation, arterial roadways, intersections, freeways, and transportation demand management (TDM) strategies. In addition, an evaluation of the operating condition of the overall multi-modal transportation system is included.

### 4.4.A.1 Applicable Plans and Policies

Transportation planning in Palo Alto and the surrounding area is subject to the regulations of federal, State, regional, and local agencies and programs. Federal regulations are administered by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Caltrans is responsible for State roadways, and regional issues are addressed by the Metropolitan Transportation Commission (MTC). The Congestion Management Agencies (CMAs) of both Santa Clara County and San Mateo County have developed regulations and policies with relevance to the Community Plan on the local level.

#### *Federal Agencies*

Federal Highway Administration and the Federal Transit Administration policies are implemented by the Metropolitan Transportation Commission (MTC), the regional San Francisco Bay Area agency, which oversees transportation improvements in the nine-county Bay Area.

#### *State Agencies*

The California Department of Transportation (Caltrans) is the State agency responsible for State transportation facilities. Caltrans has jurisdiction over State highways in the area, which include El Camino Real (State Route 82), Bayshore Freeway (U.S. 101), Interstate 280, and the Dumbarton Bridge (State Route 84).

#### *Regional Agencies*

MTC is the regional agency in charge of transportation programs. MTC distributes federal and State funds to local projects and programs. MTC and the Association of Bay Area Governments (ABAG) jointly develop land use projections, which are critical inputs into travel demand projections that are utilized in this analysis. The Peninsula Corridor Joint Powers Board (JPB) is the tri-county agency (San Francisco, San Mateo, and Santa Clara counties) that has jurisdiction over CalTrain rail service. The Dumbarton Bridge Bus Service (Line DB) is operated by a consortium of several county transit districts, including the Bay Area Rapid Transit District (BART).

### *Santa Clara County*

The Congestion Management Agency (CMA) in Santa Clara County is the Santa Clara Valley Transportation Authority's (VTA) Congestion Management Program (CMP). The Santa Clara County CMP defines methodologies and procedures for determining the impact of a potential project on their facilities. The most recent guidelines were updated and adopted by the CMP on May 7, 1998. The following are CMP facilities within the study area by functional classification.

- Freeways: US 101 and I-280,
- Expressways and Arterials: Page Mill Road, Oregon Expressway, and El Camino Real, and
- Intersections: El Camino Real/Alma, El Camino Real/Embarcadero/Galvez, El Camino Real/Page Mill/Oregon Expressway, and Junipero Serra/Page Mill.

This analysis has been prepared in accordance with the guidelines established by the Santa Clara County CMP.

The Santa Clara County Valley Transportation Authority (VTA) has jurisdiction over public transit in the County. VTA bus service includes several local and intercity routes in Palo Alto, and the VTA is a member of the CalTrain JPB.

The Santa Clara County Department of Roads and Airports is responsible for County roadways and airports, including the Palo Alto Airport, Page Mill Expressway, Foothill Expressway, Oregon Expressway, Stanford Avenue, and Junipero Serra Boulevard.

### *San Mateo City/County Association of Governments*

The San Mateo City/County Association of Governments has been designated as the Congestion Management Agency for San Mateo County. Within the study area, the San Mateo County CMP network includes US 101, I-280, SR 84, and El Camino Real. At this time, the San Mateo County CMP has not identified specific CMP intersections and has not adopted guidelines and standards for the analysis of potential projects.

Public transit service in San Mateo County is provided by SamTrans. SamTrans makes connections to public transit services in Santa Clara County in Palo Alto.

## 4.4.A.2 Methodology

Several analytical methods were employed to conduct the traffic analysis, including:

- The Santa Clara County Center for Urban Analysis (CUA) travel demand model;
- The TRAFFIX analysis software currently required by the City of Palo Alto and by the Santa Clara County CMA to analyze intersection operations;
- The 1994 Highway Capacity Software currently required by the City of Menlo Park to analyze intersection operations; and
- TRANSYT-7F signal progression program used to analyze specific intersection groups.

### *Center for Urban Analysis Travel Demand Model*

The Congestion Management Program (CMP) transportation planning model was used to evaluate the transportation effects of the proposed CP/GUP. It is based on Projections 2000, the projections developed by the Association of Bay Area Governments (ABAG) and the BAYCAST '90 transportation planning model developed by MTC. This model is referred to as the Santa Clara County Baycast Model.

The model includes 385 transportation analysis zones in Santa Clara County, 34 zones in southern San Mateo County, and 46 zones in southern Alameda County. These 465 zones are considered "internal" zones; i.e. the model estimates all trips produced or attracted to these zones. There are 21 "external" zones, based in part on the MTC "Superdistrict" system. The Superdistricts include four zones in San Francisco, two additional zones in San Mateo County, four additional zones in Alameda County, and five zones in Contra Costa County. In addition, there are four zones in Santa Cruz County, and one zone each for Monterey and San Benito counties. The model includes trip interactions between internal and external zones, but does not estimate trip interactions between external zones. The model includes estimates of commuting to and from Central Valley counties. The 385 zones in Santa Clara County are based on 1990 Census Tracts or their subdivisions. Zones in southern San Mateo and Alameda counties are composed of one or more Census Tracts. ABAG projections are provided at County, City sphere-of-influence, and Census tract levels of detail. The land use and socio-economic data projected by ABAG includes: the number of jobs by type, number of households and population, total acreage (in residential and commercial/industrial use), and households by income. The model estimates trips for several trip purposes, including: home-based work, home-based shop and other, home-based social/recreation, home-based University/Community College, and non home-based. Trip estimation is based on 1990 Census and land use data and a 1990/91 home-interview survey data.

Trips are estimated based on four household income groups, three classes of number of workers per household (0, 1, and 2+) and auto ownership (0, 1, and 2+).

The model estimates the number of trips by trip purpose by income, number of workers, and auto ownership for the following modes: walk, bicycle, drive alone, rideshare (2 persons), rideshare (3 or more persons), local bus, express bus, light rail, and heavy rail. Transit modes are accessed by walk and auto modes. Local bus includes shuttles, such as the Marguerite Shuttle. Home-based work transit trips include park-and-ride and kiss-and-ride.

The model estimates trips that begin in the AM (7:30 to 8:30 AM) and PM (4:30 to 5:30 PM) peak hours as defined by calibration. Because there is insufficient roadway capacity for peak hour travel demand, the model incorporates a procedure to reduce peak hour trips to be consistent with available capacity on freeways, expressway, and all roadways within the County.

The model includes parking costs at various locations, bridge tolls, transit costs, and estimates of the cost per mile of automobile travel. These estimates are developed primarily by MTC.

The transportation networks represented in the model include those facilities and services regarding by the Congestion Management Program as fully funded and in service in the Year 2010.

### *TRAFFIX*

TRAFFIX is a software program that simulates the 1985 and the 1994 Highway Capacity Manual (HCM) analysis methodology. TRAFFIX evaluates intersection operations based on both average vehicle delay and critical movement delay. The Santa Clara County CMA and the City of Palo Alto require the use of TRAFFIX and the evaluation of operations using critical movement delay. In addition to calculating expected vehicle delay on which level of service is based, TRAFFIX also calculates optimal signal cycle length and intersection queuing.

### *Highway Capacity Software*

The Highway Capacity Software is based on the methods prescribed in the 1994 Highway Capacity Manual. For the purposes of this EIR, the Highway Capacity Software was only used to analyze signalized intersections in the City of Menlo Park since this is the preferred methodology of the City.

### *TRANSYT-7F*

TRANSYT-7F is a signal progression tool to analyze groups of signalized intersections as a system. While TRAFFIX and Highway Capacity Software examine intersections as individual, freely operating locations, TRANSYT-7F looks at groups of intersections and the effect of one intersection on either delivering traffic to or processing traffic from an adjacent location. At the request of the City of Menlo Park, the Junipero Serra/Alpine/Santa Cruz and Santa Cruz/Sand Hill closely spaced intersections were analyzed using TRANSYT-7F.

### *Consistency with Recent Analyses*

As noted above, this analysis uses the most recent version of the CUA travel demand model. These projections are considered the most appropriate for this analysis for several reasons. First, they are the regional forecasts for the South Bay region and are maintained by the Santa Clara County Congestion Management Agency. Second, they include the most recent land use projections (Projections 2000), roadway network patterns, and mode split to transit for the region. Finally, the horizon year for the projections of 2010 is consistent with the full development of the GUP.

The traffic analysis for the recently completed Stanford University Medical Center, Center for Cancer Treatment and Prevention (Cancer Center) EIR did not use the same travel demand projections. That analysis updated the traffic projections first developed by the City of Palo Alto for the Sand Hill Road project. Several updates to the Sand Hill Road projections were completed in the Cancer Center analysis to account for changes that had occurred since the Sand Hill Road analysis. These projections were based on the previous land use forecasts

(Projections 1998) and used the horizon year of 2003 for the buildout of the Cancer Center project.

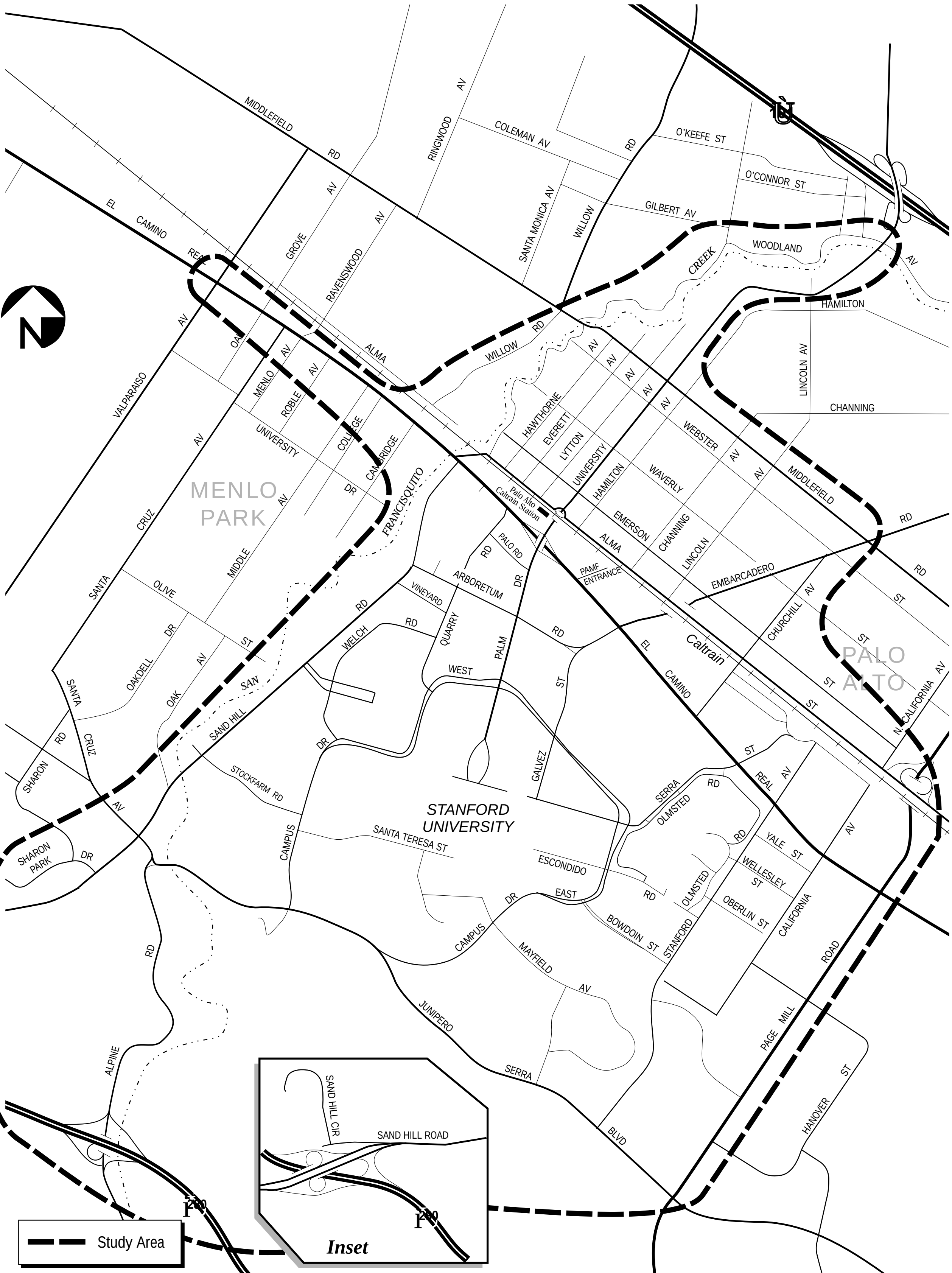
Because two travel demand models were used for these two separate studies, the projections will not be identical. However, the general trends of the projections are similar and the results of the analysis are consistent.

## 4.4.B SETTING

Figure 4.4-1 shows the project site in relation to the surrounding transportation network, which includes portions of Palo Alto, Menlo Park, San Mateo County, Santa Clara County and Stanford University. Figure 4.4-1 also shows the project study area. The project study area can be generally defined as the area bounded by Valparaiso on the north, I-280 on the west, Page Mill Road on the south, and Middlefield Road on the east. The directional conventions used in this EIR assume that I-280, El Camino Real, Middlefield Road, and US 101 are north/south facilities and roadways crossing these facilities, such as Sand Hill Road, University Avenue, and Embarcadero Road are east/west facilities.

### 4.4.B.1 Existing Transportation System Conditions

This section presents current conditions on various transportation system components. These components include transit service, bicycles and pedestrians, travel demand management programs, parking, roadways and intersections. Figure 4.4-2 shows rail and bus transit services in the study area.




Source: Korve Engineering 6/8/2000

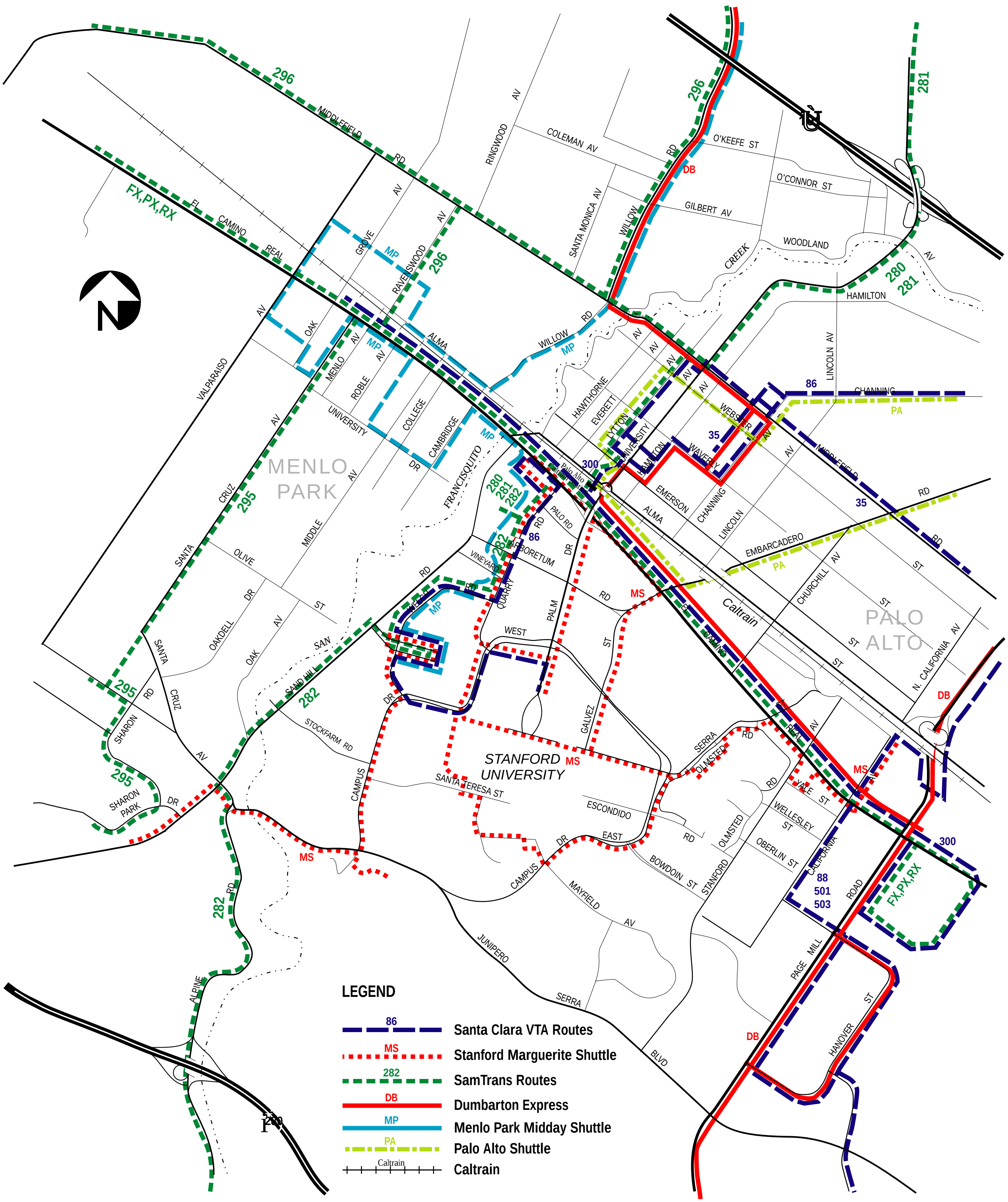
Stanford University
CP/GUP Project EIR

**TRANSPORTATION NETWORK in VICINITY of PROJECT SITE**

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-1

File: 736167\graphics\traffic\transit Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# TRANSIT ROUTE NETWORK

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-2

### *Commuter Rail Service*

*Peninsula Corridor Joint Powers Board (CalTrain)* rail service runs north-south along the Peninsula from San Francisco to San Jose with some service extending to Gilroy. CalTrain is managed by San Mateo County Transit (SamTrans), and operates under the jurisdiction of the Peninsula Corridor Joint Powers Board (JPB). CalTrain stations at the Palo Alto Intermodal Transit Center, located east of El Camino Real at University Avenue, and at the California Avenue station serve the Stanford area. The weekday schedule consists of frequent train (8 to 30 minutes) intervals during commute hours, with hourly service provided during non-commute times. The earliest northbound train leaves Palo Alto at 5:58 AM. The last northbound train departs Palo Alto at 10:58 PM, while the last southbound train departs Palo Alto at 12:58 AM. The JPB is considering upgrades to the CalTrain service including more frequent service and station improvements. A turnback track is also being considered for the Palo Alto station to allow it to function as a terminal station for train service within Santa Clara County.

Table 4.4-1 presents a ridership summary of the Palo Alto Intermodal Transit Center and CalTrain station, the California Avenue Station, and the Menlo Park Station. The Palo Alto station is the second highest ranked station in terms of ridership for the CalTrain system. Average boarding is given for Saturday, Sunday, and average weekday for the northbound and southbound directions. Northbound trains show higher ridership numbers, and would indicate that a greater amount of interaction happens north of Palo Alto than to the south. This tendency is enhanced on Saturday, when twice the number of riders board northbound and exit southbound than those that board the opposite directions. The California Avenue Station is ranked 8$^{th}$ among CalTrain stations according to ridership, the average weekday ridership is moderately less than the Palo Alto Intermodal Station for northbound departures, but has much fewer departures for an average weekday in the southbound direction. The Menlo Park Station has fewer boardings than both the California Avenue Station and the Palo Alto Intermodal Transit Center and CalTrain Station.

## Table 4.4-1

CalTrain Ridership (Average Daily Boardings and Alightings)

| Direction | Boarding | Saturday | Sunday | Weekday |
|---|---|---|---|---|
| Palo Alto Intermodal Transit Center | | | | |
| Northbound | On | 346 | 196 | 939 |
| Southbound | On | 153 | 101 | 754 |
| California Avenue Station | | | | |
| Northbound | On | 273 | 181 | 726 |
| Southbound | On | 78 | 54 | 399 |
| Menlo Park Station | | | | |
| Northbound | On | 233 | 96 | 783 |
| Southbound | On | 54 | 60 | 391 |

Source: SamTrans, February 1999 and June 2000 (Menlo Park)

### *Bus Service*

The Palo Alto Intermodal Transit Center is also a point of convergence for several bus lines, operated by the Santa Clara VTA, SamTrans, and Stanford University Marguerite Shuttle, and the Dumbarton Express, a joint BART/VTA/SamTrans/AC Transit/Union City Transit line between Palo Alto and the Union City BART Station, allowing passengers greatly enhanced transit opportunities. Other concentrations of bus lines exist at the Stanford Shopping Center, which is located one-quarter of a mile northwest of the Palo Alto Transit Center, and at the intersections of Page Mill Road and El Camino Real.

*SamTrans* currently services the Palo Alto Intermodal Transit Center with the local lines 280, 281, 282, and BART/CalTrain connector route 390. Service to the Stanford Shopping Center is provided by local lines 280, 281, and 282 as well as the BART/CalTrain connector route 390 and express lines KX, RX and PX. Eight SamTrans bus layover locations are adjacent to the Stanford Shopping Center. SamTrans buses that service the interior of the study area are local line 282, providing access along Sand Hill Road and to the Stanford University Medical Center, and local line 295, providing access along Santa Cruz Avenue from Alameda de las Pulgas to El Camino Real. Table 4.4-2 represents the total average weekday ridership for the eight routes operated by SamTrans in the study area.

*Santa Clara VTA* services the Palo Alto Intermodal Transit Center with the local routes 22, 35, and 86, and the limited-stop route 300, while servicing the Stanford Shopping Center with local routes 35 and 86. Service to the interior of the study area includes local route 86, which provides access to the Stanford University Medical Center and the Stanford University main quad. VTA local route 88 and express route 501 provide service to a small portion of California Avenue in the southeasterly corner of the study area.

## Table 4.4-2

### SamTrans - Weekday Bus Ridership Summary

| Old Route(s) | New Route | Total Average Weekday Ridership |
|---|---|---|
| 50C | 280 | 997 |
| 50V | 281 | 1340 |
| 50A | 282 | 24 |
| 4A/50B | 295 | 250 |
| 5L | 390 | 6782 |
| 7F | KX | 3096 |
| 17F | RX | 99 |

Source: SamTrans, July 1999 and December, 1999

Note: On 8/15/1999 SamTrans completely renumbered their bus routes. Many routes were eliminated, combined or altered. The ridership table is based on data collected prior to the change on 8/15/1999, except for routes KX and RX.

Table 4.4-3 displays the ridership for the VTA routes that service the Palo Alto and Stanford University community. Data compiled by the VTA in July 1999 show the large amount of average weekday ridership for route 22. This large amount might be expected due to the location of route 22 along El Camino Real and the terminus of the route, which extends from Palo Alto to East San Jose. Express route 300 is second in rank of average weekday ridership and in passengers per revenue hour.

*AC Transit* operates the Dumbarton Express, which provides service from the Union City BART station to Palo Alto utilizing the Dumbarton Toll Bridge. Service is provided to Fremont and Union City in the East Bay. On the Peninsula, service is provided to the Palo Alto Intermodal Transit Center, the California Avenue CalTrain Station, North County Offices and Court, and the Stanford Industrial Park.

*Stanford University Marguerite Shuttle* provides free service to the public accessing many locations on the university main campus such as the Medical Center, the Stanford Shopping Center, as well as to the Stanford Linear Accelerator, the Palo Alto Intermodal Transit Center, the California Avenue CalTrain Station, and downtown Palo Alto. All of the shuttle lines, except for the Downtown Express are wheelchair accessible. The shuttle operates weekdays from 6:00 AM to 8:00 PM, except university holidays. An evening and weekend service operates from September through June, the Midnight Express, linking the campus to the Palo Alto CalTrain station. Shuttle frequency is 15 to 30 minutes. Table 4.4-3 displays the ridership for this shuttle service.

**Table 4.4-3**

VTA and Stanford University - Weekday Bus Ridership Summary

| Route | Total Average Weekday Ridership | Number of Trips Daily | Average Number of Passengers per Trip | Passengers per Revenue Hour |
|---|---|---|---|---|
| Santa Clara County VTA | | | | |
| 22 | 24,405 | 198 | 123 | 62 |
| 35 | 1,468 | 62 | 24 | 24 |
| 86 | 245 | 34 | 7 | 12 |
| 300 | 3,067 | 59 | 52 | 35 |
| Stanford University | | | | |
| Marguerite Shuttle | 3,795 | 278 | 14 | 22 |

Source: VTA, July 1999 and Stanford University, April 2000

- The A Line runs from the Palo Alto Transit Center to the California Avenue train station by way of Stanford Shopping Center, the Medical Center, and the Main Quad from 6:00 AM to 7:45 PM, every 12 to 15 minutes.
- The Downtown Express runs at lunchtime from the Main Campus and Medical Center to Lytton Plaza at Emerson and University in Downtown Palo Alto from 11:00 AM to 2:30 PM, every 20 minutes.
- The Menlo Line is a commuter service to Menlo Park that service Stanford’s Main Quad, the Medical Center, Menlo Park train station, downtown Menlo Park, west Menlo Park neighborhoods, Sharon Heights, and businesses all along Sand Hill Road from 6:45 AM to 9:38 AM and from 5:00 PM to 6:55 PM.
- The Marguerite Midnight Express operates seven nights a week during the academic year. Buses start running on weekdays at 8:00 PM; on the weekends, the first bus departs the Palo Alto train station at 4:00 PM; on Friday and Saturday nights, the last bus leaves the train station at 2:00 AM. The shuttle runs until midnight from Sunday to Thursday, and until 2:30 AM on Friday and Saturday nights.
- The new Park-and-Ride Express runs between the Varsity, Track House and Stock Farm parking lots and the Main Quad every seven minutes during commute hours and every 14 minutes the rest of the day. This shuttle enables employees to park in an inexpensive lot and take a shuttle to work.
- The SLAC Line runs between SLAC, the Science and Engineering Quad, West Campus Residences, and Hoover Tower from 7:30 AM to 5:50 PM, every 30 minutes.
- The Stock Farm Line has both a daytime and evening line. During the daytime, the shuttle runs between the Stock Farm parking lot, the Hospital Fountain, and the

Blake Wilbur Clinic, every 15 minutes between 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM. The nighttime line starts at 8:00 PM and leaves from the Hospital Fountain every 10 minutes. The night route serves the Packard Children's Hospital, instead of the Blake Wilbur Clinic.

*City of Palo Alto Shuttle* is a new program that was inaugurated on December 13, 1999. This new shuttle bus system is an 18-month pilot project operated by the City of Palo Alto. This system started with the Crosstown Shuttle and the Embarcadero Shuttle routes. Both routes serve the downtown CalTrain station and transit center, and connect with the Marguerite shuttle. The Palo Alto Shuttle is free and open to everyone. Bus stops are marked with a "Palo Alto Shuttle" sign, a sticker on a regular VTA bus stop sign, or a shuttle decal on a stop sign pole.

- *The Crosstown Shuttle* runs every half-hour from 9:00 AM to 3:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturdays. It connects residential neighborhoods, senior residences and services, libraries, recreation centers, commercial districts and CalTrain
- *The Embarcadero Shuttle* runs during morning and afternoon commute hours and is coordinated with the CalTrain schedule. It serves employers in the East Bayshore area, residents in the Embarcadero Road corridor and students at Palo Alto High School.

### *TransLink ®*

On May 26, 1999, MTC awarded a 10-year contract to design, implement, operate, and maintain a regional fare payment system called TransLink®. The purpose of this contract is to develop a "smart fare card" that Bay Area transit riders will simply wave near a reader device on transit vehicles or in stations. TransLink® makes possible a single transit ticket that can be used for all Bay Area transit services. The universal ticket is a major step forward in the region's compliance with state legislation (Senate Bill 1474) that requires Bay Area transit operators, working with MTC, to consolidate and coordinate certain functions such as fare cards to improve their service. In fall of 2000, a six-month demonstration of TransLink® will be launched on selected routes of six participating transit operators: AC Transit, BART, CalTrain, Golden Gate Transit, San Francisco MUNI, and VTA. If it is successful, MTC and the transit operators will proceed with full rollout of the system region-wide by 2001.

Transit riders purchase a "smart card," a plastic card encoded with a computer chip that they load with a dollar value. Riders can purchase or load value to their cards through devices located at transit stations or retail outlets. When riders flash their TransLink® card in front of an electronic reader device onboard vehicles, in stations, or at faregates, the appropriate fare value is deducted automatically from the card. The fare value of each ride is transmitted to a central computer system, where all the transactions area handled, and payments are then distributed to the transit operators.

The capital cost of the TransLink® demonstration is $15.9 million. As more people use the system, total operating costs go up and the cost per ride goes down. MTC has programmed local, state, and federal funds to cover the capital costs of $36.7 million. Should the demonstration prove successful, MTC will be working with the transit operators to develop a plan to fully fund the program, including operating costs of approximately $7.9 million to $13.6 million.

### *Bicycles and Pedestrians*

Bicycle travel is an important component of the transportation system that connects Palo Alto, Menlo Park, Mountain View, and Stanford University. In 1972, Palo Alto became one of the first communities in California to establish a dedicated bicycle system. Since then, Palo Alto, Menlo Park, and Stanford University have made progress in developing a system of bicycle and pedestrian routes and facilities to accommodate a growing demand for non-motorized travel.

The existing system consists of three classifications of bicycle facilities:

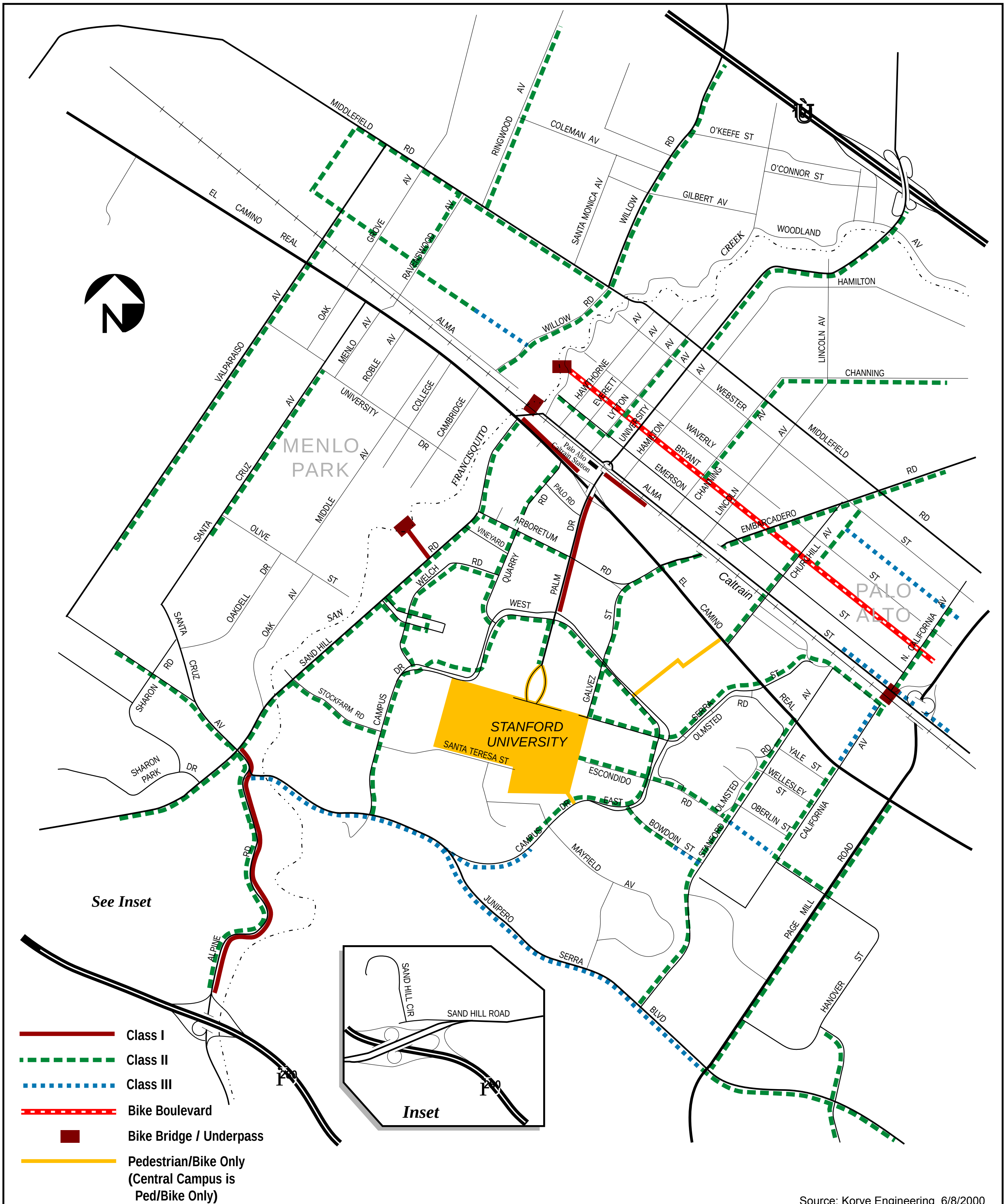
- Class I (bike path) provides an exclusive right-of-way for bicyclists and pedestrians, with cross flows of motorists minimized.
- Class II (bike lane) provides a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross flows by pedestrians and motorists permitted.
- Class III (bike route) provides a right-of-way designated by signs or permanent markings that is shared by pedestrians and motorists.

Figure 4.4-3 illustrates the location of bicycle facilities in the project study area. There are portions of the Stanford University campus that are bike/pedestrian access only, which are also identified on Figure 4.4-3.

Signalized crossings of El Camino Real are available at numerous locations in the study area including the Stanford Shopping Center entrance, University Avenue, and Embarcadero Road. Bicycles are legal on all streets in Palo Alto, except freeways, though there are some major streets with narrow lanes that are not easily shared by bicyclists and motor vehicles.

The City maintains a system of on- and off-road bicycle lanes, routes and paths, which include 14 underpasses or bridges. Palo Alto was the first community to develop the concept of a bicycle boulevard, which is a low-volume through street where bicycles have priority over automobiles. Conflicts between bicycles and automobiles are minimized, and bicycle travel time is reduced by removal of stop signs and other impediments to bicycle travel. The City developed and maintains Bryant Street as a bicycle boulevard. In order to ensure areas of roadway used by bicyclists are maintained at or above those used by motorists, the City is adjusting the street evaluation criteria for the Pavement Management Program. In addition, there are several bicycle/pedestrian/transit only routes in the Stanford University campus, such as Serra Mall, which runs in a north/south direction.

File: 736167\graphics\traffic\Bicycles Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# BICYCLE FACILITIES

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-3

Pedestrian facilities consist of sidewalks, crosswalks, and many of the facilities for bicycles discussed above. With some exceptions, the regional connections described for bicyclists also exist for pedestrians. All Class I bicycle paths and bridges are available to and used by pedestrians. Sidewalks are present in most parts of Palo Alto, but there are some major gaps, most notably in the Barron Park neighborhood and the Stanford Research Park. All signalized intersections in the area are equipped with pedestrian signals and push buttons.

Stanford University provides a comprehensive pedestrian/bicycle circulation system that contributes to the ease of moving to, from, and throughout the campus without the need for an automobile. There are several policies that the University implements to discourage the use of vehicles and encourage the use of other travel modes. Some of the policies include the following:

- Provide academic and residential land uses in close proximity to one another;
- Apply campus design concepts and site development standards that facilitate pedestrian and bicycle use;
- Maintain/improve the pedestrian and bicycle circulation system that connect places of living and work; and
- Provide a safe and easily understood system of pedestrian pathways and bikeways.

### *Transportation Demand Management (TDM)*

Transportation demand management refers to actions that reduce work-related drive-alone vehicle trips. Although a state law was passed in 1995 that prohibited agencies and cities from requiring mandatory TDM, the City of Palo Alto and Stanford University still voluntarily provide TDM programs for their employees. Key components of current TDM programs administered by Palo Alto, Menlo Park, and Stanford are summarized below.

#### *Stanford University*

Stanford's TDM program for students, staff, and faculty consists of several elements. The program is designed to help the University meet its "no net new commute trips" goal, which is required by the 1989 GUP. Table 4.4-4 shows use of the University's alternative transportation modes for every other year starting in 1987, the year of the program's inception. Except for a decrease in 1993, the alternative modes have increased in the 11 years since the requirement has been in place. The total increase for all the alternative modes of transportation, between 1987 and 1998 is 62 percent. Approximately 55 percent of Stanford University Commuters used single occupancy vehicles in 1990, as identified in the 1990 Census Transportation Planning Package.

The TDM program consists of the following elements:

- *Parking Fees*. All employees and residents must obtain parking permits to park all day on campus.
- *Marguerite Shuttle*. The shuttle provides free transportation service between various points within the campus and off-site locations. It serves two train stations, El

Camino Real bus stops, downtown Palo Alto, several commercial districts, and Stanford Linear Accelerator Center. Its schedule is coordinated with train schedules.

- *Carpool and Vanpool Services.* Stanford provides reduced cost or free parking permits to registered employees who carpool or vanpool, in addition to providing support in organizing car and van pools.
- *Clean Air Cash Program.* Stanford pays employees who do not purchase a parking permit up to $144 per year.

## Table 4.4-4

### Stanford University - Alternative Transportation Mode Usage - Daily Vehicle Trips

| Mode | Base Year (1987) | 1989 | 1991 | 1993 | 1997 | 1998 |
|---|---|---|---|---|---|---|
| Transit/Shuttle/Buspool | 263 | 327 | 316 | 388 | 572 | 534 |
| Carpool | 138 | 222 | 408 | 399 | 508 | 494 |
| Vanpool | 0 | 18 | 26 | 22 | 33 | 21 |
| Bicyclists | 819 | 819 | 1,074 | 878 | 802 | 962 |
| Pedestrians | 235 | 235 | 224 | 230 | 302 | 345 |
| TOTAL | 1,455 | 1,621 | 2,048 | 1,917 | 2,217 | 2,356 |

Source: Stanford University, Santa Clara County General Use Permit Annual Reports

- *Bicycle Services*. This element includes a capital improvement program for bike parking. Clothes lockers are available at low cost.
- *Guaranteed Ride Home*. Four free rides are offered per year, available to any registered user of alternative transportation who needs to get home in an emergency or is stranded on campus. Depending on distance and time of day, the person gets home by taxi, rental car, or in a Stanford vanpool or carpool.
- *New Employee Orientation*. Every new employee of the University, Stanford Health Service, Stanford Linear Accelerator Center, and Packard Hospital receives brochures, which describe commute options.
- *Telephone Information and Staffing*. Stanford provides information and sells transit passes to persons interested in transit and ridesharing opportunities. It also provides full-time funded employee positions to operate the Transportation Demand Management Programs.

Table 4.4-5 demonstrates the efforts of Stanford University to achieve the “no net new commute trips” goal. As mentioned above, the effectiveness of the TDM measures improved by 62% between the years of 1987 to 1998. As shown in this table, on-campus housing attributes to trip reductions to/from Stanford University to assist in achieving the goal of “no net new commute trips." The combination of on-campus housing and the TDM measures helped to achieve and surpass the trip reduction goal by 819 trips.

**Table 4.4-5**

Stanford University - TDM Goal

| | | Students | Faculty | Staff | Others | Total |
|---|---|---|---|---|---|---|
| **Population Increase** | | | | | | |
| a | Population (1998-1999) | 15,249 | 1,655 | 10,351 | 5,710 | 32,965 |
| b | Population (EIR base) | 14,092 | 1,712 | 10,422 | 5,688 | 31,914 |
| c | Change (a - b) | 1,157 | (57) | (71) | 22 | 1,051 |
| **Potential Commute Trips** | | | | | | |
| d | PM commute trip rate | 0.405 | 0.720 | 1.103 | 1.103 | --- |
| e | Potential trips (c x d) | 469 | (41) | (78) | 24 | 373 |
| **Trip Reduction From Housing** | | | | | | |
| f | Housed (1998-1999) | 9,354 | 989 | 0 | 0 | 10,343 |
| g | Housed (EIR base) | 8,695 | 955 | 0 | 0 | 9,650 |
| h | Housing increase (f – g) | 659 | 34 | 0 | 0 | 693 |
| i | PM commute trip rate | 0.405 | 0.720 | 1.103 | 1.103 | --- |
| j | Commute trips avoided (h x i) | 267 | 24 | 0 | 0 | 291 |
| **Trip Reduction from TDM Programs** | | | **1987** | **1998** | **Increase** | |
| l | Transit, Marguerite, buspool riders | | 263 | 534 | 271 | |
| m | Carpool riders | | 138 | 494 | 356 | |
| n | Vanpool riders | | 0 | 21 | 21 | |
| o | Bicyclists | | 819 | 962 | 143 | |
| p | Pedestrians | | 235 | 345 | 110 | |
| q | Total TDM Increase | | 1,455 | 2,356 | 901 | (+62%) |
| **"No New Commute Trips" Goal** | | | | | | |
| r | Potential commute trips (e) | | | 373 | | |
| s | Less: Trip reduction from housing (j) | | | (291) | | |
| t | Less: Trip reduction from TDM programs (q) | | | (901) | | |
| u | Performance (over)/under goal (r - s - t) | | | (819) | | |

Source: Stanford University Planning Office

### *City of Palo Alto*

Palo Alto's TDM program for City employees consists of several elements. The program is not available to non-city employees. The program consists of the following elements:

- Bicycle assistance program,

- a carpool program,
- "Commuter Checks" (provides employees who regularly use public transit with $20.00 tax free voucher each month),
- A guaranteed ride home program,
- A commute alternatives office,
- Public transit tickets sold onsite, and
- Bicycle storage areas.

Palo Alto also offers a TDM program for non-employees. The City's TDM program for non-employees includes:

- Free parking permits for carpools,
- Bike locker rentals, and
- Subsidies for a portion of the Marguerite Shuttle between Downtown and Stanford.

Employers are encouraged to develop shuttle services connecting areas of employment with the multi-modal transit stations and business district. The City continues to add public services that can be accessed through the mail or via computers.

#### *City of Menlo Park*

The City of Menlo Park performs the following functions to promote the reduction of single-occupancy vehicle trips:

- Maintains the shuttle bus program;
- Requires developers to pay fees that support current or future shuttles;
- Updates Transportation Systems Management (TSM) database at times of business license renewals;
- Provides transit information through the monthly newsletter *Wheels*;
- Assists local schools in developing bicycle standards;
- Assists employers in developing the emergency ride home (formerly guaranteed ride home) program;
- Assists developers in incorporating TSM elements into building plans, such as showers and lockers for bicyclists and transit information;
- Currently working on a plan that would give incentives for downtown employees who carpool; and
- Promotes and supports TSM campaigns such as California Rideshare Week, Bike to Work Day, Spare The Air Week, and Try Transit Week.

### ***Parking***

The current GUP Conditions of Approval states in the scope of the use permit section that the permit "allows continuation of all existing uses in their present locations, and allows the

University to…construct up to 1,200 new parking spaces." Stanford University's parking construction has mainly consisted of replacement of parking lost by building construction. Building under the 1989 GUP mostly occurred on former parking lots.

Stanford University has constructed a total of 3,801 new spaces in the Central Campus under the GUP, during which time 3,295 spaces were lost to building, circulation, paving, and landscape projects. Total parking construction through January 2000 and as expected through the end of the 1989 GUP is summarized in Table 4.4-6.

Stanford University plans to utilize the remaining parking increment with construction of parking lots and structures and some removal of spaces. Table 4.4-6 summarizes the disposition of the remaining parking increment.

## Table 4.4-6

### Stanford University Parking Construction/Destruction

| | Spaces Removed | Spaces Constructed | Spaces Available (of the 1,200 allowable addition) |
|---|---|---|---|
| As of January 2000 | 3326 | 4103 | 423 |
| **Anticipated from January 2000 to the end of 1989 GUP** | | | |
| Construction of Clark Center | 376 | | 799 |
| Construction of Chemistry/Biology | 92 | | 891 |
| Completion of Alumni Center | 0 | 12 | 879 |
| Temporary staging/decommissioned | 186 | | 1065 |
| Stock Farm Parking Structure (PS V) | 485 | 1,550 | 0 |

Source: Stanford University, Annual Report #11

There will be approximately 19,351 parking spaces available on the Stanford University campus with the completion of 1989 GUP buildout. Table 4.4-7 lists areas with existing parking. Figure 4.4-4 illustrates the campus and various parking locations.

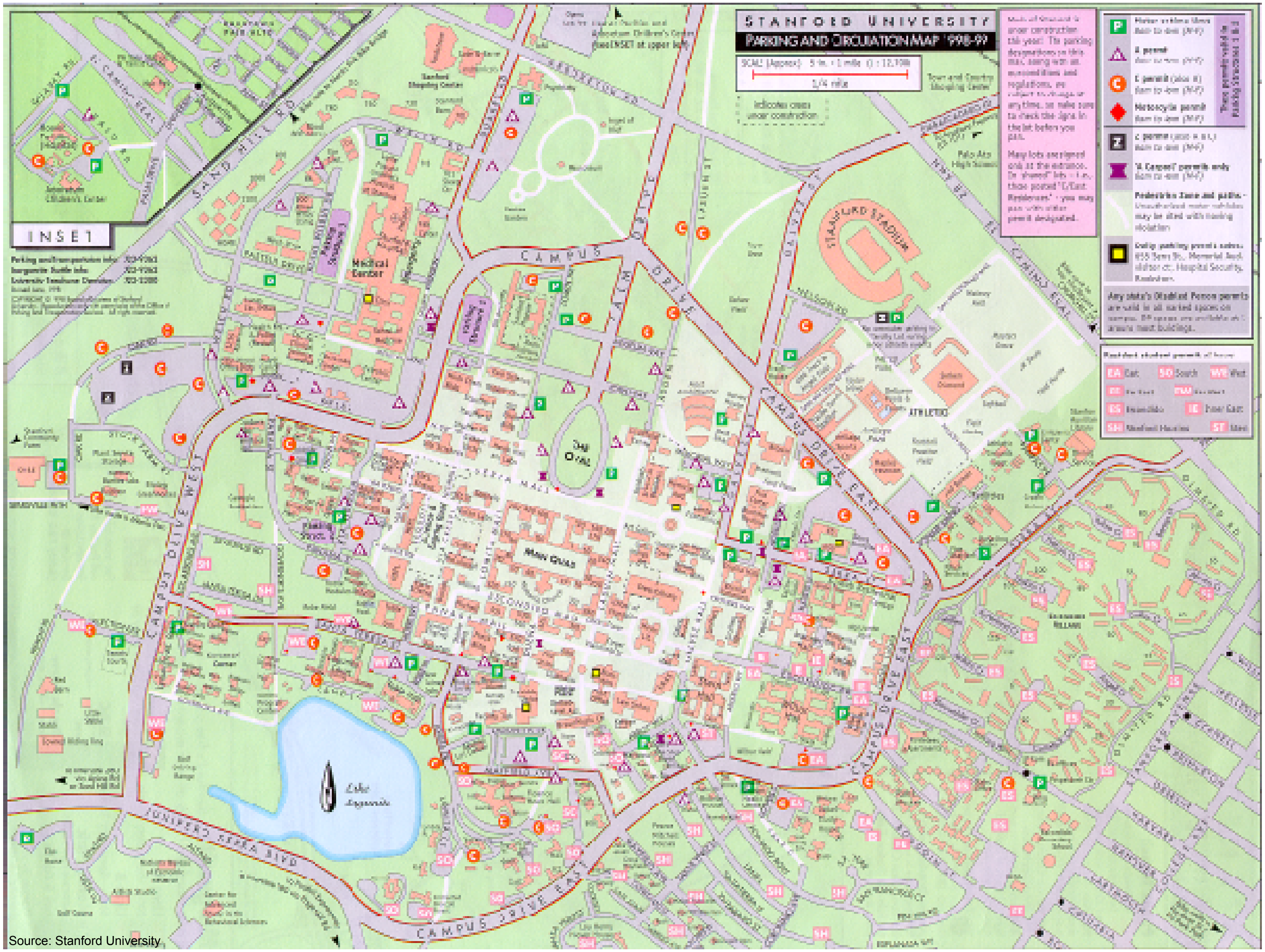
# Table 4.4-7

## Stanford University Existing Parking

| Development District | Existing Parking |
|---|---|
| West Campus | 191 |
| Lathrop | 0 |
| Foothills | 0 |
| Lagunita | 1,745 |
| Campus Center | 8,743 |
| Quarry | 1,058 |
| Arboretum | 134 |
| DAPER &Admin | 2,209 |
| East Campus | 4,731 |
| San Juan | 540 |
| Total | 19,351 |

Source: Stanford Planning Office

File: 736167\graphicss\Traffic\ParkingMap2



Source: Stanford University

Stanford University
CP/GUP Project EIR

# STANFORD UNIVERSITY
# CAMPUS PARKING LOCATIONS

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-4

### *Roadway Network*

The system of major roadways surrounding Stanford is part of the regional system serving traffic generated by Stanford and neighboring communities on the Peninsula and across the Bay. All roadways are classified according to their primary functions, as described below.

- *Freeway.* A major roadway with controlled access, devoted exclusively to traffic movement, mainly of a through or regional nature.
- *Expressway.* A major roadway with less controlled access than a freeway, linking freeways with arterials, and providing access to major destinations.
- *Arterial.* A major roadway mainly taking traffic to and from expressways and freeways and providing access to major destinations and also adjacent properties.
- *Collector.* A roadway that collects and distributes local traffic to and from arterials, and provides access primarily to adjacent properties.

#### *Regional Roadway Facilities*

The project area is illustrated on Figure 4.4-1. Regional access to the area is provided by US 101 and Interstate 280 that run the length of the San Francisco Peninsula from San Francisco to San Jose. Descriptions of these routes are provided below.

**US 101 (Bayshore Freeway)** is an eight-lane facility in the project area under the jurisdiction of the California Department of Transportation (Caltrans). One lane in each direction is reserved for high-occupancy vehicles (HOVs) during the peak commute hours. US 101 has interchanges at University Avenue, Embarcadero Road/Oregon Expressway, and San Antonio Road in the vicinity of the project. US 101 is classified as a freeway.

**Interstate 280 (Junipero Serra Freeway)** is an eight-lane facility in the project area under the jurisdiction of Caltrans. I-280 has interchanges serving Palo Alto at Sand Hill Road, Alpine Road, and Page Mill Expressway/Arastradero Road. Interstate 280 is classified as a freeway.

**State Route 84 (Dumbarton Bridge)** is a six-lane facility connecting to the Project area under the jurisdiction of Caltrans. This facility connects Alameda County to San Mateo and Santa Clara Counties. It is classified as a freeway.

#### *Local Access*

The primary streets that provide access within the Plan area are discussed below. These streets provide access to the Plan area as well as the local roadway network. For the purpose of this traffic and circulation discussion, roadways that parallel US 101 and I-280 are considered to run in the north/south direction and roadways that generally traverse toward the Santa Cruz Mountains or San Francisco Bay are considered to run in the east/west direction.

**El Camino Real (State Route 82)** is an arterial that runs north-south from San Francisco to San Jose. El Camino Real is a six-lane road from Ravenswood Avenue in Menlo Park south, and a four-lane divided road from Ravenswood Avenue north to the Atherton border. El Camino Real parallels US 101 and I-280. The major intersections within the study area are controlled by traffic signals with the exception of the El Camino Real/Palm/University Avenue interchange. This interchange is grade-separated and diamond-configured. The exit and entrance ramps at the interchange are controlled by traffic signals. In the City of Palo Alto's Comprehensive Plan, El Camino Real is classified as an arterial.

**Middlefield Road** is a two- to four-lane undivided road that runs north-south, parallel to US 101 and El Camino Real. Middlefield Road runs from Redwood City to the City of Mountain View. The major intersections are signalized. Middlefield Road within Palo Alto is classified as an arterial.

**Alma Street** is primarily a four-lane arterial that runs north-south, parallel to the CalTrain railroad tracks. Alma Street runs from El Camino Real (near San Francisquito Creek) to the San Antonio Road interchange in Mountain View, where it becomes Central Expressway (Santa Clara County G6) and terminates at De La Cruz Boulevard in Santa Clara. In the study area, Alma Street has limited access from the west side due to the immediate proximity of the CalTrain railroad tracks. The limited number of signalized intersections are synchronized with the CalTrain railroad crossing signals. Alma within Palo Alto is classified as an arterial.

**Sand Hill Road** is a two- to four-lane arterial that runs east-west. Sand Hill Road runs from Portola Road in the Town of Woodside to the Stanford Shopping Center in the City of Palo Alto. Sand Hill Road is a two lane road from Portola Road to the I-280 interchange, then it widens to four lanes to Santa Cruz Avenue, and then narrows to a two lane road until it terminates in the Stanford Shopping Center. Within the study area, Sand Hill Road provides connections to the Cities of Menlo Park and Palo Alto, as well as access to Stanford University. Sand Hill Road within Palo Alto is classified as an arterial. It is currently being widened to four lanes from San Francisquito Creek to Arboretum, and two lanes from Arboretum to El Camino Real.

**Arboretum Road** is primarily a two-lane road located in the Stanford University campus. Arboretum Road is a four-lane road for a short distance from the Quarry Road intersection to the intersection with Sand Hill Road. South of Quarry Road, Arboretum Road is a two-lane campus road which provides access to the El Camino Real/Embarcadero Road intersection via Galvez Street, where Arboretum Road terminates. Except for the intersection at Galvez Street, all intersections on Arboretum Road are signalized. Arboretum Road within Palo Alto is classified as an arterial.

**Embarcadero Road** is a four-lane arterial that runs east-west from the intersection of El Camino Real, through the US 101 interchange and terminates near the Palo Alto Municipal Airport. West of El Camino Real, Embarcadero Road becomes Galvez Street, which provides a link to Arboretum Road on the Stanford University campus. A short segment of Embarcadero Road underneath the CalTrain tracks is narrowed to three lanes. Embarcadero Road is classified by the City of Palo Alto as a residential arterial.

**Junipero Serra Boulevard** is a two-lane undivided road that runs north-south and parallels I-280. Junipero Serra Boulevard runs from Alpine Road to Page Mill Road, at which point it widens to a four-lane divided facility, signed as Foothill Expressway (Santa Clara County G5). Junipero Serra Boulevard forms a portion of the southwesterly boundary of the Stanford University central campus. Junipero Serra is classified by the City of Palo Alto as an arterial and is a County-maintained road.

**University Avenue/Palm Drive** is a two- to four-lane road that runs east-west from the Dumbarton Bridge (SR 84) to the El Camino Real grade-separated interchange, where it becomes Palm Drive. From SR 84 to US 101, University Avenue is a four-lane arterial except in Menlo Park near the Dumbarton Bridge where it is two lanes. University Avenue narrows to two lanes through the residential and downtown areas of the City of Palo Alto. Near the CalTrain overcrossing, University Avenue widens to four lanes until it becomes Palm Drive. Palm Drive remains four lanes until the intersection with Arboretum Road where it narrows to three lanes. At Campus Drive West, Palm Drive narrows again to two lanes until it terminates at the university main quad. University Avenue is classified as an arterial.

**Page Mill Road** is a two- to four-lane arterial which runs east-west from Skyline Boulevard (SR 35) to Alma Street in Palo Alto where it becomes Oregon Expressway (Santa Clara County G7), terminating at US 101. From I-280 to Alma Street, Page Mill Road is Santa Clara County Road G3. From Skyline Boulevard to the I-280 interchange, Page Mill Road is a narrow winding two-lane road. From I-280 to US 101, Page Mill Road/Oregon Expressway is a four-lane divided road. Page Mill Road is classified as an arterial.

**Alpine Road** is a two-lane road that runs north-south from Junipero Serra Boulevard to Portola Road. It interchanges with I-280 south of Junipero Serra Boulevard. Beyond Junipero Serra Boulevard, Alpine Road becomes four-lane Santa Cruz Avenue for a short distance until it splits with the Alameda De Las Pulgas, where it narrows again to two lanes. Santa Cruz Avenue turns east-west at Avy Avenue in a residential neighborhood of Menlo Park and terminates at El Camino Real near downtown Menlo Park. Alpine Road/Santa Cruz Avenue is classified as an arterial.

**Stanford Avenue** is a two-lane collector that runs east-west from Junipero Serra Boulevard to Park Boulevard. On-street parking is provided parallel to the roadway. Stanford Avenue is a County-maintained roadway west of the Palo Alto city limits.

### 4.4.B.2 Intersection Levels of Service

To evaluate the existing traffic conditions, as well as provide a basis for comparison of conditions before and after project-generated traffic is added to the street system, the Level of Service (LOS) was evaluated at critical intersections. The LOS evaluation indicates the degree of congestion that occurs during peak travel periods and is the principal measure of roadway performance.

#### *Signalized Intersections*

Traffic conditions at signalized intersections have been evaluated for AM and PM peak hours using the operational analysis procedures from the Transportation Research Board's *1985*

*Highway Capacity Manual* as required by the Congestion Management Agency. The level of service (LOS) methodology qualitatively characterizes traffic conditions associated with varying levels of traffic. An LOS determination is a measure of expected delay at an intersection, and is the principal measure of roadway quality of service. The AM peak hour generally occurs between 7:00 AM and 9:00 AM and the PM peak hour occurs between 4:00 PM and 6:00 PM. Impacts to intersections may occur outside of the typical peak hour. Since the peak hour is considered the worst hour for traffic volume, proposed peak hour mitigation measures (either TDM measures or intersection improvements) will also accommodate traffic spikes in non-peak hour periods.

A saturation flow rate must be established for each lane group approach of an intersection to determine the average vehicle delay and the LOS as defined by the *1985 Highway Capacity Manual*. The saturation flow rate is the maximum rate of flow that can pass through a given intersection approach under prevailing traffic and roadway conditions, assuming that the approach or lane group had 100 percent of time available as effective green time. An ideal saturation flow of 1,800 passenger cars per hour of green time per lane is used and then adjustments made. Left and right turn traffic restricts traffic flow and these movements are adjusted downward to 1,750 passenger cars per hour of green time per lane.

Saturation flow rates and peak hour factors for study intersections within Menlo Park were obtained from the *Menlo Park General Plan Update*. Standard default values for analysis of intersections within Palo Alto were obtained from the *City of Palo Alto's Procedures for Level of Service Analysis, 1994.*

The traffic operations analysis for Palo Alto intersections was performed using TRAFFIX, which is capable of analyzing intersections via several methodologies, including Highway Capacity Manual (HCM), as required by the Santa Clara County Congestion Management Agency. The intersections under the jurisdiction of Menlo Park were analyzed using the *1994 Highway Capacity Manual*, as required by the City of Menlo Park. The operations analysis yields a ratio of an intersection's traffic volume to its capacity, as well as the average stopped delay for vehicles approaching the intersection. Study intersections within Palo Alto and Menlo Park were assigned a LOS based on the average critical delay per vehicle. Acceptable operation are defined by LOS D or better for all non-CMP intersections and LOS E for CMP intersections for all jurisdictions. Standards of significance are described in Section 4.4.C of this report.

Table 4.4-8 defines the levels of service for signalized intersections, which range from LOS A, or free-flow conditions, to LOS F, or highly congested conditions. LOS A, B, and C are generally considered satisfactory service levels, while LOS D is marginally acceptable. LOS E conditions are considered undesirable and LOS F conditions unacceptable, although such conditions frequently occur at heavily-loaded urban intersections in the Bay Area. As noted in Table 4.4-14, LOS E is considered acceptable by the Santa Clara County CMA while other jurisdictions in which intersections affected by project traffic are located have different standards (see Table 4.4-14).

## Table 4.4-8

### Level of Service Definitions - Signalized Intersections

| Level of Service | Stopped Delay (sec/veh) | Volume to Capacity Ratio | Description of Traffic Condition |
|---|---|---|---|
| A | ≤5.0 | ≤0.60 | Insignificant Delays: No approach is fully utilized and no vehicle waits longer than one signal cycle. |
| B | 5.1 - 15.0 | 0.60 - 0.69 | Minimal Delays: An occasional approach is fully utilized. Drivers begin to feel restricted. |
| C | 15.1 - 25.0 | 0.70 - 0.79 | Acceptable Delays: Major approaches may become fully utilized. Most drivers feel somewhat restricted. |
| D | 25.1 - 40.0 | 0.80 - 0.89 | Tolerable Delays: Drivers may wait through more than one signal cycle. Queues may develop but dissipate rapidly, without excessive delays. |
| E | 40.1 - 60.0 | 0.90 - 0.99 | Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long queues of vehicles form upstream. |
| F | ≥60.0 | ≥1.0 | Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections. |

Source: Highway Capacity Manual, Transportation Research Board Special Report No. 209, Washington, D.C., 1994.

### *Unsignalized Intersections*

Like signalized intersections, unsignalized intersections are evaluated using the methodology of the Transportation Research Board's 1994 Highway Capacity Manual. The levels of service of unsignalized intersections are based on the average total delay for all vehicles. For four-way stops, the average total delay is based on the stop delay for all approaches. For two-way stop controlled intersections, the average total delay takes into account no delay for the movements which do not stop and therefore, the stopped approaches have a higher individual delay than for the overall intersection. Table 4.4-9 shows the corresponding LOS criteria at unsignalized intersections as defined by the *1994 Highway Capacity Manual*.

**Table 4.4-9**

Level of Service Definitions - Unsignalized Intersections

| Level of Service | Average Total Delay (sec/vehicle) | Description of Traffic Condition |
|---|---|---|
| A | ≤5.0 | Little or no delay |
| B | 5.1 - 10.0 | Short traffic delays |
| C | 10.1 - 20.0 | Average traffic delays |
| D | 20.1 - 30.0 | Long traffic delays |
| E | 30.1 - 45.0 | Very long traffic delays |
| F | ≥45.0 | Extreme delays which may affect other movements |

Source: Highway Capacity Manual, Transportation Research Board Special Report No. 209, Washington, D.C., 1994.

### 4.4.B.3 Freeway Levels of Service

To evaluate the existing freeway traffic conditions, as well as provide a basis for comparison of conditions before and after project-generated traffic is added to the freeway system, the Level of Service (LOS) was evaluated at segments along nearby freeway facilities. Freeway segments are measured by density in terms of passenger cars per mile per lane. Table 4.4-10 identifies the ranges of density used to define levels of service for freeway segments. LOS ranges from LOS A, or free-flow conditions, to LOS F, or highly congested conditions.

**Table 4.4-10**

Level of Service Definitions - Freeway

| Level of Service | Average Density * | Description of Traffic Condition |
|---|---|---|
| A | 0 - 10.0 | Free-flow operations |
| B | 10.1 - 16.0 | Reasonably free-flow, and free-flow speeds are maintained |
| C | 16.1 - 24.0 | Flow with speeds at or near the free-flow speed |
| D | 24.1 - 32.0 | Level at which speeds begin to decline with increasing flows |
| E | 32.1 - 45.0 | Operation at capacity |
| F | > 45.0 | Breakdowns in vehicular flow |

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 1997

* Cars per mile per lane.

### 4.4.B.4 Existing Traffic Conditions

Existing traffic conditions are presented in terms of intersection levels of service. Intersection, roadway link, and freeway operations are analyzed in this section.

#### *Traffic Volumes*

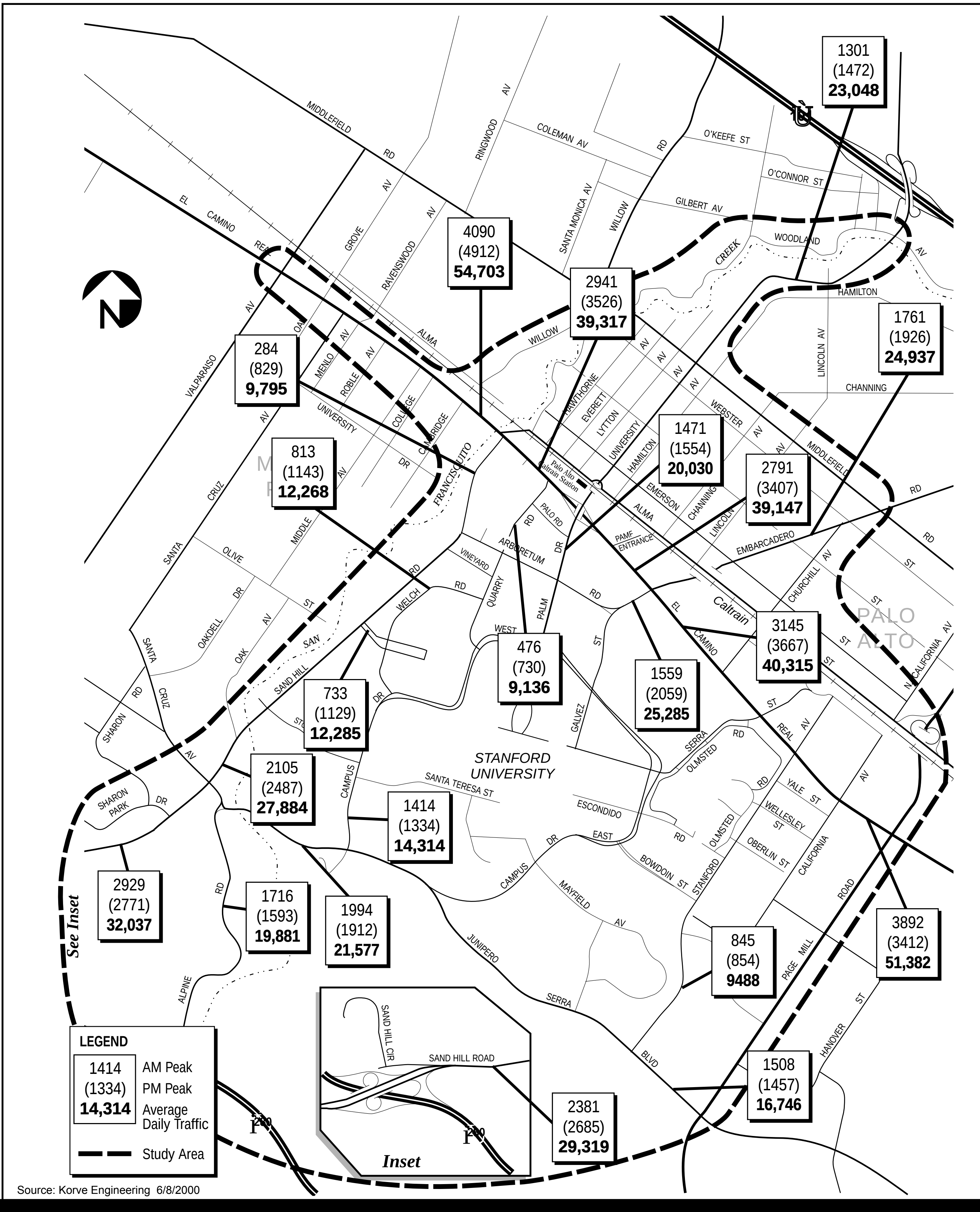
Existing (1999) daily and peak hour volumes are displayed in Figure 4.4-5. Some of these counts were collected specifically for this project in November 1999, prior to the holiday season, and in April 2000, and others were taken from existing and recent count data. For example, new counts on Sand Hill Road were not collected because of current construction activity. The dates of the intersection traffic counts are listed in Table 4.4-11. High traffic volumes occur on arterial roadways such as El Camino Real, Sand Hill Road, Embarcadero Road and University Avenue. Lesser volumes occur on the collector roadways. Peak hour traffic volumes generally represent about seven to nine percent of the daily traffic volumes and generally occur between 7:00 and 9:00 AM, and 4:00 and 6:00 PM. Also, traffic counts were conducted along roadway segments in October 1998 and April 2000 in Palo Alto and Menlo Park, which are described later in this section.

#### *Intersection Operations*

Existing traffic conditions have been analyzed for 43 study intersections within Palo Alto and Menlo Park. Of these intersections, 39 are signal-controlled, three are stop sign-controlled, and one (Quarry/El Camino Real) is currently uncontrolled. Intersections that are part of the Santa Clara or San Mateo CMP networks are noted below. The dates of the traffic counts are also noted. The intersections included in this analysis are listed in Table 4.4-11 (intersections are signalized unless otherwise indicated). The project study area was established based on the traffic volumes estimated to be generated and the distribution patterns of those trips.

The Santa Clara CMP requires that CMP facilities within the project vicinity, to which the CP/GUP would add more than ten vehicles per lane during the peak hour, be included in the study. In the vicinity of the project, US 101, El Camino Real, and Page Mill/Oregon Expressway are Santa Clara CMP facilities. The trip distribution for the CP/GUP was used to determine the expected amount of traffic on each of these regional transportation facilities. The distribution is based on faculty and staff zip code data and tailored for the differences in travel patterns between students and faculty trips. The study area established for the CP/GUP includes intersections which would experience ten or more vehicles per lane during the peak hour as a result of the project and therefore meets the requirements of the Santa Clara County CMA. As identified in Table 4.4-11, there are intersections located in Palo Alto that are County-maintained, such as El Camino Real and Page Mill Road.

File: 736167\graphics\traffic\ExistingADT Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# EXISTING DAILY AND PEAK HOUR TRAFFIC VOLUMES

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-5

# Table 4.4-11

## Study Intersections

| | | Count Date | |
|---|---|---|---|
| **Intersection** | **Jurisdiction** | **AM** | **PM** |
| El Camino Real / Valparaiso | Menlo Park | 11/16/99 | 11/16/99 |
| El Camino Real/Santa Cruz | Menlo Park | 4/12/00 | 4/12/00 |
| El Camino Real/Ravenswood | Menlo Park | 11/16/99 | 11/16/99 |
| El Camino Real/Roble | Menlo Park | 4/12/00 | 4/12/00 |
| El Camino Real/Middle | Menlo Park | 11/16/99 | 11/16/99 |
| El Camino Real/Cambridge | Menlo Park | 4/12/00 | 4/12/00 |
| El Camino Real/Sand Hill/Alma | Palo Alto[5] | 2/2/99 | 11/4/98 |
| El Camino Real/Shopping Center | Palo Alto | 10/21/98 | 10/21/98 |
| El Camino Real/Quarry | Palo Alto | N/A | N/A |
| El Camino Real/Palm/ University [1] | Palo Alto | 10/22/98 | 10/22/98 |
| El Camino Real/PAMF Entrance [2] | Palo Alto | N/A | N/A |
| El Camino Real/Embarcadero | Palo Alto[5] | 2/3/99 | 10/22/98 |
| El Camino Real/Churchill | Palo Alto | 11/16/99 | 11/16/99 |
| El Camino Real/Serra | Palo Alto | 11/17/99 | 11/16/99 |
| El Camino Real/Stanford | Palo Alto | 11/18/99 | 11/18/99 |
| El Camino Real/California | Palo Alto | 11/16/99 | 11/16/99 |
| El Camino Real/Page Mill | Palo Alto[5] | 2/3/99 | 2/3/99 |
| University/ Woodland | E. Palo Alto | 10/27/98 | 10/28/98 |
| Middlefield/Willow | Menlo Park | 11/16/99 | 11/16/99 |
| Middlefield/ University | Palo Alto | 10/16/98 | 2/3/99 |
| Middlefield/ Embarcadero | Palo Alto | 2/2/99 | 10/20/98 |
| Churchill/Alma | Palo Alto | 11/17/99 | 11/18/99 |
| Junipero Serra/Page Mill | Palo Alto[5] | 10/27/98 | 10/27/98 |
| Junipero Serra/Stanford | Santa Clara Co. | 11/17/99 | 11/17/99 |
| Junipero Serra/Campus Drive East | Santa Clara Co. | 11/16/99 | 11/16/99 |
| Junipero Serra/Campus Drive West | Santa Clara Co. | 10/28/98 | 10/28/98 |
| Junipero Serra/Alpine/Santa Cruz [3] | Menlo Park | 11/17/99 | 11/18/99 |
| Sand Hill / Sand Hill Circle/I-280 | Menlo Park | 4/12/00 | 4/12/00 |
| Sand Hill / Sharon Park | Menlo Park | 11/17/99 | 11/17/99 |
| Sand Hill/Santa Cruz [3] | Menlo Park | 11/17/99 | 11/17/99 |
| Sand Hill/Oak | Menlo Park | 11/4/98 | 11/4/98 |
| Sand Hill/Oak Creek/Stockfarm | Palo Alto | 5/8/97 | 5/8/97 |

## Table 4.4-11

### Study Intersections

| | | Count Date | |
|---|---|---|---|
| **Intersection** | **Jurisdiction** | **AM** | **PM** |
| Sand Hill/Pasteur | Palo Alto | 5/8/97 | 5/8/97 |
| Sand Hill/Arboretum | Palo Alto | 5/8/97 | 5/8/97 |
| Arboretum/Quarry | Palo Alto | 10/22/98 | 10/22/98 |
| Arboretum/Palm | Palo Alto | 11/16/99 | 11/16/99 |
| Arboretum/Galvez [4] | Stanford | 10/98 | 10/98 |
| Welch/Pasteur Southleg | Palo Alto | 10/28/98 | 10/28/98 |
| Welch/Pasteur Northleg | Palo Alto | 10/28/98 | 10/28/98 |
| Welch/Quarry | Palo Alto | 11/16/99 | 11/16/99 |
| Welch/Campus Drive West [4] | Stanford | 11/17/99 | 11/17/99 |
| Pasteur/Blake Wilbur [4] | Palo Alto | 10/98 | 10/98 |
| Santa Cruz/University | Menlo Park | 11/16/99 | 11/16/99 |

Source: Korve Engineering, City of Palo Alto, and City of Menlo Park

Notes:

1 Analyzed as a single combined intersection.

2 Will be operational with the opening of the PAMF project.

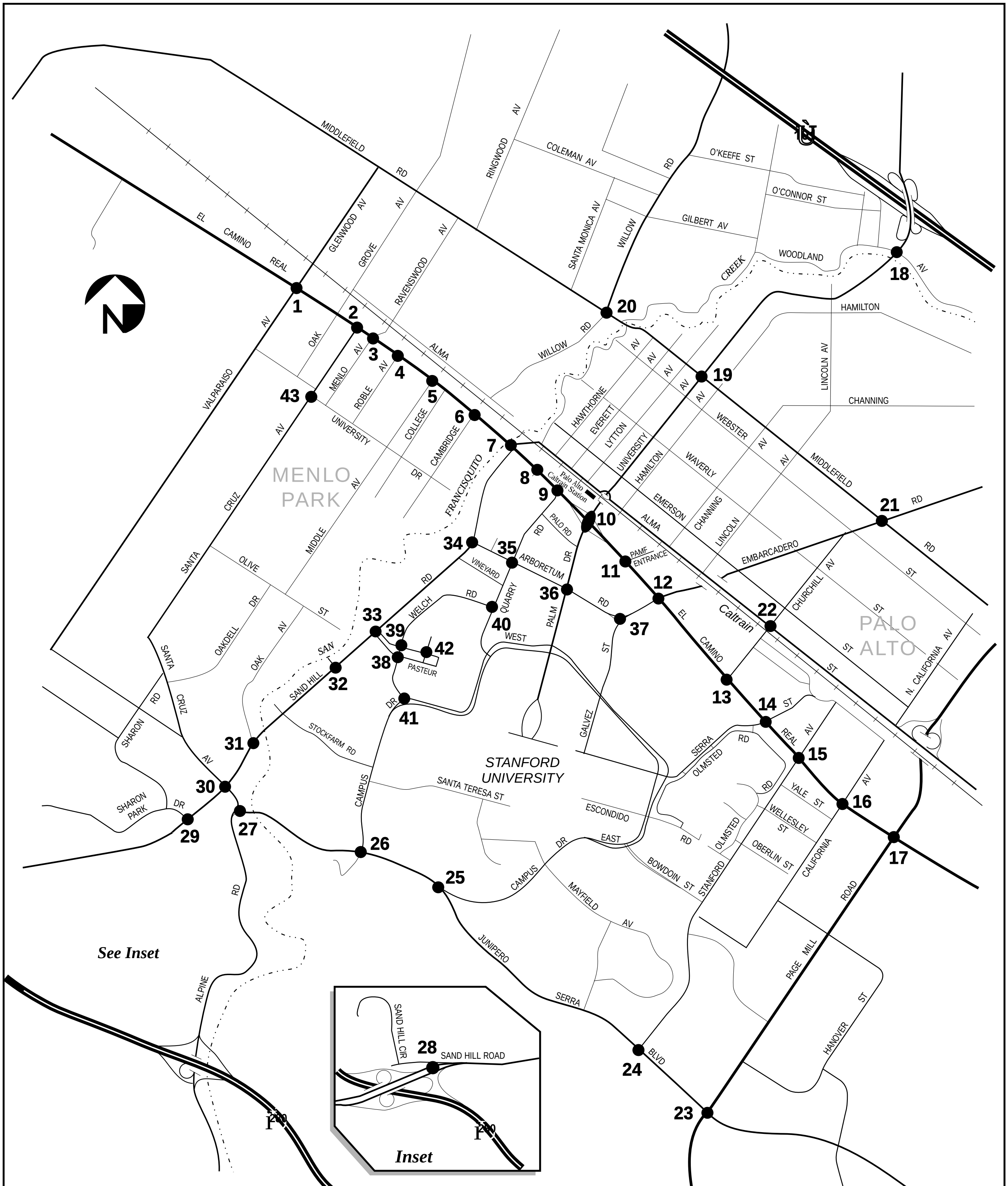
3 These intersections will also be analyzed using signal coordination (Transyt 7-F).

4 Intersection is stop-controlled.

5 Jurisdiction of Santa Clara County Congestion Management Plan

N/A = not applicable because the intersection is not yet constructed

Figure 4.4-6 illustrates each study intersection and its location in relation to the project area. As shown in Table 4.4-11, traffic counts at 16 analysis locations were performed for this study in November 1999 and four locations in April 2000. All counts were conducted when Stanford University was in session to represent the worst case scenario. Traffic counts for the other locations were taken from previous counts. All traffic volumes were factored upward based on traffic growth from 1997 or 1998 to 1999 to reflect 1999 conditions. Growth assumptions were based on recent observed traffic increases in the project area at other intersections were data was available. Figures 4.4-7A, 4.4-7A, and 4.4-7A illustrate the current lane geometry at each of the study area intersections. The existing turning movement traffic volumes are also noted on these figures.




Source: Korve Engineering 6/8/2000

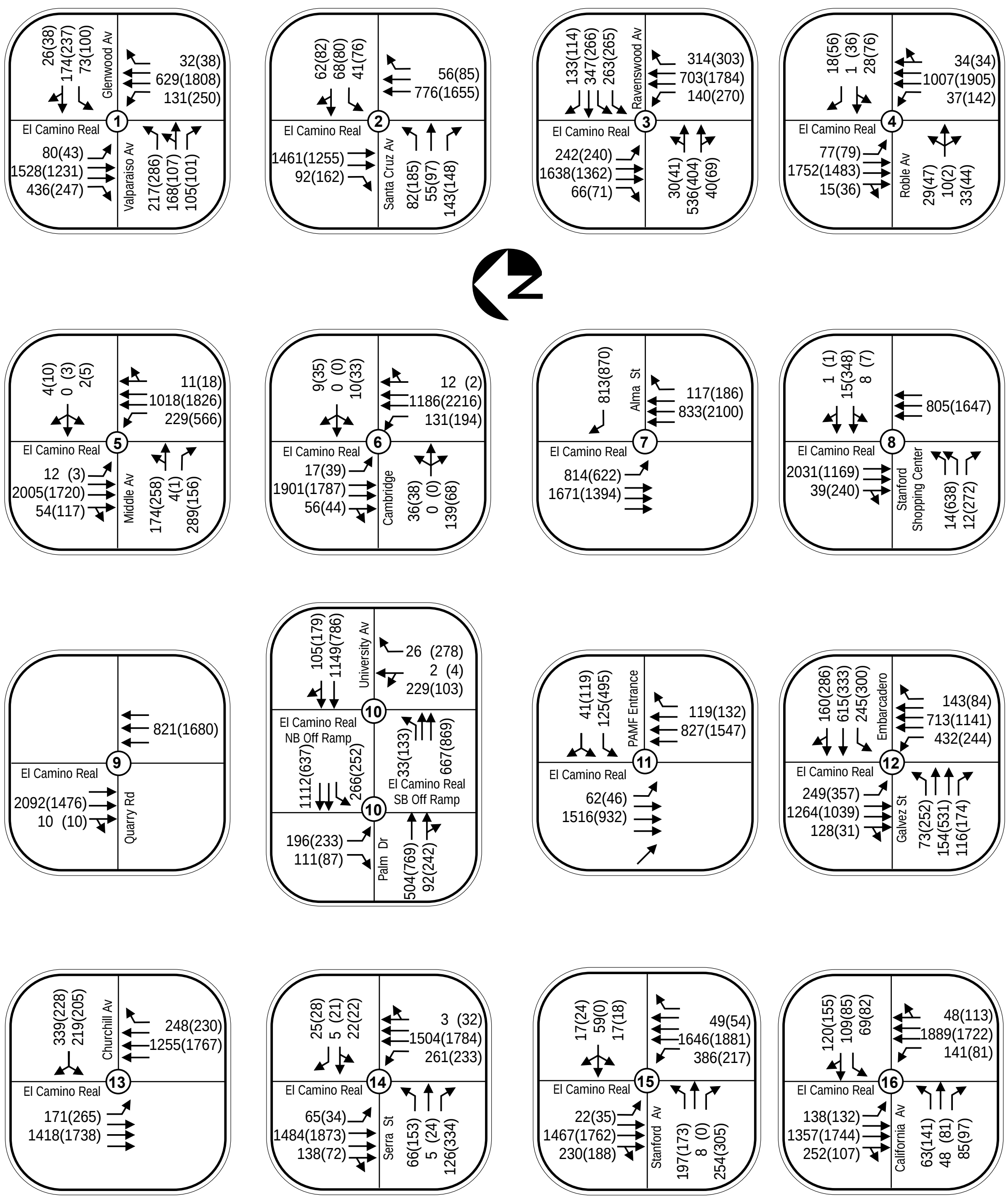
Stanford University
CP/GUP Project EIR

# STUDY INTERSECTIONS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-6

File: 736167\graphics\traffic\ExistingVolsA Date: 6/20/2000




Source: Korve Engineering 6/8/2000

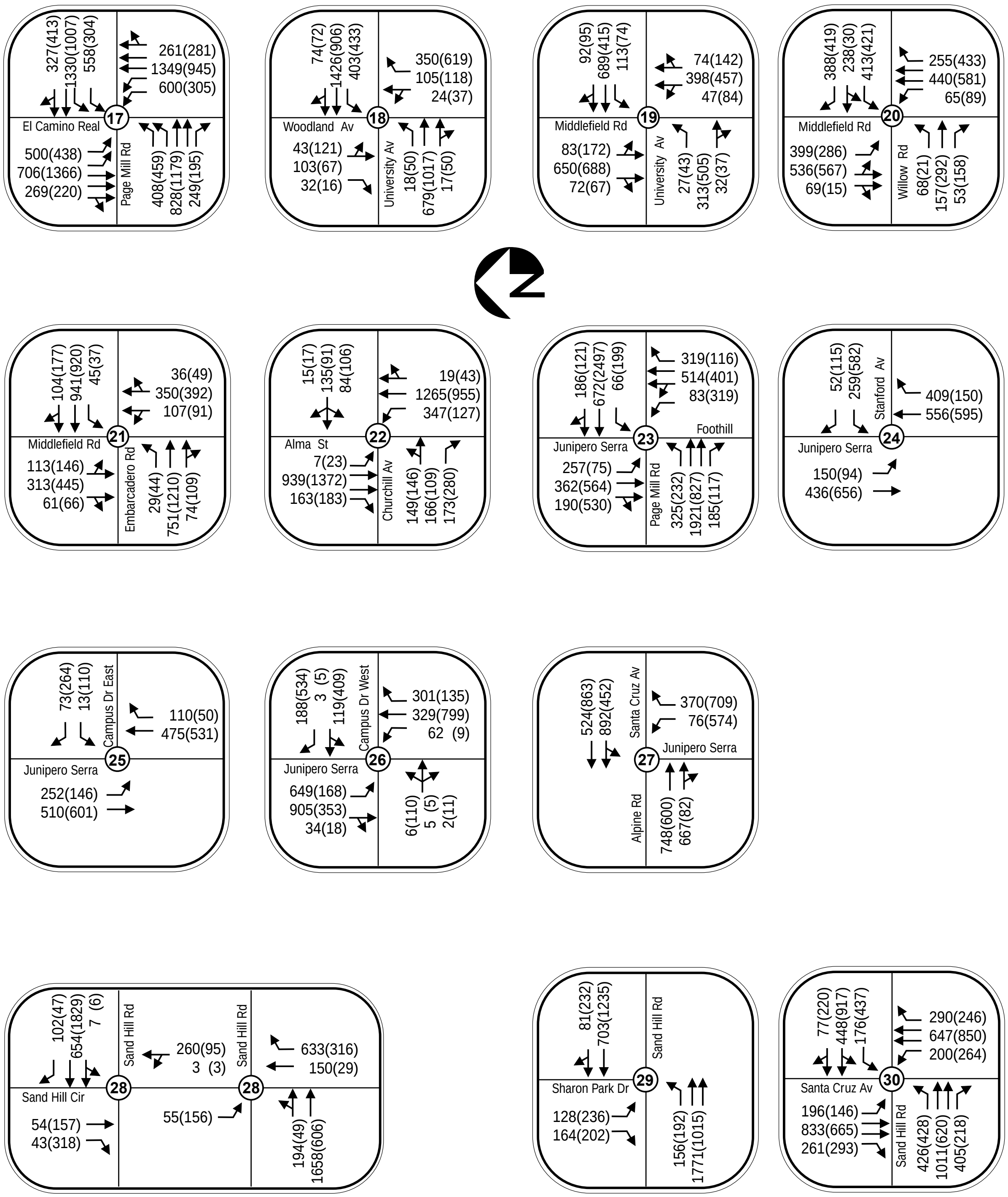
Stanford University
CP/GUP Project EIR

# EXISTING LANE GEOMETRY and TRAFFIC VOLUMES

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-7A

File: 736167\graphics\traffic\ExistingVolsB Date: 6/20/2000




**AM (PM) Peak Hour**

Source: Korve Engineering 6/8/2000

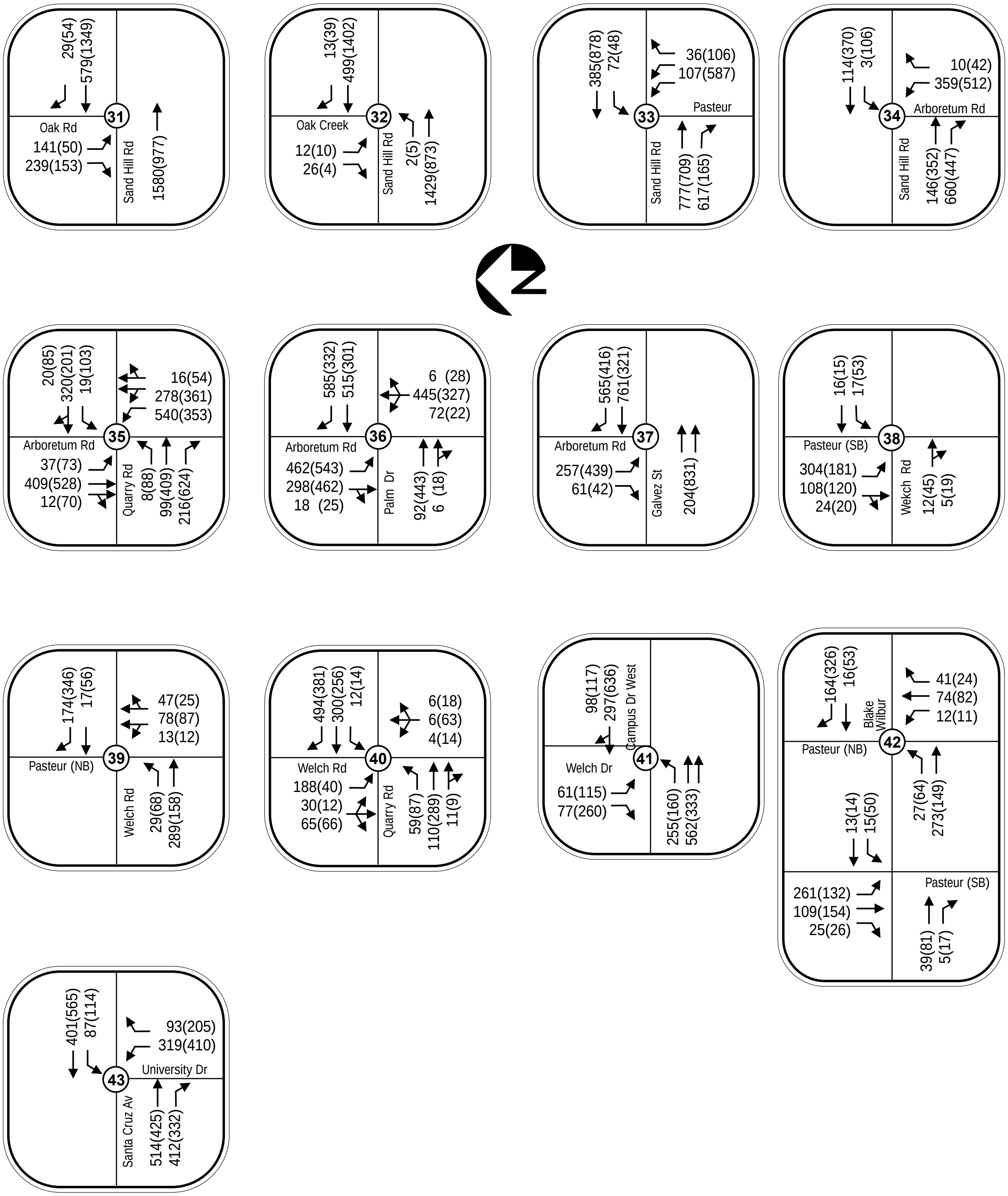
**Stanford University**
**CP/GUP Project EIR**

# EXISTING LANE GEOMETRY and TRAFFIC VOLUMES

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-7B**

File: 736167\graphics\traffic\ExistingVolsC Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# EXISTING LANE GEOMETRY and TRAFFIC VOLUMES

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-7C

Table 4.4-12 identifies the AM and PM peak hour LOS at each of the study area intersections. Intersection LOS calculation worksheets are included in a separate background report available for review at the County Planning Department office. The results of the level of service calculations indicate four intersections operate below acceptable conditions in the AM peak hour and seven in the PM peak hour. Acceptable operations are defined by LOS D or better for all non-CMP intersections and LOS E for CMP intersections for all jurisdictions. The intersection operations shown in Table 4.4-12 have been calculated using the TRAFFIX software package which was previously described. The TRAFFIX analysis calculates intersection operations as isolated locations, which is the traditional approach for the traffic section of an environmental document. However, the operations at some closely-spaced intersections, such as Stanford and California on El Camino Real and Santa Cruz/Sand Hill with Santa Cruz/Alpine/Junipero Serra are influenced by the adjacent intersection. Therefore, levels of service reported in Table 4.4-12 do not totally reflect the effects of queue spillbacks from those adjacent, closely-spaced intersections. The Santa Cruz/Sand Hill Road and Santa Cruz/Alpine/JSB intersections are also analyzed using TRANSYT 7-F signal coordination to recognize the related function of these two intersections.

The traffic operations analysis address AM and PM peak hour traffic on typical weekdays from September to May when school is in session. Other events at the University, such as football games, create traffic outside of the traditional peak hour. The CP/GUP is not expected to influence football game day traffic and this activity is therefore not addressed in this analysis, although the analysis does include potential peak-hour effects of the proposed new arena and performing arts center.

# Table 4.4-12

## Existing Intersection Capacity Analysis

| Intersection | City | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | LOS | Delay[1] (Sec) | V/C | LOS | Delay[1] (Sec) | V/C |
| El Camino Real / Valparaiso | Menlo Park | D | 26.3 | 0.84 | D | 31 | 0.94 |
| El Camino Real/Santa Cruz | Menlo Park | B | 13.6 | 0.65 | C | 16.4 | 0.75 |
| El Camino Real/Ravenswood | Menlo Park | D | 39 | 1.04 | E | 57.4 | 1.04 |
| El Camino Real/Roble | Menlo Park | B | 6.4 | 0.48 | B | 12.1 | 0.63 |
| El Camino Real/Middle | Menlo Park | C | 19.6 | 0.81 | D | 26.5 | 0.96 |
| El Camino Real/Cambridge | Menlo Park | B | 11.5 | 0.66 | C | 10.7 | 0.63 |
| El Camino Real/Sand Hill/Alma[3] | Palo Alto | C | 17.7 | 0.64 | C | 18.5 | 0.76 |
| El Camino Real/Shopping Center | Palo Alto | A | 0.9 | 0.43 | D | 37.4 | 0.96 |
| El Camino Real/Quarry[2] | Palo Alto | N/A | N/A | N/A | N/A | N/A | N/A |
| El Camino Real/Palm/ University | Palo Alto | D | 35.3 | 0.95 | D | 37.3 | 0.96 |
| El Camino Real/PAMF Entrance | Palo Alto | A | 5 | 0.36 | B | 14.2 | 0.56 |
| El Camino Real/Embarcadero[3] | Palo Alto | D | 32.6 | 0.83 | D | 34.8 | 0.8 |
| El Camino Real/Churchill | Palo Alto | C | 22.9 | 0.72 | C | 23.8 | 0.8 |
| El Camino Real/Serra | Palo Alto | B | 14.9 | 0.51 | C | 16.6 | 0.61 |
| El Camino Real/Stanford | Palo Alto | D | 26.3 | 0.81 | B | 22.2 | 0.77 |
| El Camino Real/California | Palo Alto | C | 15 | 0.6 | C | 17.1 | 0.61 |
| El Camino Real/Page Mill[3] | Palo Alto | F | 93.3 | 1.12 | F | 51.6 | 1 |
| University/ Woodland | E. Palo Alto | B | 11.3 | 0.52 | D | 30.6 | 0.73 |
| Middlefield/University | Palo Alto | C | 18.1 | 0. | C | 19.9 | 0.746 |
| Middlefield/Willow | Menlo Park | D | 27.3 | 0.704 | E | 42.7 | 0.922 |
| Middlefield/ Embarcadero | Palo Alto | C | 16.7 | 0.62 | C | 18.8 | 0.76 |
| Churchill/Alma | Palo Alto | D | 38.7 | 0.83 | D | 28.3 | 0.76 |
| Junipero Serra/Page Mill[3] | Palo Alto | D | 37.7 | 0.9 | F | 255 | 1.36 |
| Junipero Serra/Stanford | Santa Clara Co. | B | 12.9 | 0.62 | C | 20.9 | 0.82 |
| Junipero Serra/Campus Drive East | Santa Clara Co. | C | 15.2 | 0.43 | C | 16.2 | 0.47 |
| Junipero Serra/Campus Drive West | Santa Clara Co. | C | 16.1 | 0.71 | D | 38.9 | 0.92 |
| Junipero Serra/Alpine/Santa Cruz | Menlo Park | E | 43.6 | 1.01 | E | 47.6 | 1.03 |
| Sand Hill / Sand Hill Circle/I-280 | Menlo Park | E | 45.4 | 0.97 | C | 27.4 | 0.96 |
| Sand Hill / Sharon Park | Menlo Park | B | 7.2 | 0.67 | B | 11.8 | 0.78 |
| Sand Hill/Santa Cruz | Menlo Park | D | 33.6 | 0.92 | E | 52.7 | 0.99 |
| Sand Hill/Oak | Menlo Park | D | 26.3 | 1.04 | B | 10.8 | 0.84 |
| Sand Hill/Oak Creek/Stockfarm | Palo Alto | B | 5.4 | 0.84 | B | 8.6 | 0.82 |

## Table 4.4-12

Existing Intersection Capacity Analysis

| Intersection | City | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | LOS | Delay[1] (Sec) | V/C | LOS | Delay[1] (Sec) | V/C |
| Sand Hill/Pasteur | Palo Alto | B | 7.6 | 0.52 | C | 15 | 0.72 |
| Sand Hill/Arboretum | Palo Alto | B | 5.9 | 0.42 | C | 17.3 | 0.6 |
| Arboretum/Quarry | Palo Alto | C | 19.4 | 0.53 | C | 21.8 | 0.67 |
| Arboretum/Palm | Palo Alto | D | 35.2 | 0.93 | C | 22.8 | 0.76 |
| Arboretum/Galvez[2] | Stanford | F | * | >1.0 | F | * | >1.0 |
| Welch/Pasteur Southleg | Palo Alto | B | 7.5 | 0.24 | B | 10.0 | 0.18 |
| Welch/Pasteur Northleg | Palo Alto | B | 9.7 | 0.19 | B | 9.3 | 0.34 |
| Welch/Quarry | Palo Alto | B | 11 | 0.38 | B | 16.4 | 0.35 |
| Welch/Campus Drive West[2] | Stanford | A | 4.9 | 0.65 | B | 6.5 | 0.98 |
| Pasteur/Blake Wilbur[2] | Palo Alto | A | 3.1 | 1.09 | B | 5.5 | 1.15 |
| Santa Cruz/University | Menlo Park | B | 14.1 | 0.63 | B | 11.7 | 0.63 |

Source: Korve Engineering, 1999

Notes:

1 Reported delay is critical movement delay

2 Unsignalized Intersection

3 CMP intersection

* Intersection oversaturated, delay cannot be accurately calculated

### *Roadway Link Volumes*

Average Daily Traffic (ADT) counts for the study roadway segments within Palo Alto and Menlo Park were conducted in October 1998 and April 2000, as illustrated on Figure 4.4-5. The local streets that have been analyzed are as follows:

*Palo Alto*

- Welch Road, between Pasteur and Quarry (October 1998)
- Pasteur Drive, between Sand Hill and Welch (October 1998)
- Campus Drive West, between Stock Farm and Junipero Serra (October 1998)
- Sand Hill Road, east of Arboretum (October 1998)
- Quarry Road, between Arboretum and El Camino Real (October 1998)
- El Camino Real, north of Page Mill Road (April 2000)
- El Camino Real, between Sand Hill and University/Palm (October 1998)
- El Camino Real, between University/Palm and Embarcadero (October 1998)

- El Camino Real, south of Embarcadero (October 1998)
- Embarcadero Road, between Waverley and Middlefield (October 1998)
- University Avenue, east of Chaucer (October 1998)
- Junipero Serra Boulevard, north of Campus Drive West (April 2000)
- Junipero Serra Boulevard, south of Stanford Avenue (April 2000)
- Alpine Road, west of Junipero Serra Boulevard (April 2000)
- Stanford Avenue, west of Bowdoin Street (April 2000)
- Galvez Street, west of El Camino Real (April 2000)
- Palm Drive, west of El Camino Real (April 2000)

*Menlo Park*

- Sand Hill Road, east of Santa Cruz (October 1998)
- Sand Hill Road, between Monte Rosa and Sand Hill Circle (October 1998)
- Sand Hill Road, west of Sharon Park Drive (April 2000)
- El Camino Real, north of Sand Hill/Alma (October 1998)

The average daily traffic volumes noted on Figure 4.4-5 indicate that the arterial roadways such as El Camino Real, Sand Hill Road, Embarcadero Road, and University Avenue accommodate the higher traffic volumes. Lower traffic volumes occur on the collector roadways such as Campus Drive West and Quarry Road. Level of service on these roadways is governed by the level of service calculated for each intersection and is not calculated independently.

### Freeway Operations

Freeway peak hour volumes for the study segments within Palo Alto and Menlo Park were obtained from VTA. Table 4.4-13 lists the segments that have been analyzed, the volumes, speed, lanes, densities, and the resulting LOS. All freeway segments operate at an acceptable LOS of E or better during both peak hours.

## Table 4.4-13

### Existing Freeway Segment LOS

| Freeway | Limits | # of Lanes | Peak | Peak Hour Volume | Speed | Density | LOS |
|---|---|---|---|---|---|---|---|
| 280 NB | North of Sand Hill | 4 | AM | 4010 | 70 | 14.4 | B |
| | | | PM | 7505 | 65 | 29.2 | D |
| 280 SB | North of Sand Hill | 4 | AM | 8087 | 63 | 32.4 | E |
| | | | PM | 4298 | 70 | 15.6 | B |
| 280 NB | South of Sand Hill | 4 | AM | 4560 | 70 | 16.4 | C |
| | | | PM | 6260 | 69 | 22.9 | C |
| 280 SB | South of Sand Hill | 4 | AM | 6650 | 68 | 24.7 | D |
| | | | PM | 4680 | 70 | 16.9 | C |
| 280 NB | South of Alpine | 4 | AM | 6050 | 69 | 22.2 | C |
| | | | PM | 6210 | 69 | 22.8 | C |
| 280 SB | South of Alpine | 4 | AM | 6490 | 69 | 23.8 | C |
| | | | PM | 6030 | 69 | 22.0 | C |
| 280 NB | South of Page Mill | 4 | AM | 7611 | 65 | 29.5 | D |
| | | | PM | 5790 | 70 | 20.9 | C |
| 280 SB | South of Page Mill | 4 | AM | 6015 | 69 | 22.0 | C |
| | | | PM | 7271 | 66 | 27.9 | D |
| 101 NB | South of University | 3 | AM | 6230 | 55 | 37.8 | E |
| | | | PM | 5300 | 25 | 70.7 | F |
| 101 SB | South of University | 3 | AM | 5180 | 10 | 172.7 | F |
| | | | PM | 5320 | 60 | 29.5 | D |
| 84 EB | Dumbarton Bridge | 3 | AM | 6380 | 61 | 35.2 | E |
| | | | PM | 1300 | 70 | 6.3 | A |
| 84 WB | Dumbarton Bridge | 3 | AM | 1520 | 70 | 7.3 | A |
| | | | PM | 5440 | 66 | 27.7 | D |

Source: Korve Engineering

Note: US 101 notes lanes and volumes for mixed flow lanes only.

## 4.4.C EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

Table 4.4-14 includes the standards of significance applied in the Stanford CP/GUP Transportation and Circulation analysis.

**Table 4.4-14**

Evaluation Criteria with Points of Significance – Traffic and Circulation

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the project adversely affect public transit service levels or accessibility? | a. Amount of growth or concentration of population | a. Demand beyond the capacity of existing or planned facilities | Santa Clara County Valley Transportation Authority Guidelines |
| | b. Increased demand for transit service | b. Demand beyond accepted service standards | Santa Clara County Environmental Evaluation Checklist Item N(g) |
| | c. Transit availability for existing transit users | c. Reduction or interference with existing users on a permanent or temporary basis | |
| | d. Distance from existing or planned transit services, with the potential for generating a demand for such services. | d. Located more than 3/4 miles away | |
| 2. Will the project cause adverse impacts on the use of bicycle and/or pedestrian travel ways? | a. Impacts on the use of existing bicycle and/or pedestrian travel ways or access to activity centers | a. Closure or substantial interference | Santa Clara County Valley Transportation Authority Guidelines |
| | | | Palo Alto Comprehensive Plan |
| | b. Impacts on the safety for bicyclists and/or pedestrians | b. Any reduction in safety | Santa Clara County Environmental Evaluation Checklist Item N(g) |
| | c. Be inconsistent with the goals or policies of the Palo Alto Comprehensive Plan related to bicycles and/or pedestrian travel | c. 0 inconsistencies | |
| 3. Will the project cause adverse impacts to existing parking or access to existing parking? | a. Demand for off-street parking versus the proposed off-street parking supply | a. If the demand is greater than the proposed supply | Santa Clara County Valley Transportation Authority Guidelines |
| | b. Impacts on the availability of on-street parking, either through removal or through increased demand ("spillover") for that existing on-street parking | b. Cause a substantial reduction in availability of parking | Santa Clara County Environmental Evaluation Checklist Item N(f) |

# Table 4.4-14

## Evaluation Criteria with Points of Significance – Traffic and Circulation

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 4. Will the project create adverse vehicular impacts on the freeways? | For each direction of travel:<br>Number of new trips added by the project on a freeway segment determined to have been at LOS F | New trips more than one percent of the freeway capacity | Santa Clara County Valley Transportation Authority Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item N(a)<br>Santa Clara County CMP |
| 5a. Will the project create adverse vehicular impacts for intersections in the City of Palo Alto? | a. Change in level of service and critical movement delay<br>b. Change in the critical movement delay and the V/C if the baseline LOS is E or F | a. Decline from LOS D to LOS E or worse<br>b. Cause the critical movement delay to increase by four seconds (or more) and the V/C to increase by 0.01 or more | Santa Clara County Valley Transportation Authority Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item N(a)<br>City of Palo Alto |
| 5b. Will the project create adverse vehicular impacts for intersections in the City of Palo Alto specifically included in the Santa Clara County Congestion Management Plan? | a. Change in level of service<br>b. Change in the critical movement delay and the V/C at intersections already at LOS F | a. Cause the LOS to decline from a baseline LOS E or better to F<br>b. Cause the critical movement delay to increase by four seconds or more, and the V/C to increase by 0.01 or more | Santa Clara County Valley Transportation Authority Guidelines<br>Santa Clara County Congestion Management Plan<br>Santa Clara County Environmental Evaluation Checklist Item N(b)<br>City of Palo Alto |
| 5c. Will the project create vehicular impacts for intersections within the unincorporated area of Santa Clara County and not under the control of the City of Palo Alto? | a. Change in the level of service<br>b. Change in the critical movement delay and the V/C if the baseline LOS is E or F | a. Cause the LOS to decline from D or better to E or worse<br>b. Cause the critical movement delay to increase by four seconds (or more) and the V/C to increase by 0.01 or more | Santa Clara General Plan<br>Santa Clara County Environmental Evaluation Checklist Item N(a) |

# Table 4.4-14

## Evaluation Criteria with Points of Significance – Traffic and Circulation

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 5d. Will the project create vehicular impacts for intersections in the City of Menlo Park: | a. Change in the level of service at city-controlled intersections<br>b. Change of amount of traffic to a city-controlled intersection already operating at LOS E or below<br>c. Change in the level of service on the local approach of any state-controlled intersection. The intersection of Ravenswood/Middlefield and the intersection of Willow/Middlefield are excluded from this significance criterion<br>d. Change of amount of traffic to the local approach of any state-controlled intersection that is already operating at LOS F | a. Cause the LOS to drop below D (defined as 40 seconds or more average vehicle delay )<br>b. Cause traffic impacts above "statistical zero" (defined as increase of 0.5 seconds or more of delay)<br>c. Cause the LOS to drop below E (60 seconds or more average stopped delay per vehicle)<br>d. Cause traffic impacts above "statistical zero" (defined as increase of 0.5 seconds or more of delay) | Santa Clara County Valley Transportation Authority Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item N(a)<br>City of Menlo Park Policy Resolution 99-3 |
| 5e. Will the project create vehicular impacts for intersections within the City of East Palo Alto? | a. Change in the level of service<br>b. Increase the V/C ratio for E and F operations | a. Cause the LOS to decline from D or better to E or F<br>b. Increase the V/C at intersections operating at E or F by 0.05 or more | Santa Clara General Plan<br>Santa Clara County Environmental Evaluation Checklist Item N(a) |
| 6. Will the project result in traffic impacts to surrounding residential neighborhoods? | Increased traffic on residential streets | a. Creation of cut-through traffic<br>b. Creation of conflicts between automobiles and bikes and pedestrians | City of East Palo Alto General Plan |
| 7. Will the Project create additional construction traffic causing substantial reduction in access to land uses or a reduction in mobility? | a. Change in access to land uses in the study-area (even if temporary in nature) for autos, transit vehicles, pedestrians, or bicyclist | a. Cause substantial reduction in access to land uses | Santa Clara County Valley Transportation Authority Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item N(h) |
| | b. Change in mobility for users of the transportation system in the study area | b. Cause substantial reduction in mobility for users | |

**Table 4.4-14**

Evaluation Criteria with Points of Significance – Traffic and Circulation

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| | c. Change in the amount or the availability of parking supply currently necessary to support existing land uses in the study area | c. Cause a temporary loss of or substantial reduction in the availability of parking supply | |
| | d. Impacts on the operation of public transit | d. Service interruptions or rerouting of bus routes to the point that substantial schedule interruptions result or rerouting is required | |
| | e. The creation of unsafe conditions for autos, bicycles, or pedestrians | e. Create substantially unsafe conditions | |

## 4.4.D BACKGROUND CONDITIONS

### 4.4.D.1 Planned Improvements

The City of Palo Alto does not have a program to widen roadways within the City. The current widening of Sand Hill Road is the only project that is anticipated. Instead, the City of Palo Alto focuses on intersection improvements. Table 4.4-15 outlines the planned improvements at five intersections within the City of Palo Alto. These improvements were included in the intersection operations analysis for the year in which they are expected to be completed.

The City of Menlo Park has identified intersections where traffic improvements will facilitate operations. Table 4.4-15 also identifies six intersections in Menlo Park where improvements have been identified by the City as part of the General Plan. These improvements are not approved or funded. In addition, the City Council of Menlo Park recently adopted Policy Resolution 99-3 which states that new projects that will contribute traffic to Sand Hill Road and/or to the Sand Hill Road/Santa Cruz Avenue intersection be analyzed on the assumption that the reconstruction and/or widening of the bridge and contemplated modifications to the intersection will not be constructed. The intersection of Middlefield and Willow is the only intersection listed in Table 4.4-15 that is not affected by Policy Resolution 99-3. As part of the conditions of approval for the Sand Hill Road projects, Stanford has agreed to make all improvements to Sand Hill Road. This offer cannot be revoked until 2007. Therefore, the Sand Hill Road improvements are funded.

### *Sand Hill Road Improvements*

Several modifications will be made to the roadway system as a result of the Sand Hill Road projects. Some of these improvements have been made and some are currently under construction. These improvements, which are all under the jurisdiction of Palo Alto or Santa Clara County or are on Stanford maintained roads, are noted below. Each of these improvements is included in the background and project traffic analysis.

- Widen Sand Hill Road from Arboretum to the bridge across San Francisquito Creek from two lanes to four lanes.
- Extend Sand Hill Road from Arboretum to El Camino Real as a two-lane roadway.
- Modify the intersection at Sand Hill Road, El Camino Real, and Alma to allow turns to and from Sand Hill Road.
- Widen Quarry Road from two lanes to four lanes from El Camino Real to Welch, with full signalized access at El Camino Real.
- Remove Stanford Shopping Center/El Camino Real signal.
- Construct Vineyard Street between Sand Hill Road and Quarry Road as a two-lane roadway with signalized intersections at both Sand Hill and Quarry Roads.
- Construct Palo Street between Quarry Road and Palm Drive as a two-lane roadway.
- Construct Stockfarm Road as a two-lane roadway between Sand Hill Road and Campus Drive West.

## Table 4.4-15

Planned Intersection Improvements in Palo Alto and Menlo Park

| Intersection | Planned Improvement | Est. Date of Completion 2003 | Est. Date of Completion 2010 | No Date Estab-lished[1] |
|---|---|---|---|---|
| **Palo Alto** | | | | |
| Middlefield/ East Meadow | Lengthen NB and SB left-turn pockets 100 feet on Middlefield and add left turn phasing | X | | |
| El Camino Real/ Embarcadero/ Galvez | Add SB left-turn lane on ECR. | X | | |
| Page Mill/ Hanover | Add NB right-turn lane on Hanover; restripe SB Hanover approach. Add EB & WB left-turn lanes on Page Mill Rd. | X | | |
| Junipero Serra/Page Mill/Foothill | Widen Page Mill on both approaches to provide a second left-turn lane; provide an exclusive right-turn lane on the WB approach of Page Mill. Widen Junipero Serra on the west side to provide an exclusive SB right-turn lane. Widen Foothill on the east side to provide a second left-turn lane. | X | | |

## Table 4.4-15

Planned Intersection Improvements in Palo Alto and Menlo Park

| Intersection | Planned Improvement | Est. Date of Completion 2003 | Est. Date of Completion 2010 | No Date Established[1] |
|---|---|---|---|---|
| El Camino Real/ Page Mill | Add southbound, westbound, and northbound right turn lane, extend westbound left turn lane by 100 feet. | | X | |
| **Menlo Park**[1] | | | | |
| Junipero Serra/Santa Cruz/ Alpine | Widen NB approach to add exclusive right-turn lane. | | | X |
| El Camino Real/Glenwood/Valparaiso | Restripe NB and SB approaches to add third through lane on each. Widen WB approach to add exclusive right-turn lane. | | | X |
| El Camino Real/ Ravenswood/ Menlo | Widen NB approach to add third through lane. Restripe SB approach to add third through lane. Widen WB approach to add exclusive right-turn lane. | | | X |
| Middlefield/ Ravenswood | Modify right turn island to widen Middlefield and Ravenswood and add second NB left-turn lane. | | | X |
| Middlefield/ Willow[2] | Add second SB left-turn lane. Restripe EB approach. Modify signal phasing. | | | X |
| Sand Hill/Santa Cruz | Widen Sand Hill Road to add second EB left-turn lane. (The following two improvements are included in the Sand Hill Road proposed project.) Widen Sand Hill Road to add second WB left turn lane. Widen Sand Hill Road to add exclusive WB right turn lane. Modify signal phasing. | | | X |

Source: Sand Hill Road Corridor Projects EIR and the City of Palo Alto.

1 These improvements are not assumed to be implemented in the background condition. The intersection improvements identified in the General Plan do not represent an approved list of improvements being pursued or funded by Menlo Park. General Plan improvements have been superceded by Menlo Park Policy Resolution 99-3.

2 This intersection improvement was assumed in the background analysis.

### *Sand Hill Road Mitigation Measures*

The Sand Hill Road Corridor Projects EIR identified roadway mitigation measures as part of that project, which were later made conditions of approval. The mitigation measures that were identified are noted in Table 4.4-16. The mitigation measures listed were assumed in the Future (Background) and Project analysis, except those noted with an asterisk, which are analyzed as alternative mitigation measures.

Figure 4.4-8A, 4.4-8B, and 4.4-8C illustrate the lane geometry for the Future (Background) and Project conditions used in this analysis. Lane geometry is the same for both sets of conditions.

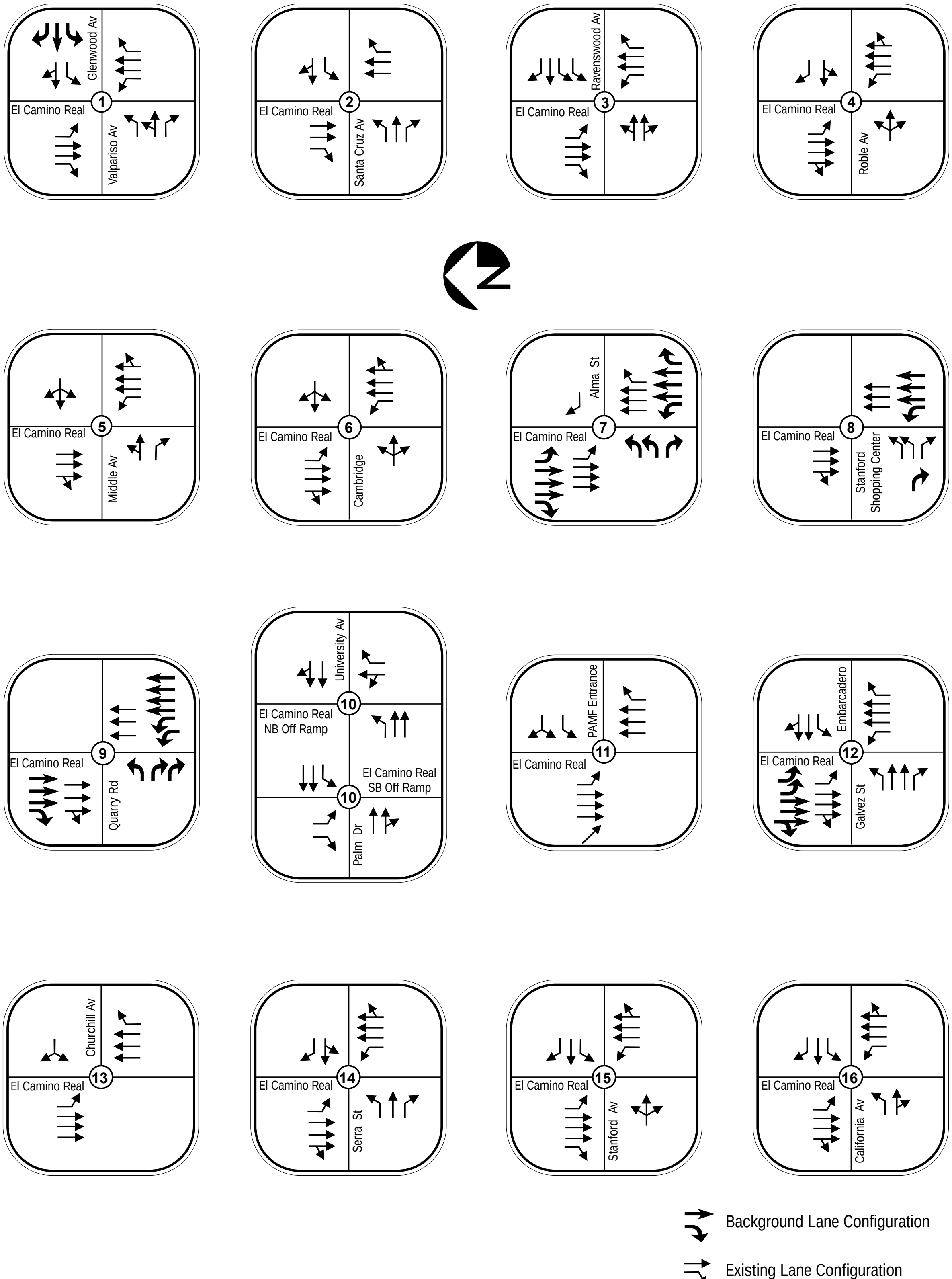
## Table 4.4-16

### Sand Hill Road Roadway Mitigation Measures

| Jurisdiction | Intersection | Mitigation Measure |
|---|---|---|
| Stanford | Arboretum/Galvez | Traffic Signal or Roundabout |
| Menlo Park | Sand Hill/Santa Cruz* | In addition to the General Plan improvements noted on Table 4.4-15 add a NB Right Turn |
| | Junipero Serra/Alpine/ Santa Cruz* | In addition to the General Plan improvements noted on Table 4.4-15 add a SB Left Turn |
| | Middlefield/Willow* | In addition to the General Plan improvements noted in Table 4.4-15 add leading left turns in north and south directions. |
| | El Camino Real/ Ravenswood* | The General Plan improvements noted in Table 4.4-15. |
| | El Camino Real/Valparaiso/Glenwood* | In addition to the General Plan improvements noted in Table 4.4-15 add approach phasing in the east/west direction and leading left phasing in north/south direction. |

Source: Sand Hill Road Corridor Projects EIR

* Not included in analysis based on City of Menlo Park Policy Resolution 99-3. The policy is assumed to preclude the General Plan's improvements at the intersection of Sand Hill Road and Santa Cruz Avenue mitigation measures certified in the 2775 Sand Hill Road Environmental Impact Report (EIR) at the intersection of Sand Hill Road and Santa Cruz Avenue, and other intersection mitigation from the Sand Hill Road EIR.




Source: Korve Engineering 6/8/2000

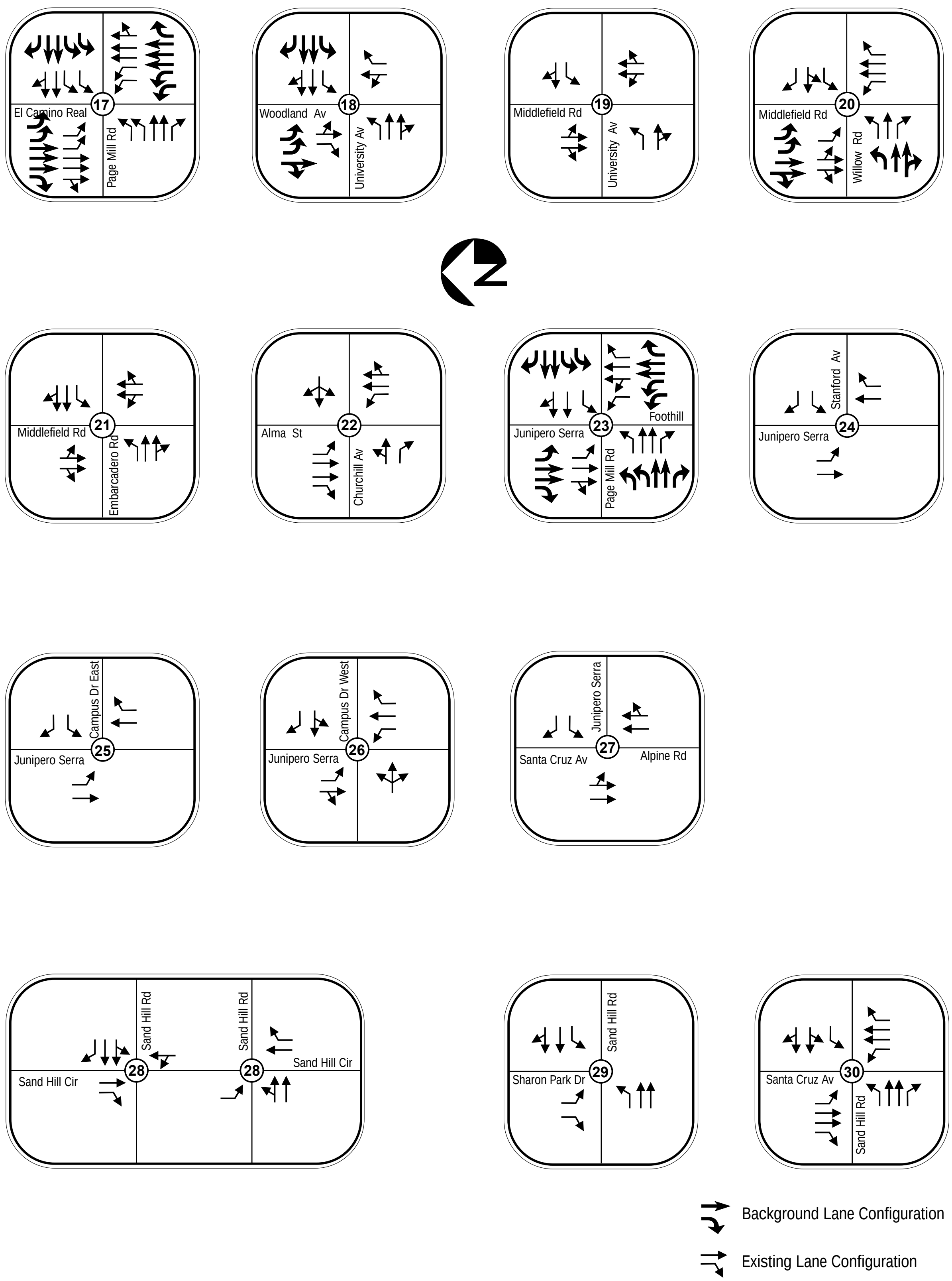
Stanford University
CP/GUP Project EIR

# FUTURE and PROJECT LANE GEOMETRY

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-8A

File: 736167\graphics\traffic\FutureConfigB Date: 6/20/2000



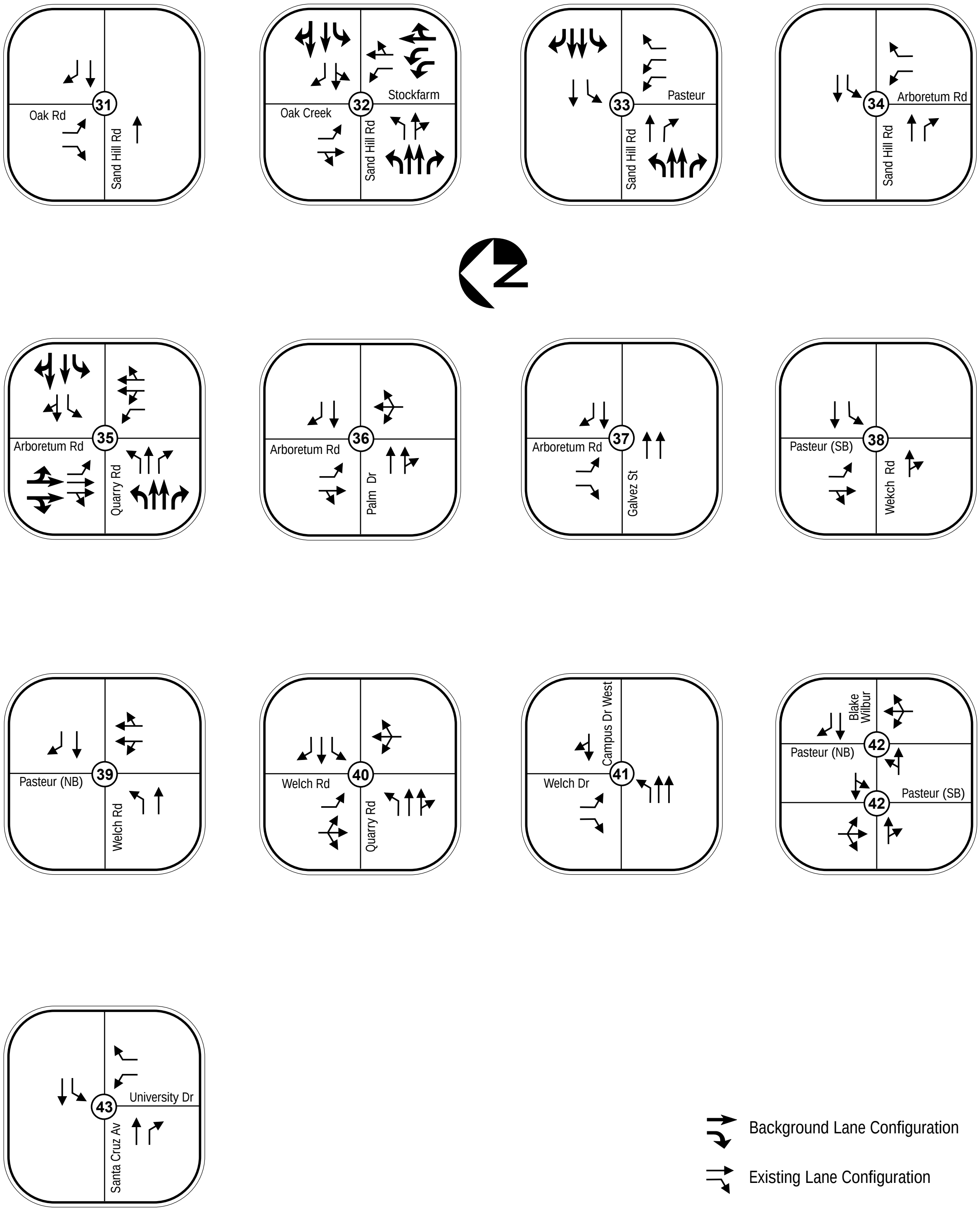

Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# FUTURE and PROJECT LANE GEOMETRY

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-8B




Source: Korve Engineering 6/8/2000

**Stanford University**
**CP/GUP Project EIR**

# FUTURE and PROJECT LANE GEOMETRY

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-8C**

# 4.4.E IMPACT ANALYSIS

Due to the complexity of evaluating the project's traffic and circulation impacts, the impact analysis first presents a general discussion of the project's travel demand (trip generation), effect on intersections, freeways, and parking. Section 4.4.F evaluates the project's impacts with the addition of a new roadway. Section 4.4.G assesses the significance of the project's impacts against the criteria in Table 4.4-14, and discusses mitigation measures for these impacts.

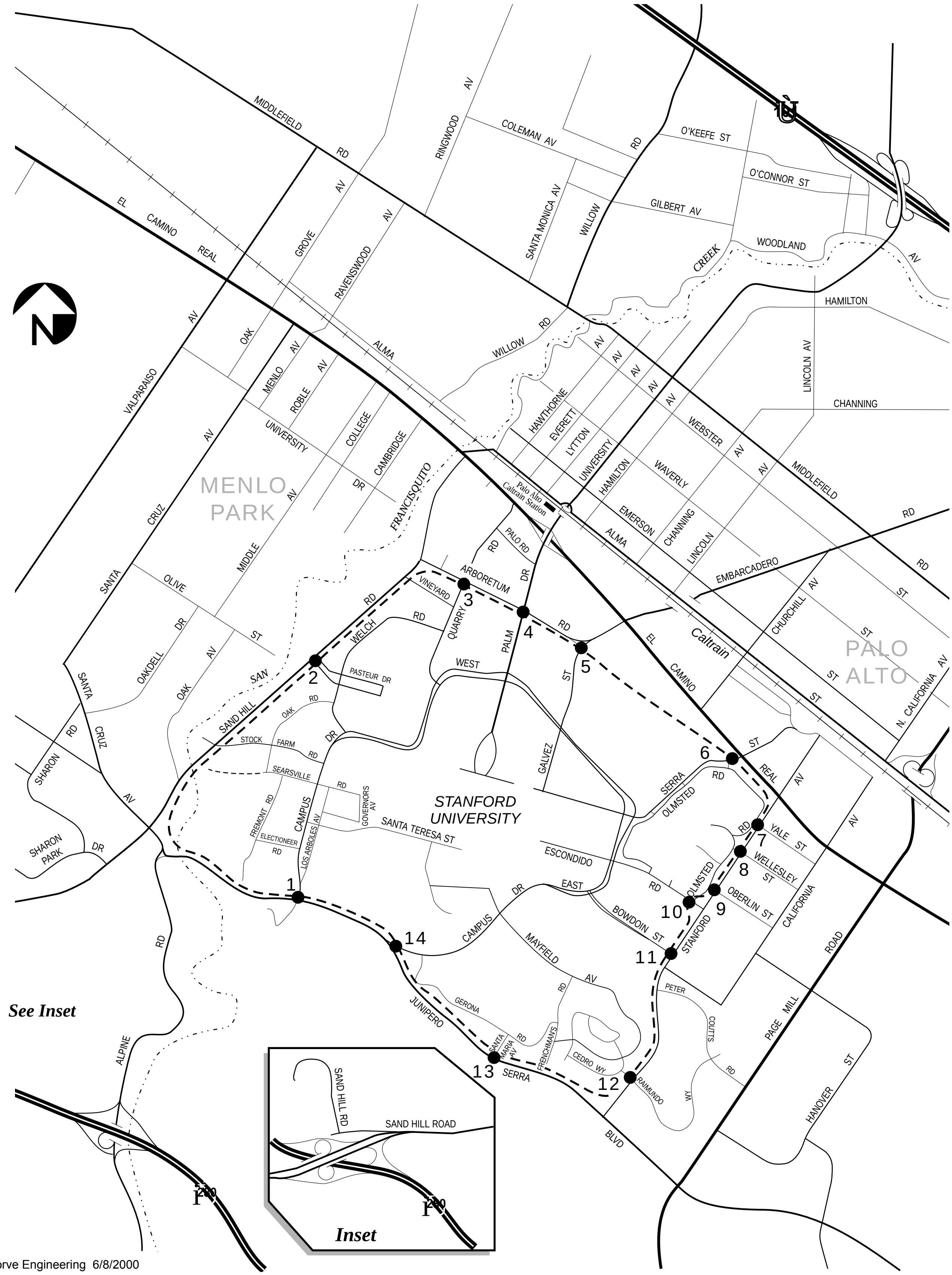
## 4.4.E.1 Project Travel Demand Rates

Project travel demand refers to the net new vehicle, transit and pedestrian traffic generated by the CP/GUP. This section provides an estimate of the trip rates for potential travel demand that would be generated by the proposed GUP. Trip generation was based on traffic counts conducted at 14 cordon gateways (shown on Figure 4.4-9), which provide access into and out of the Campus and therefore reflects current levels or rates of non-auto transportation mode use, but not potential increased future use under a "no net new commute trips" standard as proposed by the County. The gateways include the following:

1. Campus Drive West north of Junipero Serra Boulevard
2. Pasteur Drive east of Sand Hill Road
3. Quarry Road south of Arboretum
4. Palm Drive south of Arboretum
5. Galvez Street south of Arboretum
6. Serra Street south of Arboretum
7. Yale Street west of Stanford Avenue (Escondido Village)
8. Wellesley Street west of Stanford Avenue (Escondido Village)
9. Oberlin Street west of Stanford Avenue (Escondido Village)
10. Olmsted Road north of Escondido Road (Escondido Village)
11. Bowdoin west of Stanford Avenue
12. Raimundo west of Stanford Avenue
13. Santa Maria Avenue north of Junipero Serra Boulevard
14. Campus Drive East north of Junipero Serra Boulevard.

Stanford conducted a cordon line count of these gateways into and out of the campus in fall 1999. A cordon line is an imaginary line that is used to enclose an area, such as a central business district, a shopping center, or a campus-area like Stanford. Vehicles entering and leaving the area during a specified period are counted, and "cut through" traffic that enters and leaves the area without stopping is calculated. These data provide information concerning the level of trip-making activity associated with the enclosed area. Table 4.4-17 illustrates the cordon counts collected at the 14 gateways.

File: 736167\graphics\traffic\1998 Cordon Date: 6/20/2000




Source: Korve Engineering 6/8/2000

**Stanford University**
**CP/GUP Project EIR**

# NOVEMBER 1998 CORDON COUNT LOCATIONS

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-9**

The cordon count data and data on trip rates was generated by Fehr and Peers Associates, consultant to Stanford University. As part of the preparation of this EIR analysis, these data were reviewed by the County's traffic engineering consultant. While the survey data was found to be sound and the total external trip rate accurate, discrepancies in the directional split were uncovered and additional information was requested from Fehr and Peers Associates. As a result of the peer review of this data by the EIR traffic consultant, some modifications to the data were subsequently made by Fehr and Peers Associates. The EIR consultant then used the adjusted data to estimate future traffic as a result of the CP/GUP.

**Table 4.4-17**

Total 1998 Stanford-Related Traffic Generation

| Trip Type | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|
| | **In** | **Out** | **Total** | **In** | **Out** | **Total** |
| Total cordon count | 5,738 | 2,206 | 7,944 | 2,909 | 5,311 | 8,220 |
| % of inbound trips which are through trips | 4% | | | 5% | | |
| Through trips | (230) | (230) | (460) | (145) | (145) | (290) |
| Welch Road Medical office building trips | (610) | (194) | (804) | (435) | (593) | (1,029) |
| Campus-related trips | 4,898 | 1,782 | 6,680 | 2,329 | 4,573 | 6,901 |

Source: Technical Memorandum by Fehr & Peers Associates, Inc. (and reviewed by the KORVE Engineering as noted above) for the Stanford Planning Office, dated November 1, 1999.

### 4.4.E.2 Existing Trip Generation

Table 4.4-18 presents the total trip generation to the Plan area. The methodology to estimate the number of trips generated included:

- determining the total peak hour traffic travelling to and from campus;
- determining the percentage of total traffic travelling through;
- determining the amount of traffic generated by non-Stanford medical office buildings;
- determining the trip generation of campus residents;
- determining the trip generation of the hospitals;
- deriving the commuting population groups' trip rates

Based on the estimated trip rates in Table 4.4-18, Stanford currently generates 3,968 trips in the AM peak hour and 4,395 trips in the PM peak hour. The Stanford Hospitals are estimated to generate 2,570 trips in the AM peak hour and 2,540 trips in the PM peak hour. The total estimated AM peak hour trips are 6,538, which is slightly fewer than the 6,680 trips (Table 4.4-17) determined by the cordon line counts. During the PM peak hour the total estimated trips are 6,935 (from Table 4.4-18), which is slightly greater than the 6,901 trips (Table 4.4-15) determined by the cordon line count. The cordon line did not directly measure the Stanford Hill residential area east of Stanford Avenue, which may account for this small difference. Total external trip rates shown in Table 4.4-18 do account for all trips to and from the campus, including Stanford Hill. These per person trip rates represent the number of vehicle trips generated by each member of the campus population groups identified in Table 4.4-18. In the future, if observed traffic counts increase from existing volumes, the percentage increase would likely reflect both Stanford-generated trips and non-Stanford through traffic.

### 4.4.E.3 Future Trip Generation with General Use Permit

The proposed GUP includes the addition or expansion of facilities on several parts of the campus. The generation of new trips by these facilities was determined by applying the existing trip generation rates identified by Fehr & Peers to the net campus population growth projected for each type of facility. Population growth categories include additional students, faculty, and staff on the campus and additional resident population from new housing. Table 4.4-19 identifies the net campus population growth and newly generated vehicle trips associated with each of the new facilities, except the proposed arena and performing arts center (also referred to as theater) facilities. Table 4.4-20 presents the net new campus population and vehicle trips that would occur with the GUP, given simultaneous events at the arena and theater, which would occur infrequently. The AM peak hour trip generation is the same for each of these scenarios. Only the PM peak hour trips differ since the PM peak hour is when events are projected to occur at the arena and theater. The effects of traffic to the arena and theater were evaluated for the PM peak hour in this analysis. However, the majority of traffic to these facilities will occur outside of the PM peak hour, such as from 6:30 pm to 7:30 pm. Project specific traffic studies will be required for these facilities once a specific location within the Campus has been proposed. Those specific traffic studies may result in additional mitigation measures, particularly at intersections in the immediate area of the facility.

Buildout of the proposed GUP housing units would result in construction of 2,000 additional graduate student housing units, allowing 1,217 graduate students to relocate from off-campus locations to the new on campus housing units (when increases in the population of graduate students are taken into account). This relocation has two effects. First, the existing trips from 1,217 off-campus housing units would be removed from the study area roadways. This results in a reduction of 205 AM peak hour vehicle trips and 184 PM peak hour vehicle trips. Second, new trips would be generated for the 2,000 new on-campus graduate student housing units. Given the on-campus location, fewer trips generated from these housing units would use automobiles. Thus, there would be 168 new AM peak hour vehicle trips and 156 new PM peak hour vehicle trips from the added housing. This corresponds to a net reduction of 37 vehicle trips in the AM peak hour and 28 vehicle trips in the PM peak hour, as a result of relocating 1,217 graduate students from off-campus to on-campus housing. Because projected increases in the population of faculty and staff is greater than the number of additional units serving this population, there will be no net reduction in trips resulting from this housing. Table 4.4-20 shows the changes in travel by direction and by peak hour associated with the additional development on campus and Table 4.4-21 shows trip generation specifically for graduate students.

## Table 4.4-18

### Stanford Campus Area 1998 External Travel – Population and Trips

| Population Group | # People | | | Trips - AM Peak Hour | | | Trips - PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | General Campus | Med School | Total | Trips In | Trips Out[1] | Total | Trips In[1] | Trips Out | Total |
| **Table A: Campus Rates for Community Plan/General Use Permit** | | | | | | | | | |
| Commuters | | | | | | | | | |
| - Faculty | 590 | 253 | 843 | 140 | 43 | 183 | 51 | 113 | 164 |
| - Staff | 4,931 | 2,323 | 7,254 | 1,204 | 370 | 1,574 | 435 | 972 | 1,407 |
| - Students | 4,146 | 352 | 4,498 | 576 | 175 | 751 | 211 | 468 | 679 |
| - Others | 1,707 | 0 | 1,707 | 288 | 89 | 377 | 104 | 232 | 336 |
| Total | 11,374 | 2,928 | 14,302 | 2,208 | 677 | 2,885 | 801 | 1,785 | 2,586 |
| Campus Residents | | | | | | | | | |
| - Faculty | 615 | 277 | 892 | 36 | 0 | 36 | 268 | 18 | 285 |
| - Staff | 163 | 60 | 223 | 9 | 0 | 9 | 67 | 4 | 71 |
| - F/S Spouses | 693 | 297 | 990 | 75 | 0 | 75 | 0 | 69 | 69 |
| - Grad Students | 3,156 | 312 | 3,468 | 312 | 166 | 479 | 142 | 302 | 444 |
| - GS Spouses | 807 | 80 | 887 | 0 | 165 | 165 | 292 | 75 | 366 |
| - Undergraduates | 5,904 | 0 | 5,904 | 236 | 83 | 319 | 201 | 372 | 573 |
| Subtotal | 11,338 | 1,026 | 12,364 | 668 | 414 | 1,082 | 969 | 840 | 1,809 |
| Total | 22,712 | 3,954 | 26,666 | 2,876 | 1,091 | 3,968 | 1,771 | 2,625 | 4,395 |
| **Table B: Hospital Rates for Cumulative Impact Analysis** | | | | | | | | | |
| - Hospital Staff | - | - | 3,507 | 168 | 561 | 2,209 | 456 | 1,543 | 1,999 |
| - Hospital patients/visitors[2] | - | - | 3,608 | 289 | 72 | 361 | 216 | 325 | 541 |
| Total | | | 7,115 | 1,937 | 633 | 2,570 | 672 | 1,868 | 2,540 |

1 Includes all campus residents, including spouses. Trips may be made outside the campus for several reasons, such as drop-off trips or by spouses.

2 Outpatients plus visitors, as calculated for the average daytime populations in the annual reports

# Table 4.4-18 Cont.

## Stanford Campus Area External Travel – Trip Rates

| Population Group | Trip Rate - AM Peak Hour | | | Trip Rate - PM Peak Hour | | |
|---|---|---|---|---|---|---|
| | Rate In[3] | Rate Out[3] | Total | Rate In[3] | Rate Out[3] | Total |
| **Table A: Campus Trips** | | | | | | |
| Commuters | | | | | | |
| - Faculty | 0.166 | 0.051 | 0.217 | 0.060 | 0.134 | 0.194 |
| - Staff | 0.166 | 0.051 | 0.217 | 0.060 | 0.134 | 0.194 |
| - Students | 0.128 | 0.039 | 0.167 | 0.047 | 0.104 | 0.151 |
| - Others | 0.169 | 0.052 | 0.221 | 0.061 | 0.136 | 0.197 |
| Campus Residents | | | | | | |
| - Faculty | 0.040 | 0.000 | 0.040 | 0.300 | 0.020 | 0.320 |
| - Staff | 0.040 | 0.000 | 0.040 | 0.300 | 0.020 | 0.320 |
| - F/S Spouses | 0.076 | 0.000 | 0.076 | 0.000 | 0.070 | 0.070 |
| - Grad Students | 0.090 | 0.048 | 0.138 | 0.041 | 0.087 | 0.128 |
| - GS Spouses | 0.000 | 0.186 | 0.186 | 0.329 | 0.084 | 0.413 |
| - Undergraduates | 0.040 | 0.014 | 0.054 | 0.034 | 0.063 | 0.097 |
| **Table B: Hospital Trips** | | | | | | |
| - Hospital Staff | 0.470 | 0.160 | 0.630 | 0.130 | 0.440 | 0.570 |
| - Hospital patients/visitors | 0.080 | 0.020 | 0.100 | 0.060 | 0.090 | 0.150 |

Source: Technical Memorandum by Fehr & Peers Associates, Inc. for the Stanford Planning Office, dated November 1, 1999.

3 Rates indicate the number of trips per faculty member, staff member or student.

Note: The trip generation rates developed from existing traffic volumes include the current level of TDM.

# Table 4.4-19

## Stanford General Use Permit Trip Generation without Arena and Performing Arts Center

| Land Use | Size | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rate In | Rate Out | Trips In | Trips Out | Total Trips | Rate In | Rate Out | Trips In | Trips Out | Total Trips |
| Undergraduate Students | | | | | | | | | | | |
| New On-Campus | 100 | 0.04 | 0.014 | 4 | 1 | 5 | 0.034 | 0.063 | 3 | 6 | 10 |
| Graduate Students | | | | | | | | | | | |
| New On-Campus | 683 | 0.09 | 0.048 | 61 | 33 | 94 | 0.041 | 0.087 | 28 | 59 | 87 |
| Relocated from Off-Campus | 1217 | 0.09 | 0.048 | 110 | 58 | 168 | 0.041 | 0.087 | 50 | 106 | 156 |
| Negative Assignment | (1217) | (0.133) | (0.035) | (162) | (43) | (205) | (0.056) | (0.095) | (68) | (116) | (184) |
| Hospital Res/Post Docs | | | | | | | | | | | |
| On-Campus Students | 350 | 0 | 0.04 | 0 | 14 | 14 | 0.02 | 0.3 | 7 | 105 | 112 |
| On-Campus Dependents | 175 | 0 | 0.076 | 0 | 13 | 13 | 0.07 | 0.0 | 12 | 0 | 12 |
| Off-Campus Students | 233 | 0.172 | 0.045 | 40 | 10 | 51 | 0.072 | 0.122 | 17 | 28 | 45 |
| Faculty/Staff | | | | | | | | | | | |
| On-Campus Faculty/Staff | 687 | 0 | 0.04 | 0 | 27 | 27 | 0.02 | 0.3 | 14 | 206 | 220 |
| Faculty/Staff Dependents | 611 | 0 | 0.076 | 0 | 46 | 46 | 0.07 | 0 | 43 | 0 | 43 |
| Off-Campus Faculty/Staff | 248 | 0.172 | 0.045 | 43 | 11 | 54 | 0.072 | 0.122 | 18 | 30 | 48 |
| Other | 192 | 0.175 | 0.046 | 34 | 9 | 42 | 0.073 | 0.124 | 14 | 24 | 38 |
| Totals | | | | 129 | 182 | 311 | | | 138 | 450 | 588 |

Source: Korve Engineering, April 2000

## Table 4.4-20

### Stanford General Use Permit Trip Generation with Arena and Performing Arts Center

| Land Use | Size | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rate In | Rate Out | Trips In | Trips Out | Total Trips | Rate In | Rate Out | Trips In | Trips Out | Total Trips |
| Undergraduate Students | | | | | | | | | | | |
| New On-Campus | 100 | 0.04 | 0.014 | 4 | 1 | 5 | 0.034 | 0.063 | 3 | 6 | 10 |
| Graduate Students | | | | | | | | | | | |
| New On-Campus | 683 | 0.09 | 0.048 | 61 | 33 | 94 | 0.041 | 0.087 | 28 | 59 | 87 |
| Relocated from Off-Campus | 1217 | 0.09 | 0.048 | 110 | 58 | 168 | 0.041 | 0.087 | 50 | 106 | 156 |
| Negative Assignment | 1217 | (0.133) | (0.035) | (162) | (43) | (205) | (0.056) | (0.095) | (68) | (116) | (184) |
| Hospital Res/Post Docs | | | | | | | | | | | |
| On-Campus Students | 350 | 0 | 0.04 | 0 | 14 | 14 | 0.02 | 0.3 | 7 | 105 | 112 |
| On-Campus Dependents | 175 | 0 | 0.076 | 0 | 13 | 13 | 0.07 | 0.0 | 12 | 0 | 12 |
| Off-Campus Students | 233 | 0.172 | 0.045 | 40 | 10 | 51 | 0.072 | 0.122 | 17 | 28 | 45 |
| Faculty/Staff | | | | | | | | | | | |
| On-Campus Faculty/Staff | 687 | 0 | 0.04 | 0 | 27 | 27 | 0.02 | 0.3 | 14 | 206 | 220 |
| Faculty/Staff Dependents | 611 | 0 | 0.076 | 0 | 46 | 46 | 0.07 | 0 | 43 | 0 | 43 |
| Off-Campus Faculty/Staff | 248 | 0.172 | 0.045 | 43 | 11 | 54 | 0.072 | 0.122 | 18 | 30 | 48 |
| Other | 192 | 0.175 | 0.046 | 34 | 9 | 42 | 0.073 | 0.124 | 14 | 24 | 38 |
| Arena | 4600 | 0 | 0 | 0 | 0 | 0 | 0.033 | 0 | 153 | 0 | 153 |
| Performing Arts Center | 2800 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 56 | 0 | 56 |
| Totals | | | | 129 | 182 | 311 | | | 347 | 450 | 796 |

**Table 4.4-21**

Graduate Student Trip Generation

| Land Use | Size | AM Peak Hour | | | PM Peak Hour (With Arena/Theater) | | |
|---|---|---|---|---|---|---|---|
| | | Trips In | Trips Out | Total | Trips In | Trips Out | Total |
| Relocated Off-Campus | 1,217 | 110 | 58 | 168 | 50 | 106 | 156 |
| Negative Assignment | (1,217) | (162) | (43) | (205) | (68) | (116) | (184) |
| Net Trips Added/ (Reduced) | | (52) | 15 | (37) | (18) | (10) | (28) |

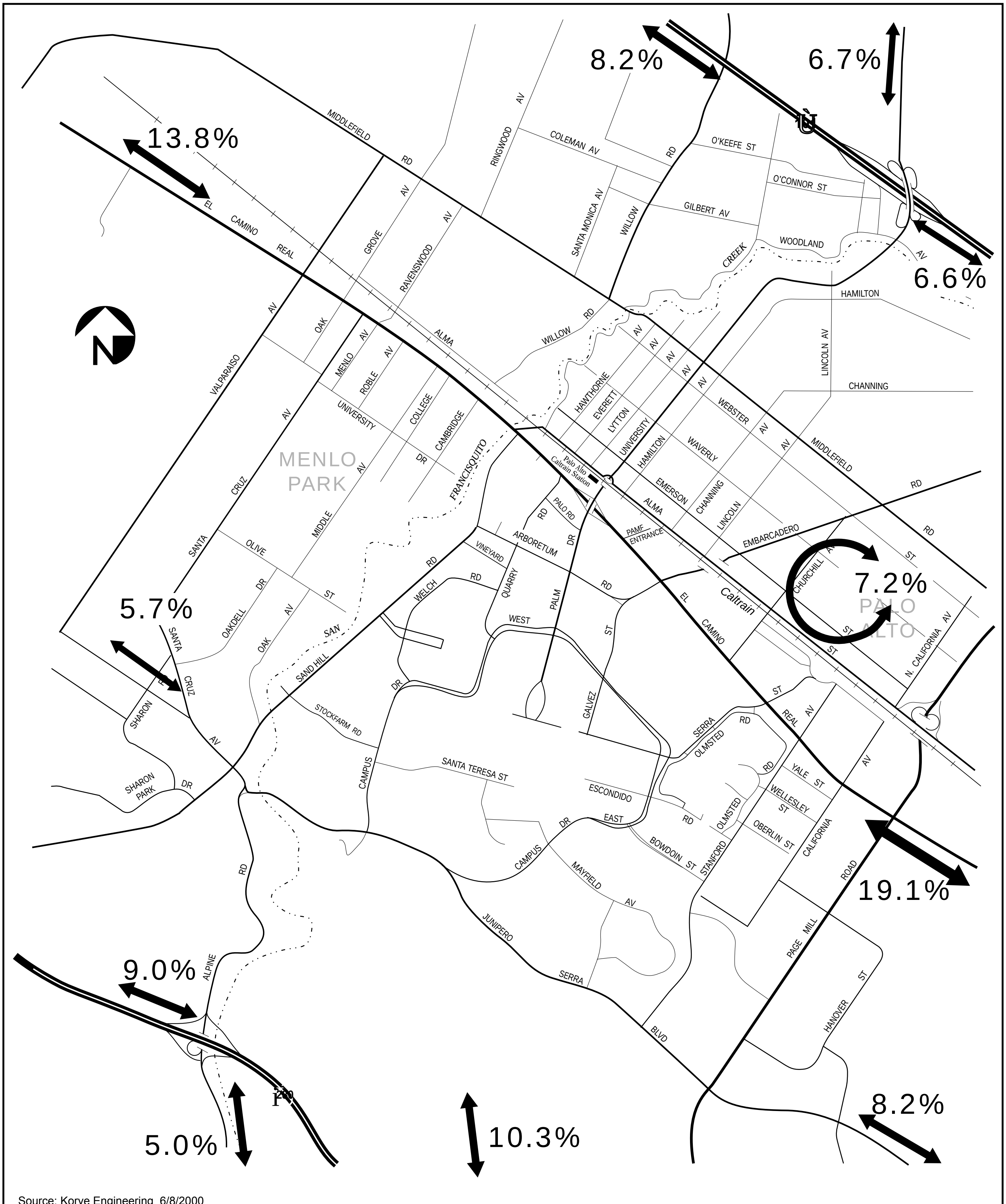
Source: Korve Engineering

Note: Theater is also referred to as the Performing Arts Center

### 4.4.E.4 Trip Distribution

A trip distribution pattern was developed for the proposed project based on zip code data gathered from the Stanford campus address database. All work or school trips to and from the campus were assumed to originate from or terminate at the home zip code of the person making the trip. Thus, the geographic distribution of trips to and from Stanford would correspond with the geographic distribution of zip codes in the database. Two distinct patterns emerged from the zip code data; one for students, and the other for faculty and staff. The differences between these distribution patterns are caused in part by the relatively large proportion of all students (50.8 percent) using on-campus housing, and by socioeconomic factors that influence the off-campus housing and transportation choices available to students, faculty, and staff. The directional distribution of proposed project traffic is graphically illustrated in Figure 4.4-10A for students, and Figure 4.4-10B for faculty and staff.

The trips associated with each new facility were categorized as having the characteristics of either student or faculty/staff type. All trips by faculty and staff or their dependents were included in the faculty/staff trip distribution depicted in Figure 4.4-10B, as well as arena and theater uses. Trips made by on-campus post doctoral students and their dependents were categorized as following the faculty/staff trip distribution pattern. Trips in the “other” category were also assumed to most closely follow the faculty staff patterns. All remaining trips including those by undergraduate students, graduate students, and off-campus post doctoral students, were assumed to follow the student trip distribution pattern depicted in Figure 4.4-10A.



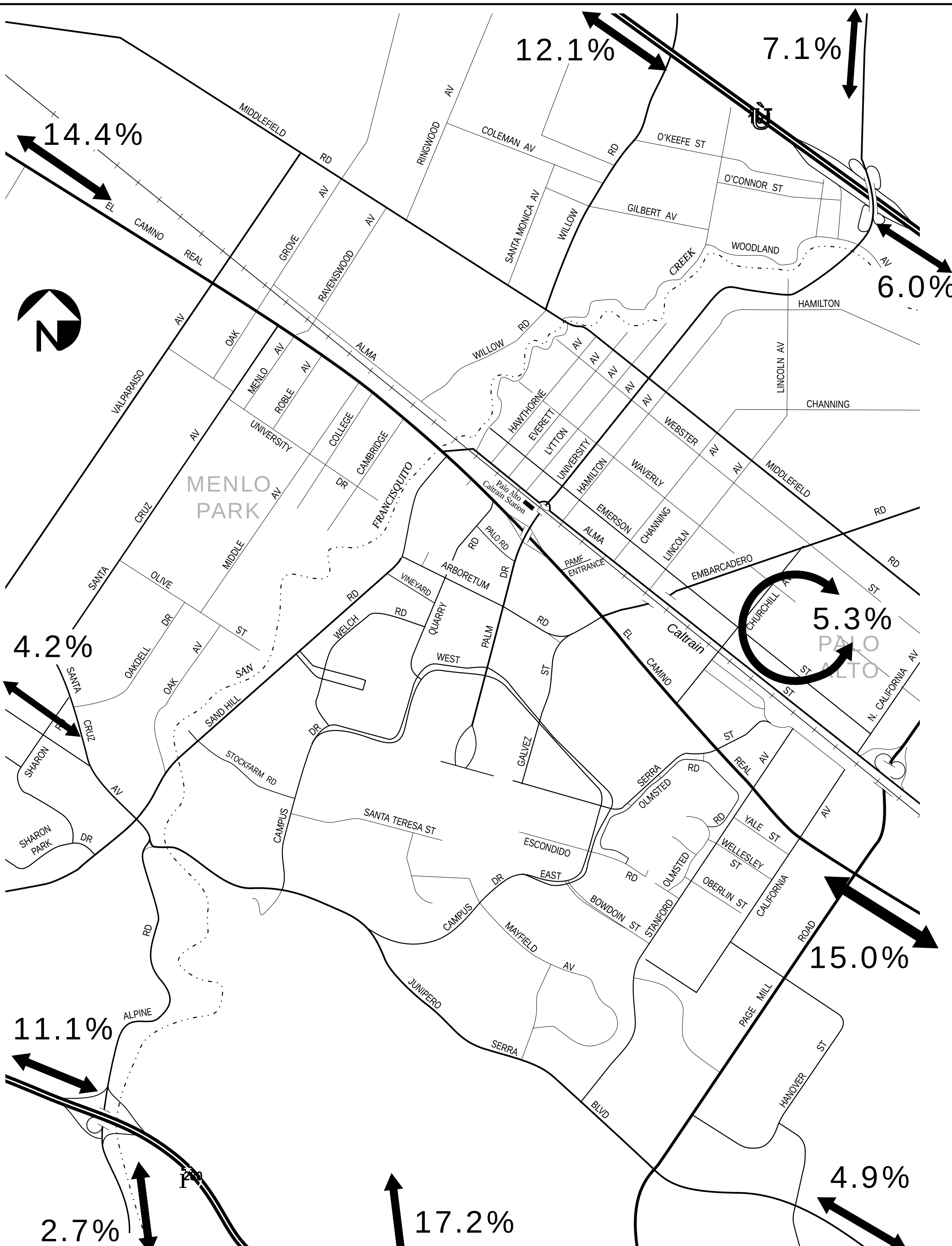

Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**TRIP DISTRIBUTION for STUDENTS**

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-10A**




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**TRIP DISTRIBUTION for FACULTY and STAFF**

PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-10B

New vehicle trips were assigned to study area roadways and added to background traffic volumes using the TRAFFIX traffic impact analysis software. Each new campus facility was represented in TRAFFIX as part of the traffic analysis zones (TAZ's) identified by the CUA Model. Each Stanford TAZ was subdivided into student and faculty/staff zones resulting in a total of eight TRAFFIX zones. The net new trips generated by the GUP for each zone are summarized in Table 4.4-22. Vehicle trips generated by each of these zones were assigned to study area roadways using the appropriate student or faculty/staff distribution. Figure 4.4-11 shows the locations of the studied TAZ's.

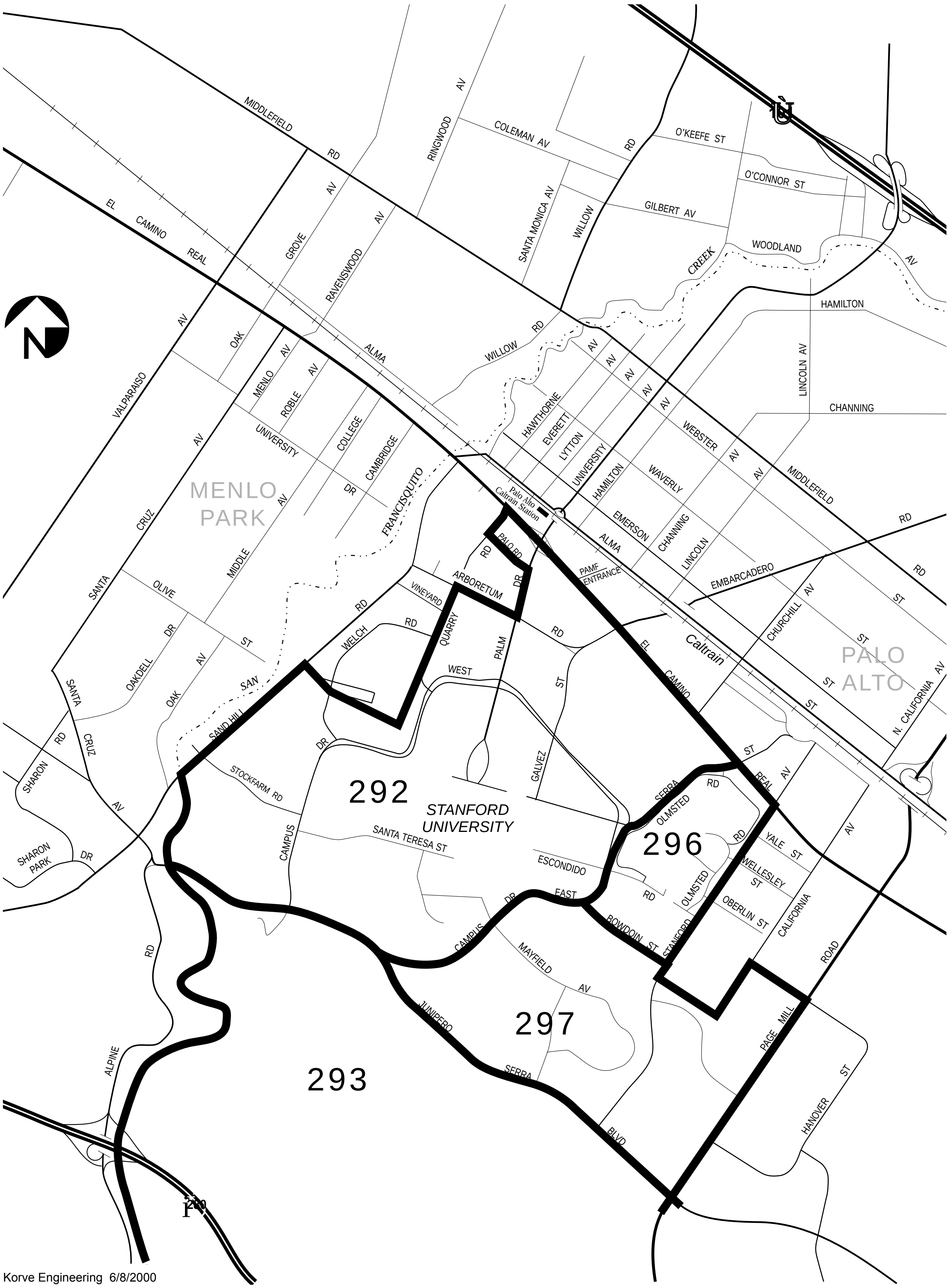
## Table 4.4-22

### Stanford General Use Permit Trip Generation by TRAFFIX Zone

| Zone | Trip Type | AM Peak Hour | | | PM Peak Hour (No Arena/Theater) | | | PM Peak Hour (With Arena/Theater) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Trips In | Trips Out | Total | Trips In | Trips Out | Total | Trips In | Trips Out | Total |
| 292 | Student | (36) | 12 | (24) | (13) | (6) | 191 | 197 | (6) | 191 |
| 292 | Fac/Staff | 76 | 107 | 183 | 96 | 325 | 421 | 96 | 325 | 421 |
| 293 | Student | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 293 | Fac/Staff | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| 296 | Student | 92 | 48 | 140 | 43 | 91 | 134 | 43 | 91 | 134 |
| 296 | Fac/Staff | 0 | 8 | 8 | 7 | 22 | 29 | 7 | 22 | 29 |
| 297 | Student | (3) | (1) | (4) | (1) | (2) | (3) | (1) | (2) | (3) |
| 297 | Fac/Staff | 0 | 6 | 6 | 4 | 17 | 21 | 4 | 17 | 21 |
| Total | | 130 | 180 | 311 | 138 | 448 | 588 | 348 | 448 | 796 |

Notes:

- Theater is also referred to as the Performing Arts Center.
- Totals may be off due to rounding
- Each zone is split into students and faculty/staff for trip distribution purposes.




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

# TRAFFIC ANALYSIS ZONE MAP

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-11

The assignment of project traffic from internal zones to external roadways provides a reasonable estimate of the traffic volumes on off-campus roadways. However, the model does not provide adequate detail within the campus cordon relative to the exact location of new on campus facilities or the specific parking locations that will be used for trips to those facilities. Therefore, the assignment within the campus cordon of new on-campus traffic resulting from the GUP was carried out with a different method than for the off-campus roadways. Rather than use specific assignments, an overall growth rate was applied to on-campus study intersections to determine the with Project traffic volumes. This growth rate was determined by comparing the with and without Project cordon volumes around the campus perimeter. Based on this method, the Project traffic would be approximated by applying a two percent growth rate to the AM peak hour intersection volumes. For the PM peak hour, the Project growth rate would be 3.2 percent without an arena or theater event occurring, and 4.5 percent with an arena and theater event occurring. Since specific locations of growth for development in the Plan area have not been determined, this approach represents the best means of estimating future traffic within the campus area. Future site-specific traffic studies may be required by the County for projects which could have a substantial localized impact, such as redevelopment of Escondido Village, the stable site housing, the performing arts center, sports arena, and major parking structures.

### 4.4.E.5 Intersection Analysis

This section addresses projected Year 2010 Conditions with and without the proposed project without the arena and theater. This section also addresses the Year 2010 Conditions with the proposed project with the arena and theater. The project was added to year 2010 conditions because the GUP development is a series of individual projects. The exact timing of these projects is not known at this time. The reason for including an evaluation of transportation conditions in the Year 2010 is to address changes in travel patterns and volumes which are expected to occur. No increase over existing TDM levels was assumed in this analysis because the “no net new commute trips” policy is not included as part of the project description; the analysis therefore represents a “worst-case scenario” for GUP buildout (i.e., the analysis does not include a higher rate of TDM use than current levels). This analysis assumes that all housing proposed on campus as part of the GUP will be built. If the housing development does not occur in tandem with the other development proposed as part of the CP/GUP, additional regional traffic impacts may occur because additional off campus trips would be attracted to the campus.

Cumulative (background traffic) and project transportation impacts were analyzed together to provide a fuller understanding of future conditions, and to help clearly understand project related impacts.

Table 4.4-23 presents a comparison of the intersection level of service and critical movement delay for the three scenarios described above. Table 4.4-23 results shown in bold indicate a significant impact. The three scenarios include:

- Year 2010 without the project volumes;
- Year 2010 with project without arena and theater volumes; and
- Year 2010 with project with the arena and theater.

### *Future Year 2010 without Project Conditions*

Future Year 2010 volumes were developed by applying growth rates developed from the CUA Model. Figures 4.4-12A, 4.4-12B, and 4.4-12C illustrate the Year 2010 without the project volumes. The volumes were then evaluated for the resulting level of service for each intersection. The results are shown in Table 4.4-23. During the AM peak hour, there are four intersections that operate at level of service E and nine intersections that would operate at level of service F in the future Year 2010 without the project. During the PM peak hour, there are seven intersections that operate at level of service E and 15 intersections that would operate at level of service F.

### *Future Year 2010 with Project without the Arena and Performing Arts Center Conditions*

Future Year 2010 without the project volumes were developed by applying growth rates developed from the CUA Model. Trips generated from the project without the arena and performing arts center (theater) were then added to the base Year 2010 volumes. Figures 4.4-13A, 4.4-13B, and 4.4-13C illustrate the Year 2010 with project without arena and theater volumes. The resulting volumes were then evaluated for the resulting level of service for each intersection. The results are outlined in Table 4.4-23 to show a comparison between the Year 2010 with and without conditions. During the AM peak hour, there are five intersections that would operate at LOS E, and ten intersections that would operate at LOS F. During the PM peak hour, there are eight intersections that would operate at LOS E and 15 intersection that would operate at LOS F. The Project would cause significant impacts at seven intersections during the PM peak hour and nine during both the AM and PM peak hours. Significant impacts include reduction of level of service from D to E or E to F, or increases in delays at intersections already operating at LOS E or F (refer to Table 4.4-8 and Impact TR-5).

### *Future Year 2010 with Project with the Arena and Performing Arts Center Conditions*

Future Year 2010 without the project volumes were developed by applying growth rates developed from the CUA Model. Trips generated from the project with the arena and theater were then added to the base Year 2010 volumes. Figures 4.4-14A, 4.4-14B, and 4.4-14C illustrate the Year 2010 with project with the arena and theater volumes. The resulting volumes were then evaluated for the resulting level of service for each intersection. The results are outlined in Table 4.4-23 to show a comparison between the Year 2010 with and without conditions. The traffic volumes and resulting capacity analysis for the AM peak hour would remain the same with or without the arena and theater, therefore this time period was not analyzed as part of this scenario. During the PM peak hour, there are eight intersections that operate at LOS E and 16 intersections that would operate at LOS F. The Project would cause significant impacts at eight intersections during the PM peak hour and nine during both the AM and PM peak hours.

# Table 4.4-23

## Intersection Level of Service - Comparison of Year 2010 Scenarios

| Intersection | Peak Hour | Year 2010 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No Project | | | With Project without Arena and Theater | | | With Project with Arena and Theater | | |
| | | LOS | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay |
| El Camino Real / Valparaiso | AM | D | 0.879 | 32.1 | **E** | **1.027** | **42** | | | |
| | PM | F | 1.091 | 69.3 | **F** | **1.109** | **77.2** | **F** | **1.109** | **77.2** |
| El Camino Real / Santa Cruz | AM | C | 0.815 | 16.3 | C | 0.819 | 16.4 | | | |
| | PM | C | 0.93 | 22.6 | C | 0.952 | 24.1 | C | 0.952 | 24.1 |
| El Camino Real / Ravenswood | AM | F | 1.136 | 100 | **F** | **1.14** | **102.4** | | | |
| | PM | F | 1.255 | 176 | **F** | **1.269** | **187.1** | **F** | **1.269** | **187.0** |
| El Camino Real / Roble | AM | B | 0.604 | 6.7 | B | 0.607 | 6.7 | | | |
| | PM | B | 0.701 | 13.6 | B | 0.711 | 14 | B | 0.711 | 14.0 |
| El Camino Real / Middle | AM | C | 0.897 | 23.3 | C | 0.9 | 23.5 | | | |
| | PM | F | 1.157 | 104 | **F** | **1.161** | **105.4** | **F** | **1.164** | **107.2** |
| El Camino Real / Cambridge | AM | B | 0.819 | 14.6 | B | 0.822 | 14.6 | | | |
| | PM | B | 0.821 | 13.7 | B | 0.824 | 13.8 | B | 0.827 | 13.9 |
| El Camino Real / Sand Hill / Alma | AM | D | 0.811 | 26.7 | D | 0.815 | 26.9 | | | |
| | PM | F | 1.077 | 71.9 | F | 1.086 | 75.5 | F | 1.086 | 75.5 |
| El Camino Real / Shopping Center | AM | F | N/A | 54.2 | F | N/A | 55.3 | | | |
| | PM | F | N/A | 63.4 | F | N/A | 66.4 | F | N/A | 70.7 |
| El Camino Real / Quarry | AM | B | 0.438 | 10.2 | B | 0.44 | 10.2 | | | |
| | PM | D | 0.708 | 25.5 | D | 0.71 | 25.6 | D | 0.713 | 25.6 |
| El Camino Real / Palm / University | AM | E | 1.032 | 51.9 | E | 1.046 | 54.9 | | | |
| | PM | F | 1.163 | 104.5 | **F** | **1.21** | **126.7** | **F** | **1.222** | **133.8** |
| El Camino Real / PAMF Entrance | AM | A | 0.441 | 4.5 | A | 0.443 | 4.5 | | | |
| | PM | C | 0.645 | 15.3 | C | 0.648 | 15.3 | C | 0.649 | 15.3 |
| El Camino Real / Embarcadero | AM | D | 0.923 | 39.2 | D | 0.928 | 39.7 | | | |
| | PM | E | 0.91 | 40.3 | E | 0.915 | 40.7 | E | 0.92 | 41.3 |
| El Camino Real / Churchill Ave | AM | D | 0.796 | 25.1 | D | 0.798 | 25.1 | | | |
| | PM | D | 0.985 | 39 | D | 0.989 | 39.7 | **E** | **0.991** | **40.1** |
| El Camino Real /Serra | AM | C | 0.626 | 15.7 | C | 0.635 | 16 | | | |
| | PM | C | 0.777 | 18.2 | C | 0.788 | 18.6 | C | 0.793 | 18.9 |
| El Camino Real /Stanford | AM | D | 0.969 | 39.1 | E | 0.984 | 41.7 | | | |
| | PM | E | 1.019 | 41.5 | **E** | **1.048** | **50.1** | **E** | **1.053** | **51.8** |
| El Camino Real / California | AM | C | 0.699 | 18.0 | C | 0.704 | 18.1 | | | |
| | PM | C | 0.745 | 16.5 | C | 0.764 | 17 | C | 0.764 | 17.0 |

# Table 4.4-23

## Intersection Level of Service - Comparison of Year 2010 Scenarios

| Intersection | Peak Hour | Year 2010 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No Project | | | With Project without Arena and Theater | | | With Project with Arena and Theater | | |
| | | LOS | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay |
| El Camino Real / Page Mill | AM | F | 1.072 | 76.3 | F | 1.078 | 78.4 | | | |
| | PM | E | 0.988 | 48.2 | E | 1.002 | 50.9 | E | 1.002 | 50.9 |
| University / Woodland | AM | D | 0.794 | 28.2 | D | 0.798 | 28.3 | | | |
| | PM | D | 0.649 | 33.3 | D | 0.668 | 33.7 | D | 0.668 | 33.7 |
| Middlefield Road/University Ave | AM | C | 0.769 | 20.1 | C | 0.781 | 20.7 | | | |
| | PM | E | 1.027 | 45.9 | **E** | **1.068** | **58.2** | **E** | **1.068** | **58.3** |
| Middlefield / Willow | AM | D | 0.778 | 31.0 | D | 0.780 | 31.0 | | | |
| | PM | F | 1.051 | 72.6 | **F** | **1.057** | **74.5** | **F** | **1.057** | **74.5** |
| Middlefield / Embarcadero | AM | C | 0.702 | 18.5 | C | 0.703 | 18.5 | | | |
| | PM | D | 0.927 | 26.5 | D | 0.93 | 26.8 | D | 0.93 | 26.8 |
| Alma Street / Churchill Avenue | AM | E | 0.944 | 47.9 | E | 0.945 | 48.1 | | | |
| | PM | E | 1.024 | 53.1 | E | 1.027 | 53.9 | E | 1.027 | 53.9 |
| Junipero Serra / Page Mill | AM | F | 1.094 | 91.1 | F | 1.096 | 92.1 | | | |
| | PM | F | 1.276 | 190.8 | **F** | **1.306** | **214.3** | **F** | **1.306** | **214.4** |
| Junipero Serra Blvd./Stanford Ave | AM | C | 0.77 | 16.2 | C | 0.782 | 16.7 | | | |
| | PM | E | 0.992 | 49.5 | **E** | **1.078** | **57.6** | **F** | **1.023** | **61.1** |
| Junipero Serra/Campus Drive East | AM | C | 0.564 | 16.5 | C | 0.573 | 17 | | | |
| | PM | C | 0.698 | 23.0 | C | 0.718 | 23.8 | C | 0.723 | 23.9 |
| Junipero Serra / Campus Drive West | AM | F | 0.966 | 71.4 | **F** | **0.974** | **75.4** | | | |
| | PM | F | 1.218 | 187.8 | **F** | **1.268** | **233.4** | **F** | **1.268** | **233.7** |
| Junipero Serra / Alpine / Santa Cruz | AM | F | 1.252 | 167.6 | **F** | **1.264** | **176.7** | | | |
| | PM | F | 1.15 | 106.0 | **F** | **1.167** | **115.9** | **F** | **1.173** | **116.9** |
| Sand Hill / Sand Hill Circle / I-280 | AM | F | 1.083 | 79.3 | **F** | **1.09** | **82.3** | | | |
| | PM | F | 1.159 | 101.2 | **F** | **1.175** | **110.6** | **F** | **1.178** | **112.5** |
| Sand Hill / Sharon Park | AM | B | 0.858 | 11.1 | B | 0.861 | 11.3 | | | |
| | PM | C | 0.928 | 15.7 | C | 0.942 | 16.6 | C | 0.942 | 16.6 |
| Sand Hill / Santa Cruz | AM | F | 1.066 | 73.3 | **F** | **1.077** | **76.7** | | | |
| | PM | F | 1.206 | 154.4 | **F** | **1.188** | **137.2** | **F** | **1.19** | **138.4** |
| Sand Hill / Oak | AM | F | 1.356 | 245.2 | **F** | **1.357** | **245.8** | | | |
| | PM | F | 1.337 | 225 | **F** | **1.34** | **228.1** | **F** | **1.34** | **228.1** |
| Sand Hill / Oak Creek / Stockfarm | AM | C | 0.821 | 15.3 | C | 0.821 | 15.3 | | | |
| | PM | B | 0.751 | 10.9 | B | 0.752 | 10.9 | B | 0.752 | 10.9 |

# Table 4.4-23

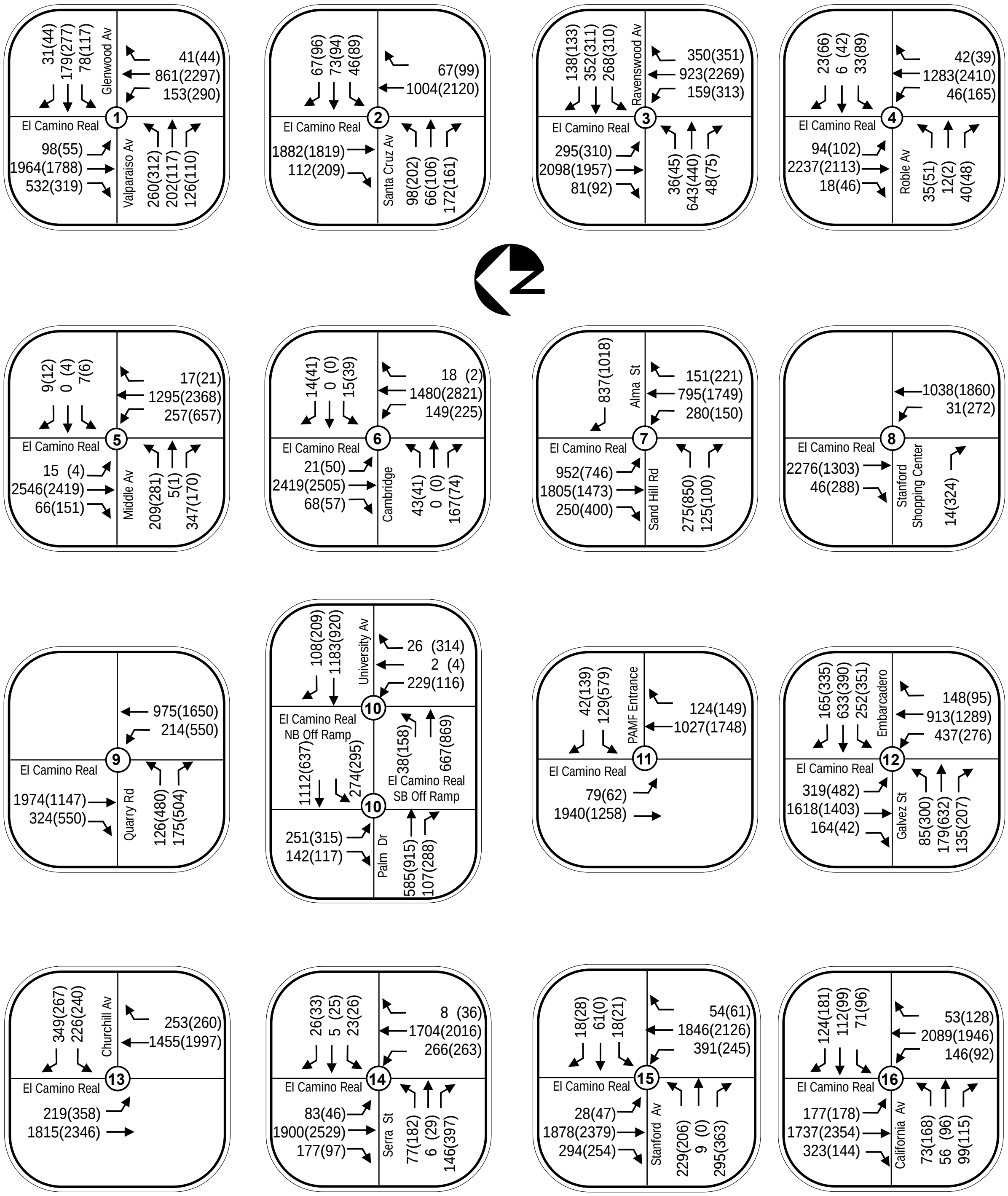
## Intersection Level of Service - Comparison of Year 2010 Scenarios

| Intersection | Peak Hour | Year 2010 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No Project | | | With Project without Arena and Theater | | | With Project with Arena and Theater | | |
| | | LOS | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay |
| Sand Hill / Pasteur | AM | C | 0.646 | 16.3 | C | 0.647 | 16.4 | | | |
| | PM | D | 0.743 | 26.0 | D | 0.744 | 26.1 | D | 0.744 | 26.1 |
| Sand Hill / Arboretum | AM | E | 0.941 | 42.8 | E | 0.945 | 43.3 | | | |
| | PM | F | 1.006 | 65.4 | F | 1.011 | 67.4 | F | 1.013 | 68.1 |
| Arboretum / Quarry | AM | C | 0.67 | 20.1 | C | 0.682 | 20.3 | | | |
| | PM | E | 0.976 | 47.3 | E | 1.011 | 46.5 | E | 1.02 | 48.7 |
| Arboretum Road/Palm Drive | AM | E | 1.026 | 59.2 | **F** | **1.047** | **65.2** | | | |
| | PM | D | 0.912 | 37.0 | **E** | **0.945** | **41.5** | **E** | **0.952** | **42.6** |
| Arboretum / Galvez | AM | B | 0.741 | 9.7 | B | 0.755 | 10.1 | | | |
| | PM | B | 0.636 | 9.6 | B | 0.659 | 9.9 | B | 0.665 | 9.9 |
| Welch / Pasteur southbound | AM | B | 0.273 | 7.7 | B | 0.278 | 7.7 | | | |
| | PM | B | 0.354 | 12.1 | B | 0.368 | 12.2 | B | 0.37 | 12.2 |
| Welch / Pasteur northbound | AM | B | 0.218 | 9.8 | B | 0.223 | 9.8 | | | |
| | PM | B | 0.606 | 12.4 | B | 0.627 | 12.7 | B | 0.632 | 12.8 |
| Welch Road / Quarry Road | AM | C | 0.576 | 17.0 | C | 0.587 | 17.3 | | | |
| | PM | C | 0.61 | 17.5 | C | 0.632 | 17.9 | C | 0.638 | 18.0 |
| Welch Road / Campus Drive West | AM | B | 0.759 | 6.7 | B | 0.774 | 7.5 | | | |
| | PM | F | 1.52 | 109.6 | **F** | **2.06** | **242.7** | **F** | **2.077** | **258.0** |
| Pasteur / Blake/Wilbur | AM | B | 1.217 | 5.0 | B | 1.243 | 5.6 | | | |
| | PM | B | 1.335 | 7.3 | B | 1.384 | 9.2 | B | 1.394 | 9.7 |
| Santa Cruz / University | AM | B | 0.723 | 14.8 | B | 0.726 | 14.9 | | | |
| | PM | B | 0.726 | 13.2 | B | 0.728 | 13.3 | B | 0.731 | 13.3 |

Notes:

- Results shown in bold indicate a significant impact.
- Theater is also referred to as the Performing Arts Center.

File: 736167\graphics\traffic\2010NoProjVolsA    Date: 6/20/2000




Source: Korve Engineering 6/8/2000

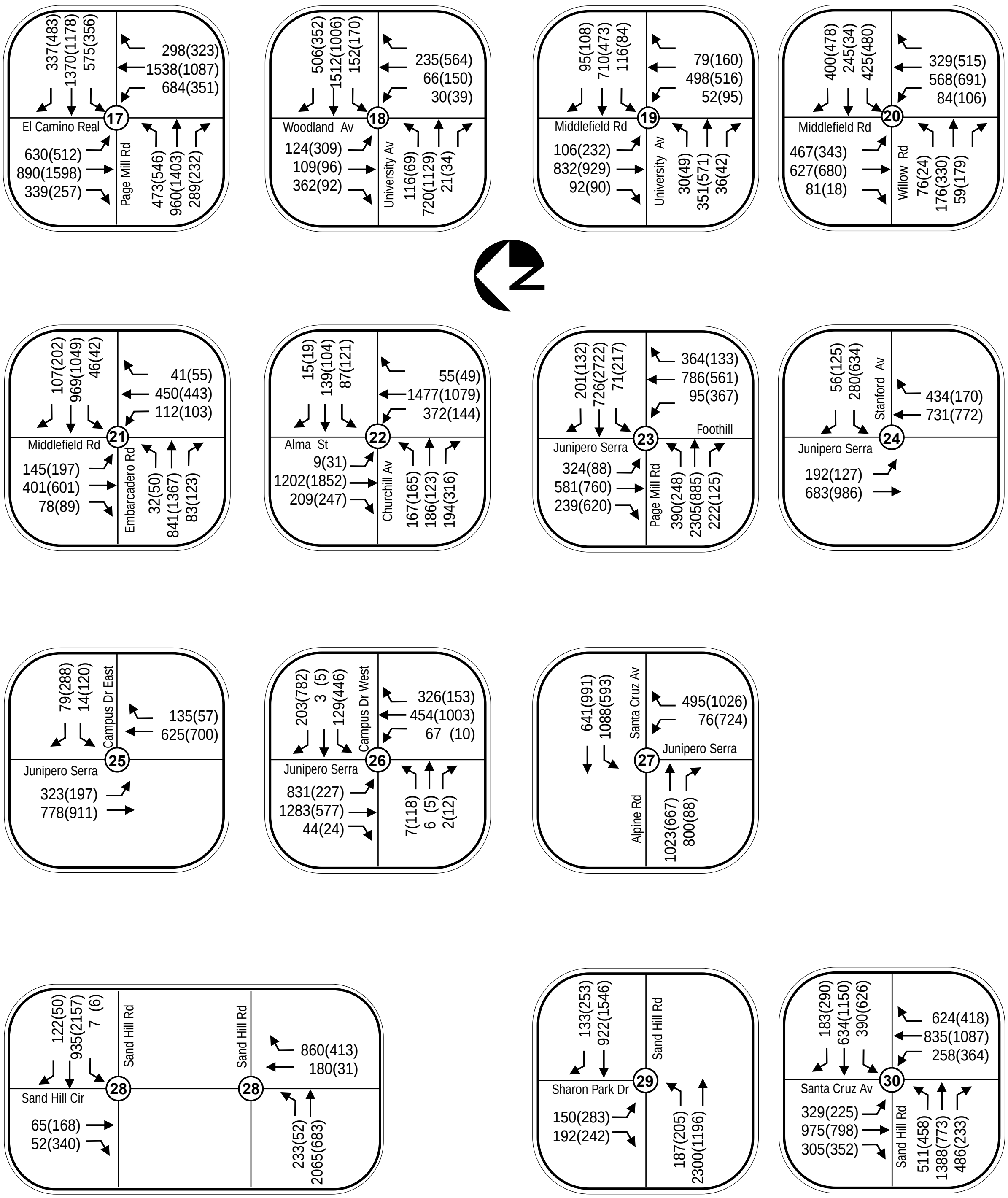
**AM (PM) Peak Hour**

**Stanford University**
**CP/GUP Project EIR**

# YEAR 2010 TRAFFIC VOLUMES
# NO PROJECT

**PARSONS**
**HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-12A**




AM (PM) Peak Hour

Source: Korve Engineering 6/8/2000

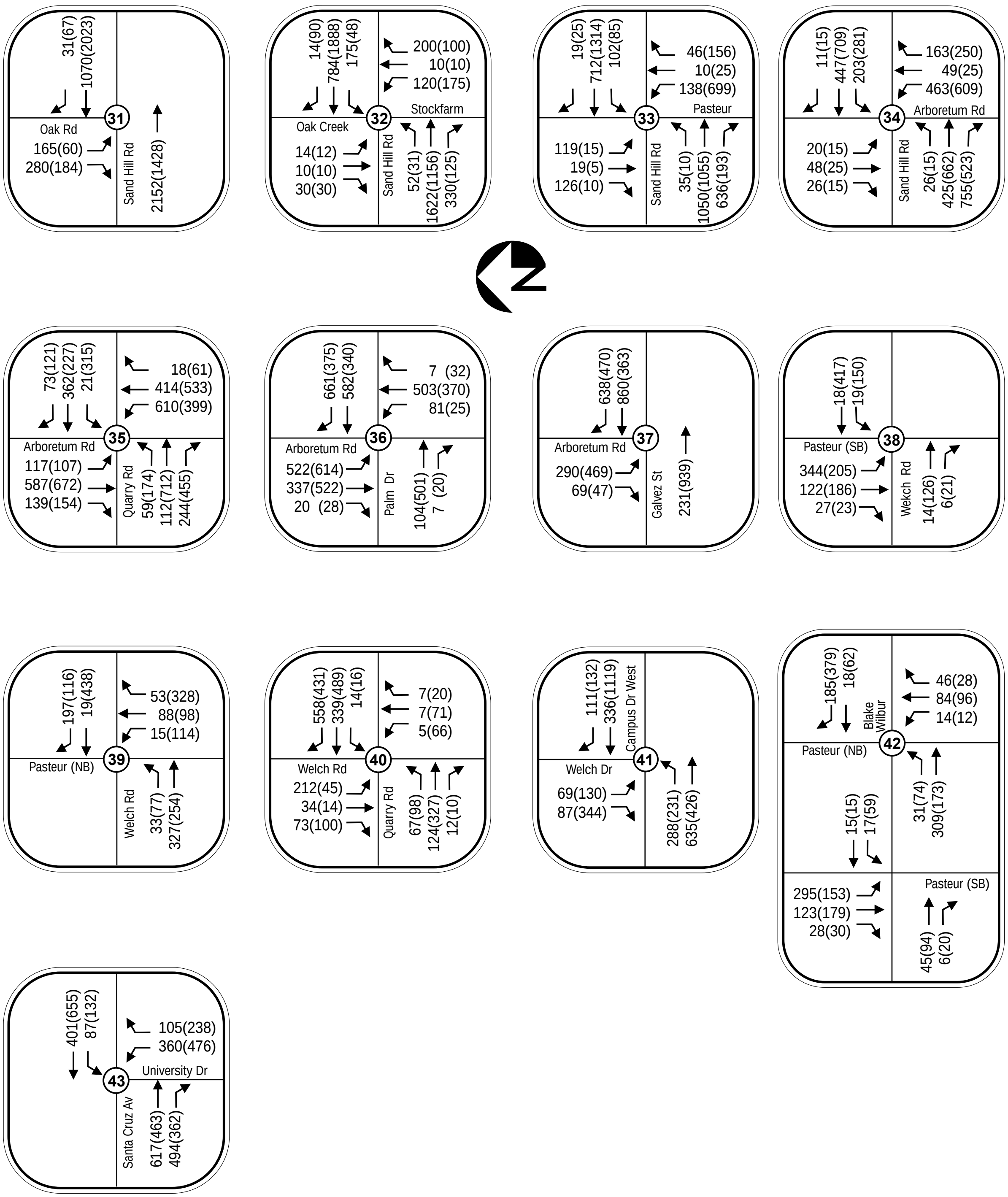
Stanford University
CP/GUP Project EIR

# YEAR 2010 TRAFFIC VOLUMES NO PROJECT

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-12B

File: 736167\graphics\traffic\2010NoProjVolsC Date: 6/20/2000




Source: Korve Engineering 6/8/2000

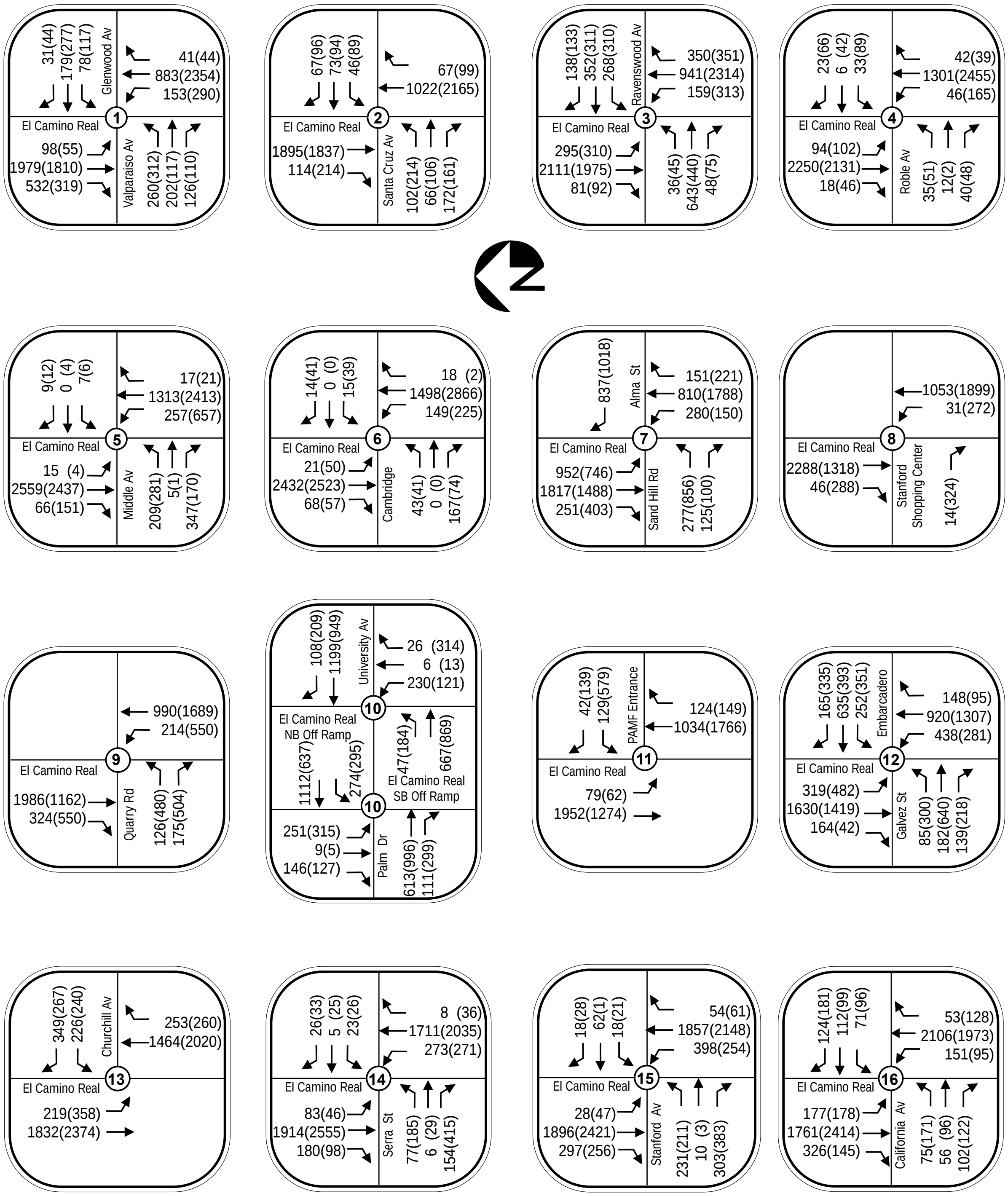
Stanford University
CP/GUP Project EIR

# YEAR 2010 TRAFFIC VOLUMES
# NO PROJECT

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-12C

File: 736167\graphics\traffic\2010+CPnoArenaA Date: 6/20/2000




AM (PM) Peak Hour

Source: Korve Engineering 6/8/2000

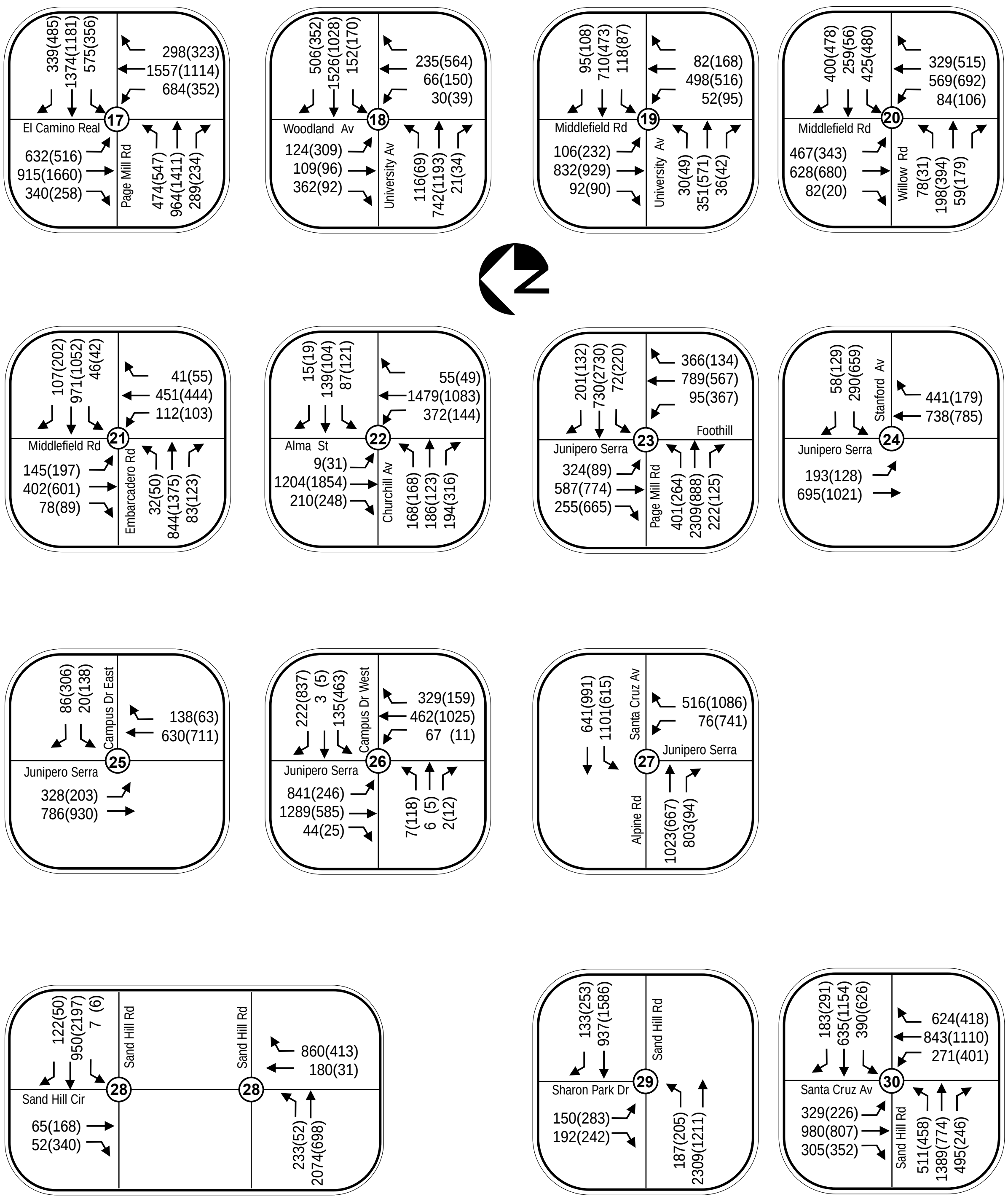
Stanford University
CP/GUP Project EIR

# YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (No Arena and Theater)

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.4-13A

File: 736167\graphics\traffic\2010+CPnoArenaB Date: 6/20/2000




Source: Korve Engineering 6/8/2000

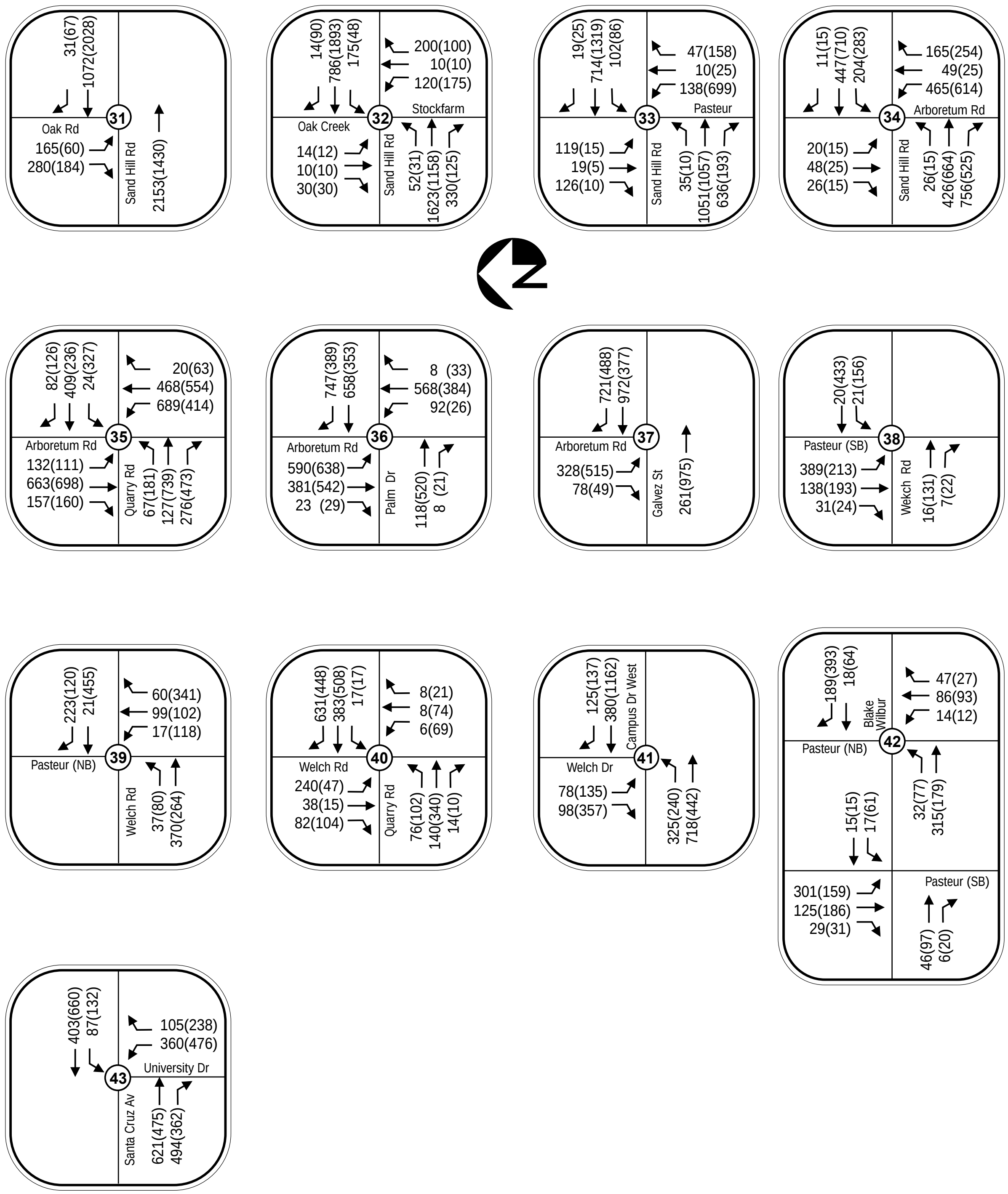
AM (PM) Peak Hour

**Stanford University**
**CP/GUP Project EIR**

# YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (No Arena and Theater)

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-13B**




AM (PM) Peak Hour

Source: Korve Engineering 6/8/2000

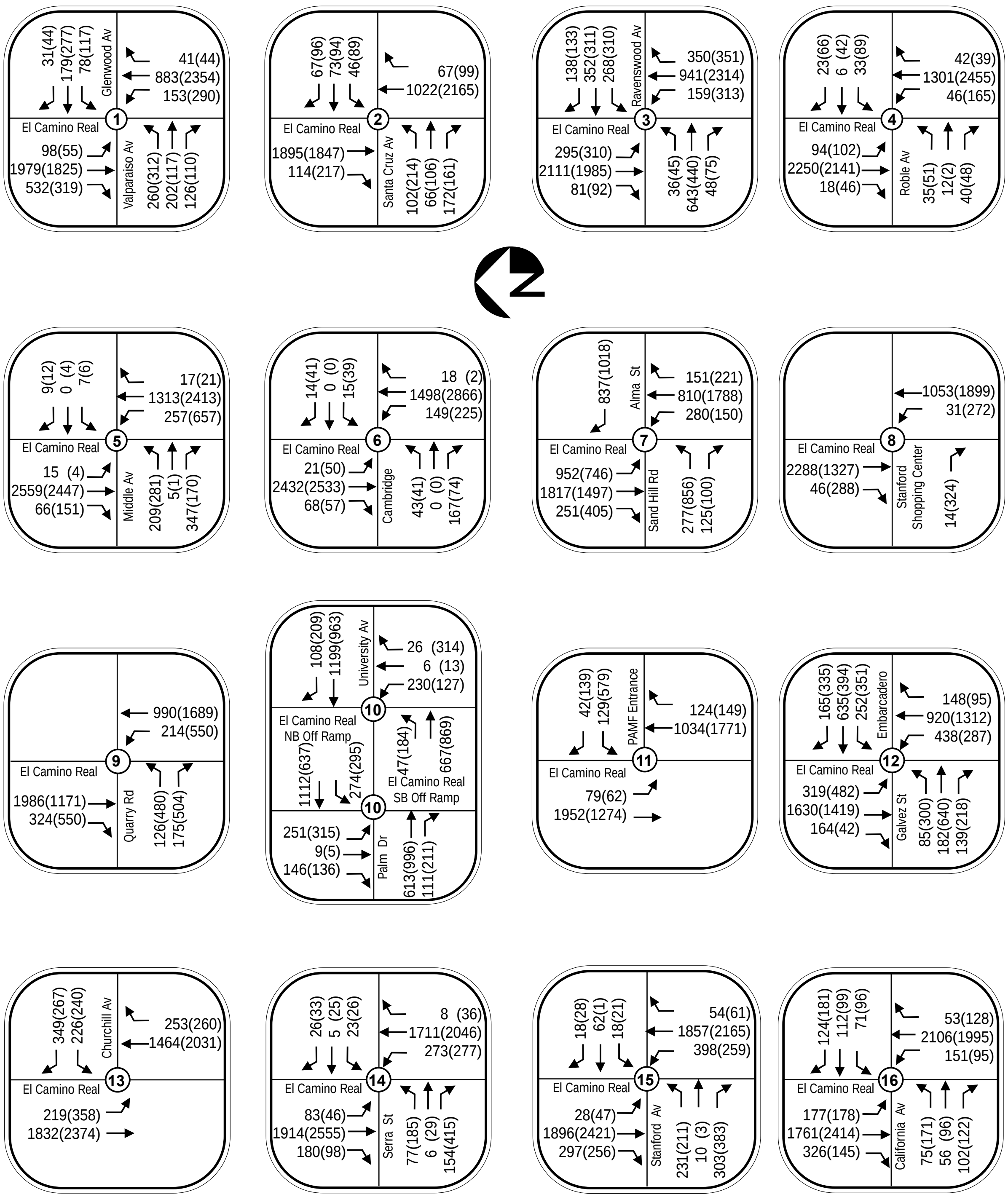
Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (No Arena and Theatre)**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-13C

File: 736167\graphics\traffic\2010+CP+ArenaA Date: 6/20/2000




AM (PM) Peak Hour

Source: Korve Engineering 6/8/2000

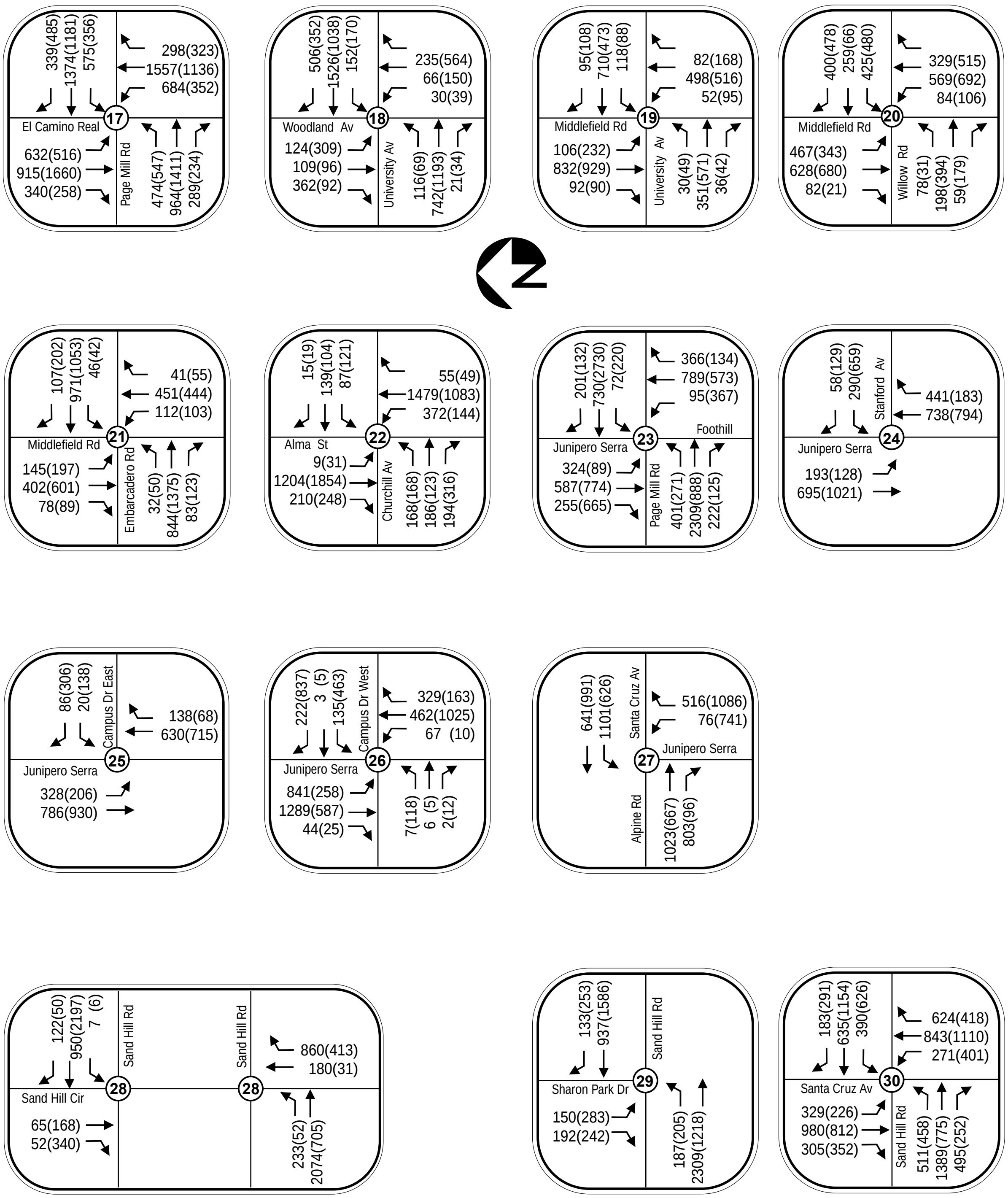
Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (With Arena and Theater)**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-14A

File: 736167\graphics\traffic\2010+CP+ArenaB Date: 6/20/2000




AM (PM) Peak Hour

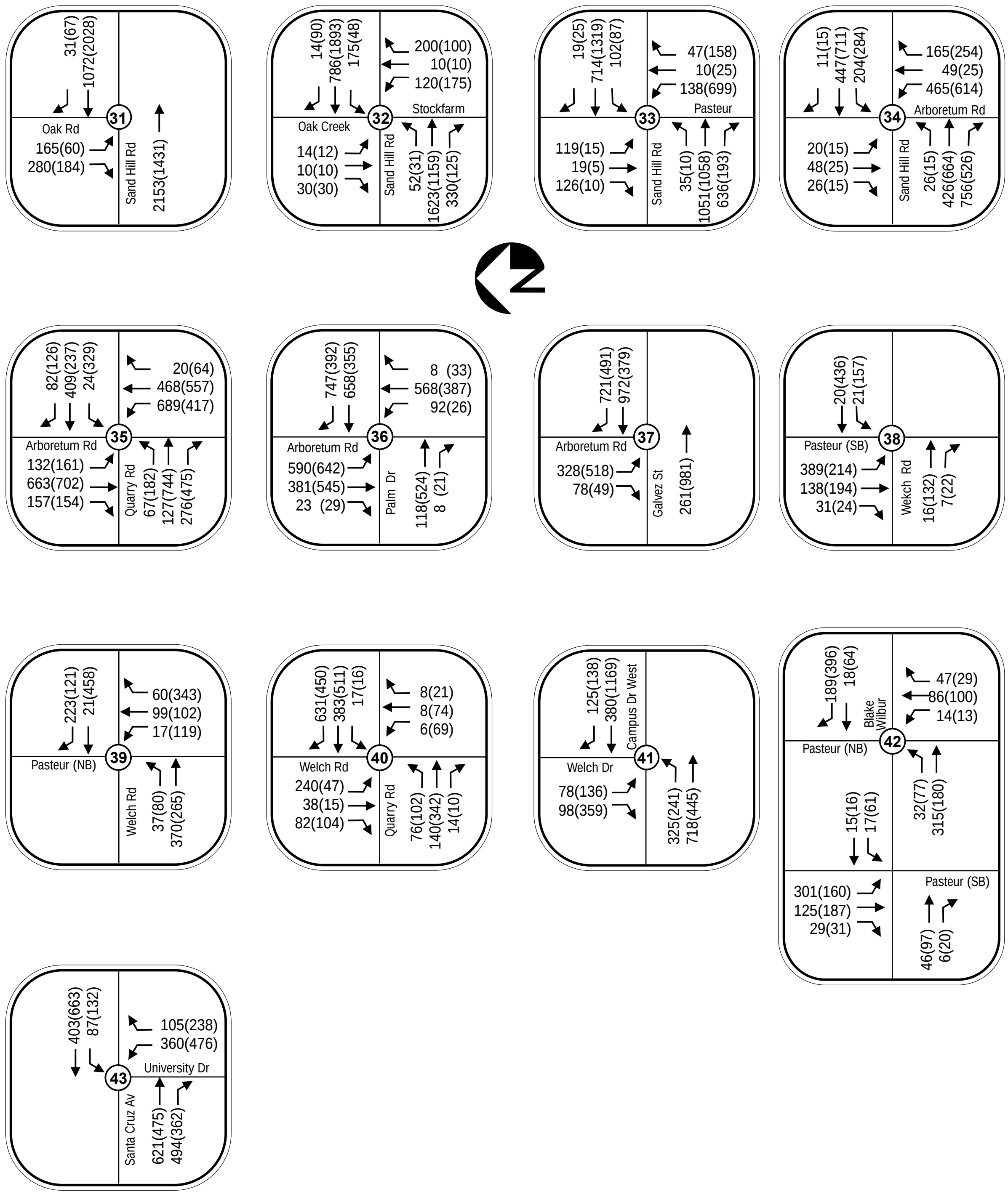
Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (With Arena and Theater)**

PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-14B




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (With Arena and Theater)**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-14C

### 4.4.E.6 TRANSYT 7-F Analysis

The closely spaced intersections of Sand Hill/Santa Cruz and Santa Cruz/Alpine/Junipero Serra were evaluated using the TRANSYT 7-F analysis software package. This computer package considers the intersections as part of a system, rather than as isolated locations. Table 4.4-24 illustrates the results of the TRANSYT 7-F analysis for these two intersections operating as a coordinated system. The table illustrates four conditions; the existing traffic operations, the expected traffic operations in 2010 without the project, the expected traffic operations in 2010 with the project, and the expected traffic operations in 2010 with the project and with mitigation measures identified in this analysis (a second eastbound left turn lane at Sand Hill/Santa Cruz and a westbound right turn at Alpine/JSB). Table 4.4-24 shows the expected operations of each intersection as well as the system average. Both of these calculations are a result of the TRANSYT 7-F analysis.

The Alpine/Junipero Serra/Santa Cruz intersection operates slightly better than the Santa Cruz/Sand Hill intersection. The existing conditions analysis, which considered these locations as isolated intersections indicated LOS D in the AM peak and LOS E in the PM peak for Santa Cruz/Sand Hill, identical to the TRANSYT 7-F analysis, and LOS E during both peak hours at Santa Cruz/Alpine/Junipero Serra, slightly worse than that found in the TRANSYT 7-F analysis. The TRANSYT 7-F analysis indicates that the intersections when analyzed as a system operate better than when they are analyzed separately. For future conditions, the two intersections as a system operate at LOS F. As noted in Table 4.4-24, the project increases the average system delay by less than 2 percent in the AM peak and by nearly 19 percent in the PM peak. With the mitigation measures identified by TRAFFIX assumed in place at these intersections (identified in Section 4.4.H), the delay at each intersection and for the system average is reduced to a value lower than the non-project condition in 2010.

**Table 4.4-24**

TRANSYT 7F Analysis Summary

| | | Santa Cruz/Sand Hill | | Santa Cruz/Alpine/ Junipero Serra | | System Average |
|---|---|---|---|---|---|---|
| **Scenario** | **Peak Hour** | **LOS** | **Delay** | **LOS** | **Delay** | **Delay** |
| Existing | AM | D | 36.5 | D | 31.0 | 34.2 |
| | PM | E | 48.4 | D | 34.6 | 43.0 |
| 2010 No Project | AM | F | 295.4 | F | 112.9 | 227.2 |
| | PM | F | 185.9 | F | 117.9 | 160.3 |
| 2010 With Project | AM | F | 297.6 | F | 121.3 | 231.5 |
| | PM | F | 214.3 | F | 151.7 | 190.6 |
| 2010 With Project With Mitigation | AM | F | 214.5 | E | 45.7 | 151.3 |
| | PM | F | 121.9 | F | 105.9 | 115.8 |

Source: Korve Engineering, June 2000

The conclusions of the TRANSYT 7-F analysis are the same as when these intersections were analyzed as isolated intersections. The intersections are currently approaching capacity operations. With additional traffic growth, both from the GUP and from other development, these intersections would reach capacity.

### 4.4.E.7 Freeway Analysis

Freeway capacity analysis was conducted for the study segments for future Year 2010 No Project and 2010 with Project scenarios.

#### *Year 2010 No Project*

Freeway peak hour volumes for study segments within Palo Alto and Menlo Park were obtained from VTA. Growth rates obtained from the CUA model were applied to calculate future volumes. The resulting volumes and capacity analysis are shown in Table 4.4-25. According to the results of the analysis, two segments operate at LOS F; those are northbound US 101 during the PM peak hour and southbound US 101 during the AM peak hour.

#### *Year 2010 With Project Without Arena and Performing Arts Center*

For this scenario, trips resulting from the project without the arena and performing arts center (theater) were added to the future Year 2010 volumes. The resulting volumes and capacity analysis are shown in Table 4.4-25. According to the results of the analysis, all freeway segments operate at the same LOS as no project.

#### *Year 2010 With Project With Arena and Performing Arts Center*

For this scenario, trips resulting from the project with the arena and theater were added to the future Year 2010 volumes. The resulting volumes and capacity analysis are shown in Table 4.4-25. According to the results of the analysis, all freeway segments operate at the same LOS as with project (no arena and theater).

# Table 4.4-25

## Freeway Segment LOS – Comparison of Year 2010 Scenarios

| Freeway | Limits | # of Lanes | Peak | Year 2010 No Project | | | | Year 2010 with Project without Arena and Theater | | | | Year 2010 with Project with Arena and Theater | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Peak Hour Volume | Speed | Density | LOS | Peak Hour Volume | Speed | Density | LOS | Peak Hour Volume | Speed | Density | LOS |
| 280 NB | North of Sand Hill | 4 | AM | 4050 | 70 | 14.6 | B | 4065 | 70 | 14.7 | B | 4065 | 70 | 14.7 | B |
| | | | PM | 7580 | 65 | 29.4 | D | 7621 | 65 | 29.5 | D | 7621 | 65 | 29.5 | D |
| 280 SB | North of Sand Hill | 4 | AM | 8170 | 62 | 33.2 | E | 8180 | 62 | 33.4 | E | 8180 | 62 | 33.4 | E |
| | | | PM | 4340 | 70 | 15.7 | B | 4352 | 70 | 15.7 | B | 4361 | 70 | 15.7 | B |
| 280 NB | South of Sand Hill | 4 | AM | 4610 | 70 | 16.6 | C | 4618 | 70 | 16.7 | C | 4618 | 70 | 16.7 | C |
| | | | PM | 6320 | 69 | 23.2 | C | 6341 | 69 | 23.2 | C | 6341 | 69 | 23.2 | C |
| 280 SB | South of Sand Hill | 4 | AM | 6720 | 68 | 25.0 | D | 6725 | 68 | 25.0 | D | 6725 | 68 | 25.0 | D |
| | | | PM | 4730 | 70 | 17.0 | C | 4736 | 70 | 17.1 | C | 4741 | 70 | 17.1 | C |
| 280 NB | South of Alpine | 4 | AM | 6110 | 69 | 22.3 | C | 6118 | 69 | 22.3 | C | 6118 | 69 | 22.3 | C |
| | | | PM | 6270 | 69 | 22.9 | C | 6280 | 69 | 23 | C | 6286 | 69 | 23 | C |
| 280 SB | South of Alpine | 4 | AM | 6550 | 68 | 24.3 | D | 6562 | 68 | 24.4 | D | 6562 | 68 | 24.4 | D |
| | | | PM | 6090 | 69 | 22.3 | C | 6122 | 69 | 22.5 | C | 6122 | 69 | 22.5 | C |
| 280 NB | South of Page Mill | 4 | AM | 7690 | 65 | 29.8 | D | 7705 | 65 | 30.0 | D | 7705 | 65 | 30.0 | D |
| | | | PM | 5850 | 70 | 21.1 | C | 5869 | 70 | 21.1 | C | 5881 | 70 | 21.1 | C |
| 280 SB | South of Page Mill | 4 | AM | 6080 | 69 | 22.3 | C | 6103 | 69 | 22.3 | C | 6103 | 69 | 22.3 | C |
| | | | PM | 7340 | 66 | 28.0 | D | 7404 | 66 | 28.3 | D | 7404 | 66 | 28.3 | D |

# Table 4.4-25

## Freeway Segment LOS – Comparison of Year 2010 Scenarios

| Freeway | Limits | # of Lanes | Peak | Year 2010 No Project | | | | Year 2010 with Project without Arena and Theater | | | | Year 2010 with Project with Arena and Theater | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Peak Hour Volume | Speed | Density | LOS | Peak Hour Volume | Speed | Density | LOS | Peak Hour Volume | Speed | Density | LOS |
| 101 NB | South of University | 3 | AM | 6300 | 55 | 38.2 | E | 6305 | 55 | 38.2 | E | 6305 | 55 | 38.2 | E |
| | | | PM | 5380 | 25 | 71.9 | F | 5390 | 25 | 71.9 | F | 5394 | 25 | 71.9 | F |
| 101 SB | South of University | 3 | AM | 5250 | 10 | 175.0 | F | 5257 | 10 | 175.2 | F | 5257 | 55 | 175.2 | F |
| | | | PM | 5390 | 60 | 29.9 | D | 5400 | 60 | 30.0 | D | 5400 | 25 | 30.0 | D |
| 84 EB | Bridge | 2 | AM | 6440 | 60 | 36.2 | E | 6451 | 60 | 36.2 | E | 6451 | 60 | 36.2 | E |
| | | | PM | 1310 | 70 | 6.3 | A | 1342 | 70 | 6.4 | A | 1342 | 70 | 6.4 | A |
| 84 WB | Bridge | 2 | AM | 1540 | 70 | 7.4 | A | 1548 | 70 | 7.4 | A | 1548 | 70 | 7.4 | A |
| | | | PM | 5490 | 66 | 28.0 | D | 5500 | 66 | 28.0 | D | 5504 | 66 | 28.0 | D |

Source: Korve Engineering

Notes:

- US 101 notes lanes and volumes for mixed flow lanes only.
- Theater is also referred to as the Performing Arts Center.

### 4.4.E.8 Future Parking Conditions

Currently, there are approximately 19,351 parking spaces available at Stanford. With the anticipated future buildout of the GUP, there will be 21,677 spaces available on campus. Table 4.4-26 lists areas with existing parking spaces, new campus developments and the spaces needed and proposed for those developments according to historic parking provisions on campus. A list detailing Stanford's intended future parking locations is included in a separate background report available for review at the County Planning Office. As identified in the table below, the supply of parking will meet Stanford's anticipated demand when a specific parking allocation for the performing arts center is considered. Without the performing arts center, parking supply will exceed demand.

**Table 4.4-26**

Stanford University Existing and Future Parking

| Development District | Existing Parking | New Development | | | | Additional Parking | |
|---|---|---|---|---|---|---|---|
| | | Academic | Cultural/ Athletic | Student Housing | Fac/Staff Housing | Proposed | Needed |
| West Campus[1] | 191 | 0 | | | 567 | 0 | |
| Lathrop[2] | 0 | 20,000 | | | | 0 | 13 |
| Foothills | 0 | 0 | | | | 0 | |
| Lagunita[3] | 1,745 | 0 | | 925 | (13) | 695 | 694 |
| Campus Center[2, 4, 5] | 8,743 | 1,555,000 | 2,800 | | | (89) | 997 |
| Quarry[2, 6] | 1,058 | 50,000 | | 350 | | 570 | 382 |
| Arboretum | 134 | 0 | | | | (134) | 0 |
| DAPER &Admin[2 5] | 2,209 | 50,000 | 4,600 | | | 1,267 | 32 |
| East Campus [1, 2, 3] | 4,731 | 110,000 | | 1,075 | 75 | 564 | 877 |
| San Juan[1] | 540 | 0 | | | 39 | 0 | 0 |
| Less Relocated Commuters[7] | | | | | | | (669) |
| Total | 19,351 | 1,785,000 | | 2,350 | 668 | 2,873 | 2,325 |
| Total less PAC parking[8] | | | | | | 2,325 | |
| Parking Shortfall/Surplus | | | | | | 0 | |

Source: Stanford Planning Office and Korve Engineering

Notes:

1 Parking for faculty/staff housing assumed to be accommodated in unit (garage, carport, on-street).
2 Academic parking is 1,785,000 sf / 2,201 new people / 0.52 spaces per person = 1 space per 1,560 sf.
3 Undergraduate and graduate student housing parking provided at 0.75 spaces per unit.
4 Assumes performing arts center (PAC) is 50,000 sf which is removed from total space in Campus Center.
5 Additional parking for PAC and arena assumed to be accommodated by vacated daily spaces.
6 Post Doc and Resident parking provided at 1.0 spaces per unit.
7 Deduction for graduate students moved onto campus is based on 55% currently drive.
8 Parking Supply assumed 548 spaces for the PAC.

At 1989 GUP buildout, parking on the Stanford campus will be provided at 1.03 spaces per student, faculty and staff (including Medical Center students and faculty, who are eligible for campus parking and housing accordingly). As proposed, new parking will be provided at a rate of 1.31 new parking spaces per new students, faculty and staff on the campus, a significantly higher rate of parking than currently provided. Of the 2,873 spaces proposed, 1,850 spaces would serve student and postgraduate residences. Parking for faculty and staff housing would be provided on the site of the housing (garages, driveways, and on-street) and is not included in the parking totals. 1,023 spaces would therefore serve nonresidential uses. Since there will, in fact, be a net reduction in commuter population due to the addition of on-campus housing, proposed parking levels will be substantially higher than the parking currently provided; to some degree, parking spaces will be provided for some new campus residents at both their residences and their on-campus workplaces. Although a substantial portion (548 spaces) of the nonresidential parking is proposed to serve the Performing Arts Center, these spaces would presumably be available for daytime use as well.

While it is difficult to quantify the degree of this surplus due to changes in the proposed population demographics, the 1,023 spaces proposed to serve academic and support facilities do represent a surplus of parking serving the new population. This parking surplus may undermine future trip reduction efforts, as parking restrictions are a recognized means to reduce auto use. For parking provision to continue at the current rate of 1.03 spaces per student, faculty and staff, future parking spaces would need to be limited to 2,267 total spaces (including student residential parking).

## 4.4.F FUTURE YEAR 2010 WITH NEW ROADWAY ALTERNATIVE

This section addresses conditions of an additional alternative. It addresses traffic pattern changes with and without the project in the Year 2010 with the addition of a new roadway. The new roadway, if approved, would use the existing alignments of Stock Farm Road and Campus Drive West, continuing across Junipero Serra Boulevard along Links Road. The roadway would extend from Links Road, curve, and end when intersecting with Alpine Road. This roadway would provide an alternate route from Sand Hill Road to Junipero Serra Boulevard and Alpine Road (see Figure 7-4). The primary effect of the new roadway would be to remove some of the traffic from Sand Hill Road and Santa Cruz Avenue by providing a more direct route and bypassing congested intersections on the existing roadways in Menlo Park.

Under this alternative, only five intersections would be affected by the alternate traffic flow. Those intersections, along with their corresponding level of service results, are outlined in Table 4.4-27. Figures 4.4-15A, 4.4-15B, and 4.4-15C illustrate the resulting volumes of the Year 2010 with Project and New Roadway Volumes (without the arena and theater).

The Year 2010 with project with the new roadway alternative improve conditions at three intersections (Junipero Serra Boulevard/Alpine/Santa Cruz and Sand Hill/Oak and Junipero Serra/Campus Drive West), however, the project would continue to cause an impact at the intersection of Sand Hill and Santa Cruz with the new roadway. The LOS and vehicle delay at the intersection of Sand Hill/Oak Creek/Stockfarm would remain the same with or without the new roadway. The remaining intersections (not included in Table 4.4-27) would have the same results as the Year 2010 with project without arena and theater conditions. Therefore, the impacts associated with the Year 2010 with project without arena and theater described in Section 4.4.F would be the same for the remainder of the intersections. With this new roadway, the conditions at each of these five intersections improve considerably from the Future Year 2010 No Project without the new roadway; in some cases, the intersection operation improves to better than existing conditions. However, the intersection of Sand Hill Road and Santa Cruz Avenue does not improve. The trips subtracted from this intersection would not affect the critical movements, which are used to calculate the average critical delay for the intersection. Specifically, the trips are reduced for the northbound right turn and the westbound left turn with the alternative roadway, neither of which represent a critical movement. The northbound critical movement is the left turn. The westbound approach is constrained by its approach signal phasing and shared through and right turn lane, with the right turns being the critical movement. Because the level of service analysis is based on critical movement delay, this intersection delay and level of service would not improve with the new roadway and the resulting shift in traffic.

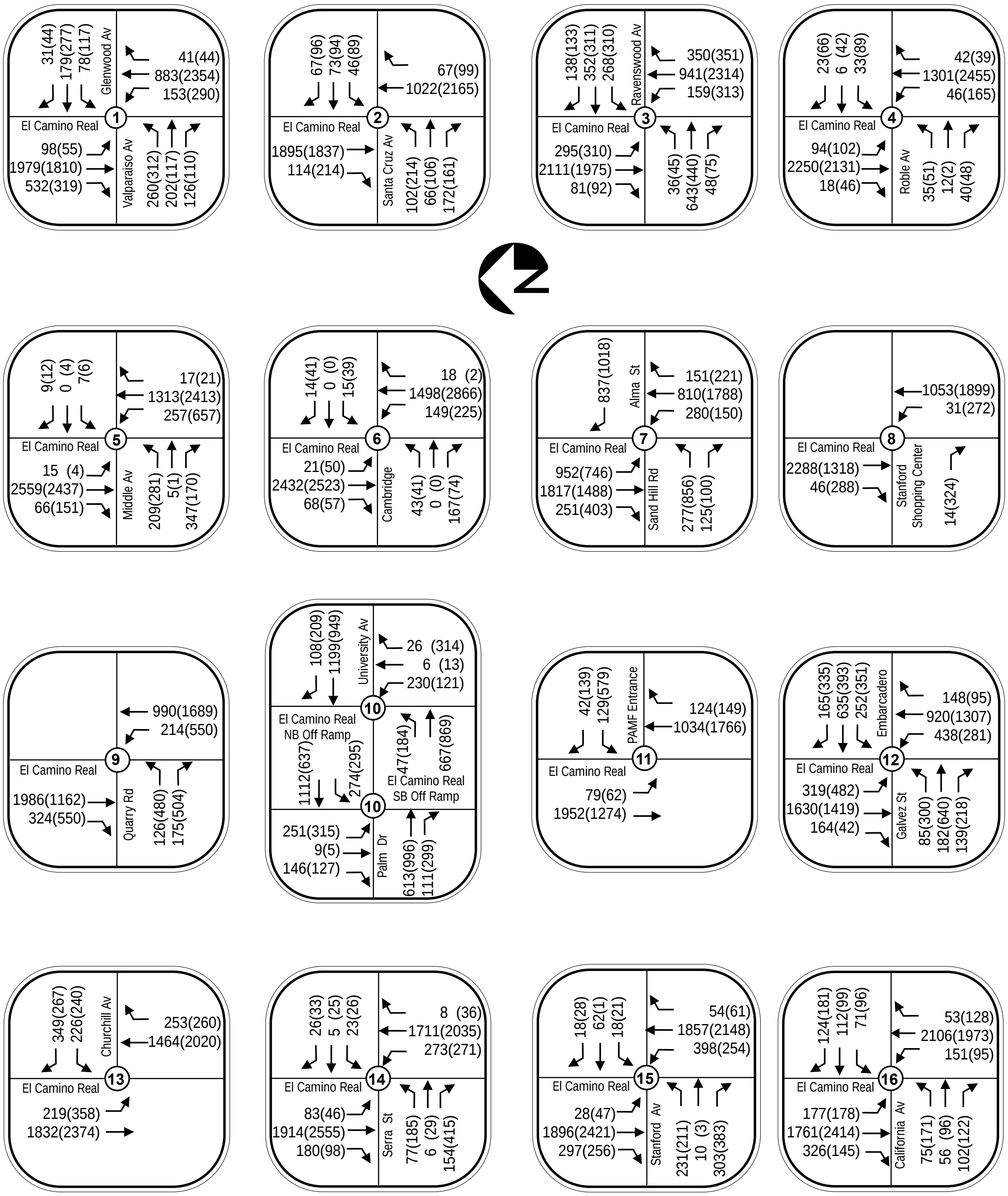
## Table 4.4-27

### Intersection Level of Service - Comparison of Year 2010 Scenarios with and without New Roadway

| Intersection | Peak Hour | Year 2010 | | | | | |
|---|---|---|---|---|---|---|---|
| | | With Project without New Roadway | | | With Project With New Roadway | | |
| | | LOS | V/C | Delay | LOS | V/C | Delay |
| Junipero Serra / Alpine / Santa Cruz | AM | F | 1.264 | 176.7 | B | 0.675 | 13.1 |
| | PM | F | 1.167 | 115.9 | C | 0.765 | 15.1 |
| Sand Hill / Santa Cruz | AM | F | 1.077 | 76.7 | F | 1.077 | 77.0 |
| | PM | F | 1.188 | 137.2 | F | 1.210 | 157.0 |
| Sand Hill / Oak | AM | F | 1.357 | 245.8 | D | 1.038 | 25.8 |
| | PM | F | 1.340 | 228.1 | C | 0.896 | 4.8 |
| Sand Hill / Oak Creek / Stockfarm | AM | C | 0.821 | 15.3 | B | 0.637 | 14.1 |
| | PM | B | 0.752 | 10.9 | B | 0.557 | 9.5 |
| Junipero Serra/Campus Drive West | AM | F | 0.974 | 75.4 | F | 0.974 | 75.4 |
| | PM | F | 1.268 | 233.4 | F | 1.175 | 155.2 |

Source: Korve Engineering, April 2000

Note: Theater is also referred to as the Performing Arts Center.




**AM (PM) Peak Hour**

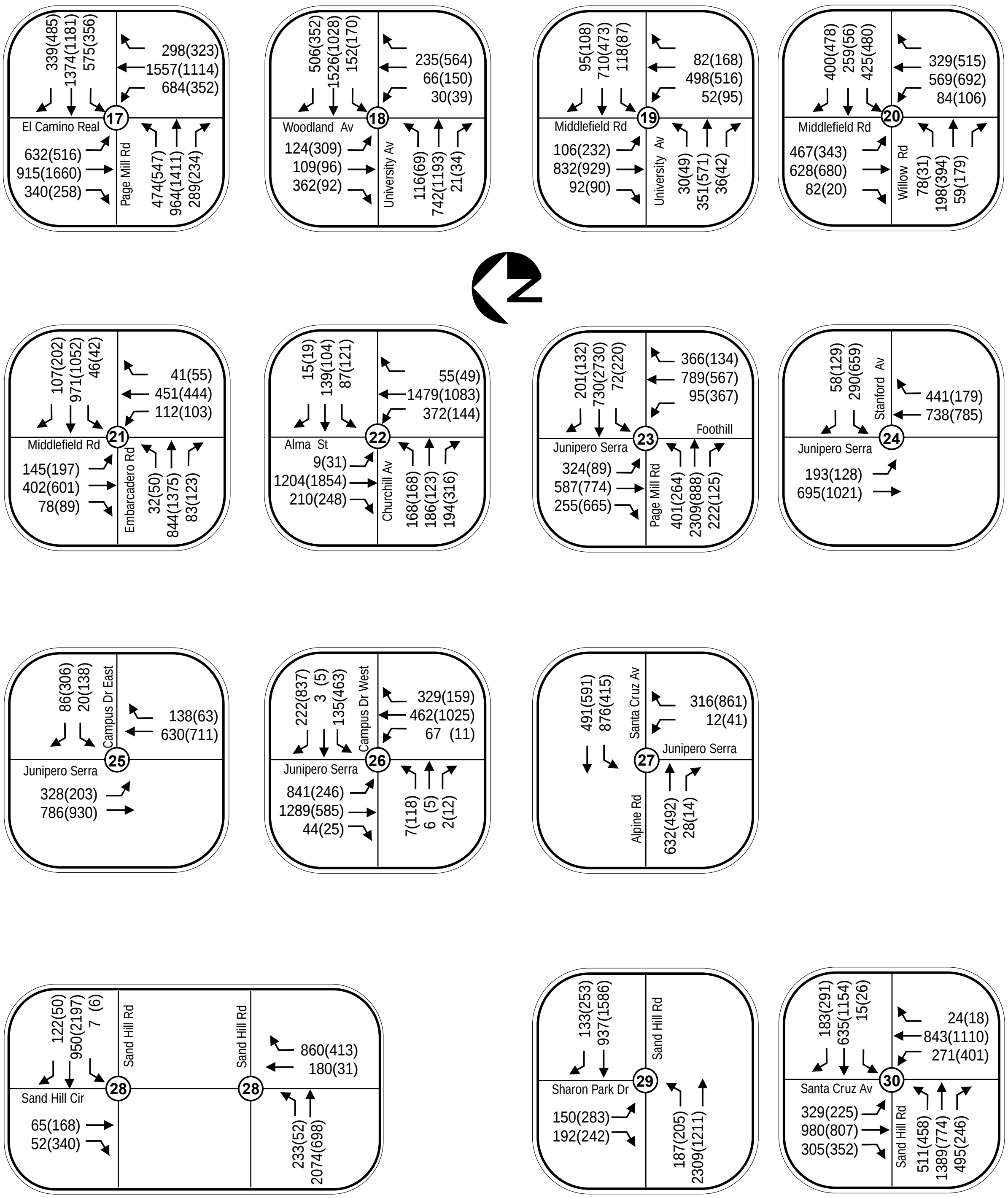
Source: Korve Engineering 6/8/2000

**Stanford University**
**CP/GUP Project EIR**

# YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (With New Roadway)

**PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.**

**Figure 4.4-15A**




AM (PM) Peak Hour

Source: Korve Engineering 6/8/2000

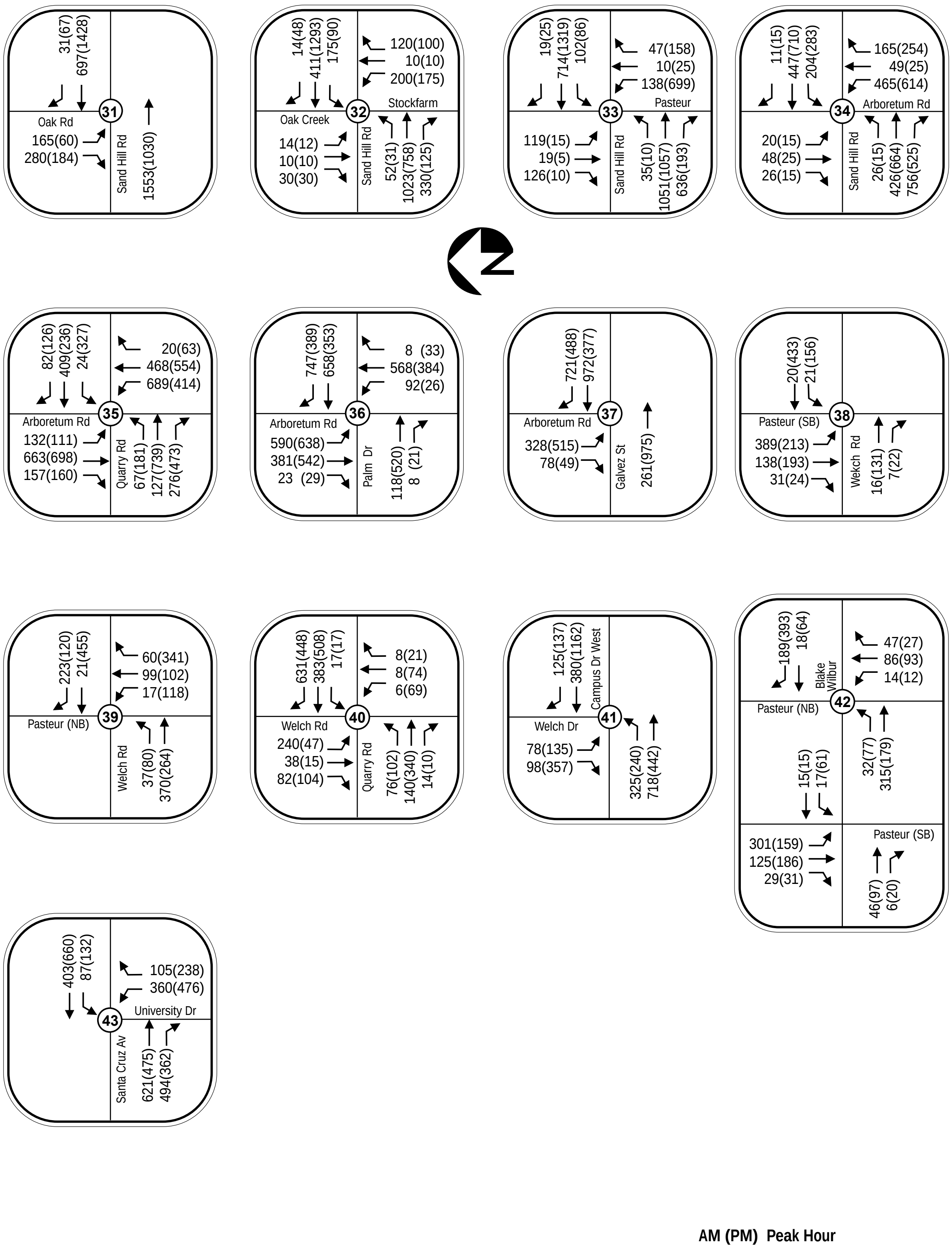
Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT**
**TRAFFIC VOLUMES**
**(With New Roadway)**

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

**Figure 4.4-15B**

File: 736167\graphics\traffic\CO+NewRoadC Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**YEAR 2010 WITH PROJECT TRAFFIC VOLUMES (With New Roadway)**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-15C

## 4.4.G IMPACTS AND MITIGATION MEASURES

This section outlines the impacts and corresponding mitigation measures that are expected to occur under the Year 2010 with project scenarios. The detailed analysis on which this section is based is presented in Section 4.4.E and 4.4.F. The traffic analysis is based on modeling that uses ABAG forecasts for 2010 development levels. These development levels include background traffic generated by other development in the region. Therefore, all traffic analysis is conducted on a cumulative basis. This approach provides the most accurate understanding of future traffic conditions in the area, and allows for a comparison of conditions with and without the project.

**IMPACT: TR-1: Transit. Will the project adversely affect public transit service levels or accessibility?**

Analysis: *Less than Significant*

The increase in trips generated by the project both with and without the arena and theater would add very little increase in transit usage. The 1990 Census data indicate that 3.5 percent of all work trips in Palo Alto and Stanford are via transit. Therefore, about 11 AM peak hour trips and 21 PM peak hour trips would occur via transit for the CP non-arena and theatre scenario. Although transit use has increased since 1990, the existing transit facilities and services have sufficient capacity to accommodate the increase in transit trips that would occur from implementation of the CP/GUP, in part due to the ability of operators to meet any dramatic changes in demand by adding vehicles to routes. Therefore, this impact is considered to be less than significant.

Mitigation: No mitigation is required.

**IMPACT: TR-2: Bicycle and/or Pedestrian. Will the project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?**

Analysis: *Less than Significant*

The pedestrian and bicycle travel ways would not be affected by the project. At the current level of project definition, there would not be any closures to existing paths and access would not be reduced, therefore the impact would be less than significant. However, potential impacts to pedestrian and bicycle travel will need to be evaluated at the time of project-specific ASA review.

Mitigation: No mitigation is required.

**IMPACT: TR-3: Parking. Will the project create adverse impacts to existing parking or access to existing parking?**

Analysis: *Less than Significant*

Existing parking facilities would be affected. However, the number of spaces eliminated would be accommodated at equally accessible locations. The supply of parking spaces available would remain the same as the existing demand and expanded at a proportional rate to accommodate growth, therefore the impact would be less than significant. While to some degree the provision of parking facilities encourages automobile use, not providing sufficient parking could result in Stanford commuters parking within the surrounding neighborhood.

An analysis of the parking proposed by Stanford indicates that the University is proposing a surplus amount of parking relative to the existing levels of parking provided on the campus. Maintenance of current parking ratios on the campus would reduce the degree to which added parking would encourage automobile trips. This issue is discussed further in mitigation measure TR-5B.

Mitigation: No mitigation is required. However a neighborhood parking monitoring program may need to be put into effect to monitor and aggressively remedy any neighborhood "spillover" parking.

**IMPACT: TR-4: Vehicular Impacts – Freeways. Will the Project create adverse vehicular impacts on the freeways?**

Analysis: *Less than Significant*

The addition of trips for project scenarios both with and without the arena and theater would not cause significant impacts along freeway segments. A freeway impact would only occur if the project increases the freeway volume by greater than one percent of the freeway capacity for segments operating at LOS F, which would not occur under the project. Freeway volumes associated with the project are overestimated because of the conservative nature of the analysis. The residential component of the CP/GUP creates a better jobs/housing balance on the campus. Therefore, less freeway travel will be associated with Stanford than is projected by the travel demand model. The regional vehicle miles traveled and vehicle hours traveled will also be less with the implementation of the CP/GUP.

Mitigation: No mitigation is required. However the proposed trip reduction mitigation program (TR-5B) may help decrease trips to further reduce the effects to freeways from implementation of the project.

**IMPACT: TR-5: Vehicular Impacts – Intersections. Will the project create adverse vehicular impacts for intersections in Palo Alto, Santa Clara County, and Menlo Park?**

Analysis: *Significant*

Based upon the analysis conducted in Section 4.4.E.2, the addition of trips for the project scenarios with and without the arena and theater, when added to background 2010 conditions (with existing levels of TDM use), would cause impacts along five intersections in the City of Palo Alto, eight in the City of Menlo Park, two in Stanford, and two in Santa Clara County. The intersections that would be impacted, and the reason that the impact is considered significant are documented below:

| Intersection | Criteria Exceeded |
|---|---|
| El Camino Real and Valparaiso Avenue (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| El Camino Real and Ravenswood Avenue (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| El Camino Real and Middle Avenue (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| El Camino Real and Palm Drive/University Avenue (Palo Alto/CMP) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for CMA intersection operating at LOS F |
| El Camino Real and Churchill Avenue (Palo Alto) | Caused the LOS to decline from LOS D or better to LOS E |
| El Camino Real and Stanford Avenue (Palo Alto) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for CMA intersection operating at LOS F |
| Middlefield Road and University Avenue (Palo Alto) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for CMA intersection operating at LOS F |
| Middlefield Road and Willow Road (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| Junipero Serra Boulevard and Page Mill Road (Palo Alto/CMP) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for CMA intersection operating at LOS F |
| Junipero Serra Boulevard and Stanford Avenue (Santa Clara County) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for County intersection operating at LOS E or worse |
| Junipero Serra Boulevard and Campus Drive West (Santa Clara County) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for County intersection operating at LOS E or worse |
| Junipero Serra Boulevard and Alpine Road/Santa Cruz Avenue (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| Sand Hill Road and Sand Hill Circle and I-280 (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| Sand Hill Road and Santa Cruz Avenue (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| Sand Hill Road and Oak Road (Menlo Park) | Increased delay by more than 0.5 seconds for intersection operating at LOS E or worse |
| Welch Road and Campus Drive West (Stanford) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for intersection operating at LOS F |
| Arboretum Road and Palm Drive (Stanford) | Increased delay by more than 4 seconds and increased v/c by more than 0.01 for intersection operating at LOS F |

The impacts at these intersections are significant and require mitigation measures.

Mitigation: The mitigation measures proposed for intersection impacts consist of trip reduction methods and intersection capacity improvements. The County's preferred approach is trip reduction. However, the County cannot legally require Stanford to implement TDM programs. Therefore, intersection improvements have also been identified. If the proposed TDM approach is not successful or Stanford elects not to fully implement the program, the intersection improvements would have to be implemented to reduce the impacts significance. These programs shall include:

- TR-5A: Tier 1 Intersection Capacity Expansion;
- TR-5B: Trip Reduction and Monitoring (achievement of no net new commute trips);
- TR-5C: Cooperative Trip Reduction; and
- TR-5D: Tier 2 Intersection Capacity Expansion.

The proposed intersection improvements have been divided into Tier 1 and Tier 2 measures. The Tier 1 mitigation measures are easily made and result in a significant improvement in intersection operations. The Tier 1 mitigation measures are intended to be made even if the trip reduction program is effective in eliminating all net new commute trips. The Tier 2 mitigation measures are more difficult to implement and may result in an undesirable increase of traffic on specific streets. Tier 2 mitigation measures will only be implemented if the expanded TDM program is not totally effective in eliminating all new commute traffic (peak hour traffic) generated by the CP/GUP. If Tier 2 mitigation measures are necessary, Stanford will be required to provide their fair share contribution.

**TR-5A: Tier 1 Intersection Capacity Expansion**

**Arboretum Road and Palm Drive (Palo Alto and Stanford University).** Mitigation at this intersection would require adding an exclusive northbound left turn lane.

**Welch Road and Campus Drive West (Palo Alto and Stanford University).** Mitigation at this intersection would require adding a westbound right turn lane.

**TR-5B: Trip Reduction and Monitoring**

Implementation of Measure TR-5B: Trip Reduction would require the implementation of existing and new TDM measures and a monitoring program. This program is anticipated to reduce the amount of commute trips, so that the net commute trips with CP/GUP would not increase.

The use of TDM to control commute trips would allow Stanford to continue working toward the goal of "no net new commute trips", and also reduce impacts to freeways and other roadways as described in Impacts TR-4 and TR-6. However, direct monitoring by the County will be required to determine compliance with the conditions if Stanford chooses this mitigation alternative. No net new commute trips is defined as no increase in automobile trips during peak commute times in the peak commute direction, as counted at a defined cordon location around the central campus.

Monitoring will continue to gauge the effectiveness of these measures. A traffic monitoring program will need to be developed for the project to determine the baseline for current traffic volumes and to measure traffic over the coming years as the CP/GUP is implemented. Monitoring will be conducted by a qualified consultant retained by the County.

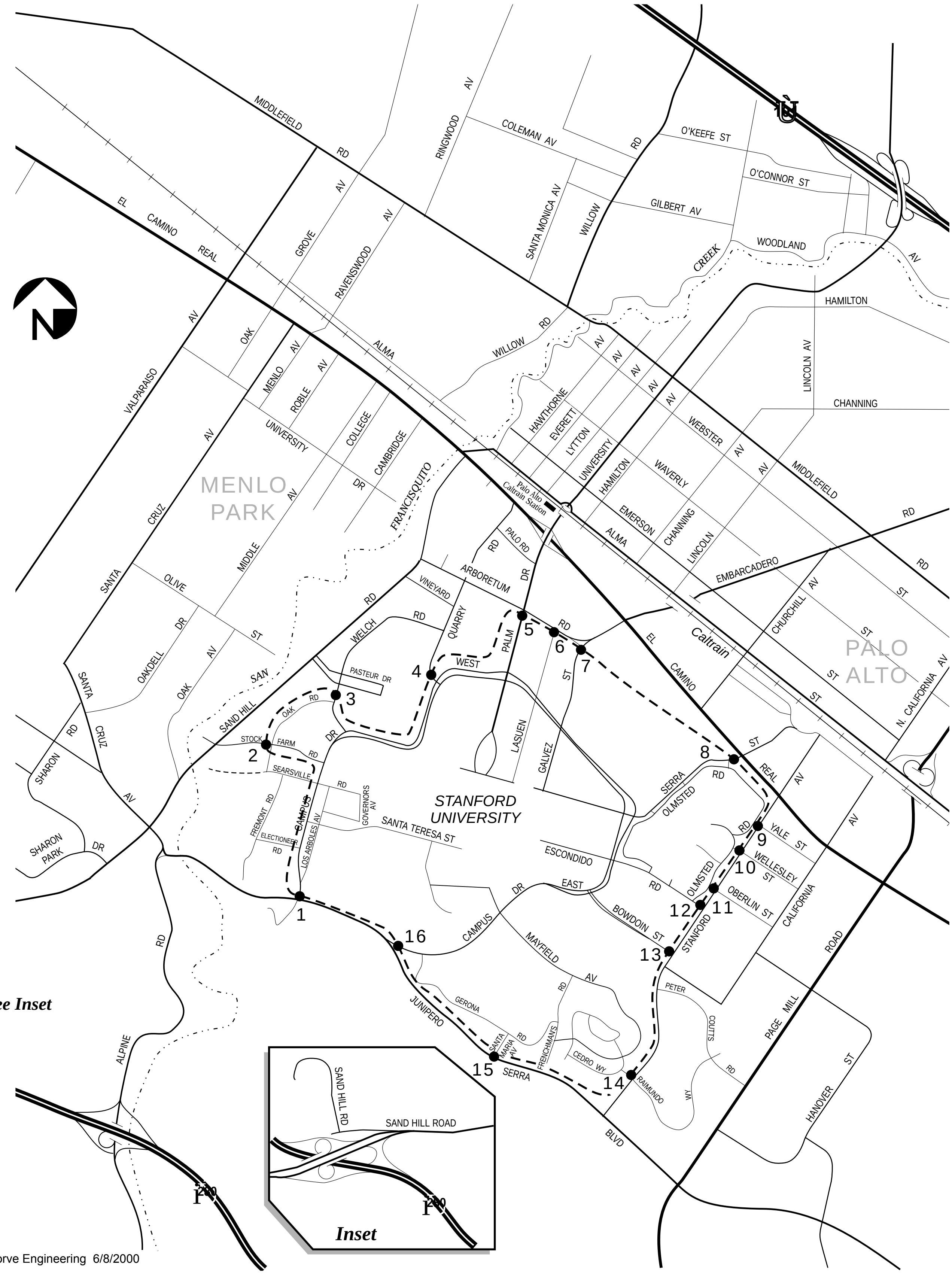
To monitor compliance with the TDM standard, a cordon line will be developed to monitor CP/GUP related traffic. The cordon line would isolate all traffic into and out of Stanford University. A cordon line completely encircles an area and all roads leading into and out of the area to be counted. The following is a preliminary list of the cordon intersections. Figure 4.4-16 from the Draft EIR illustrates the cordon line around Stanford.

1. Campus Drive West, east of Junipero Serra Boulevard
2. Stockfarm Road, south of Sand Hill Road
3. Welch Road, east of Oak Road
4. Quarry Road, east of Campus Drive West
5. Palm Drive, west of Arboretum Road
6. Lasuen Street, west of Arboretum Road
7. Galvez Street, west of Arboretum Road
8. Serra Street, west of El Camino Real
9. Yale Street, north of Stanford Avenue
10. Wellesley Street, north of Stanford Avenue
11. Oberlin Street, north of Stanford Avenue
12. Escondido Road, north of Stanford Avenue
13. Bowdoin Street, north of Stanford Avenue
14. Raimundo Way, north of Stanford Avenue
15. Santa Maria Avenue, east of Junipero Serra Boulevard
16. Campus Drive East, east of Junipero Serra Boulevard

The following steps will be followed for the peak hour traffic monitoring.

**1. Traffic Volume Counts**. During the AM peak hour and the PM peak hour, the total amount of traffic crossing the cordon line will be counted by travel direction. The monitoring will be from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The peak hour within the two-hour count period will be calculated based on total traffic volumes to determine the campus-wide peak hours. Counts will be conducted during the regular academic year, which does not include academic breaks or end-of-quarter finals. The three annual counts shall be averaged to determine the annual traffic level for the baseline and each monitoring year.

File: 736167\graphics\traffic\Cordon Date: 6/20/2000




Source: Korve Engineering 6/8/2000

Stanford University
CP/GUP Project EIR

**STANFORD TRAFFIC MONITORING CORDON LINE**

PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.4-16

**2. License Plate Survey**. All vehicles will also need to be identified in order that through trips can be removed from the total volume. Through trips will be identified by recording the last four digits of the license plate on each vehicle. Five-minute increments of time will be noted on the survey forms in order to determine when a vehicle crosses the cordon in either direction. In the past, approximately 75 percent of the license plates have been able to be recorded for the heavily traveled roadways and nearly 100 percent for the lighter traveled roadways. These percentages will adequately estimate the amount of through traffic across the campus.

**3. License Plate Matching**. Matching license plates will be determined by comparing numbers that crossed both an entering and exiting cordon within a defined period (e.g., 20 minutes). Vehicles that enter and exit the cordon within the time period will be through trips across the campus without a campus-related purpose.

**4. Adjust Cordon Volumes**. Several parking lots along Campus Drive West and Stockfarm are inside the cordon, but serve hospital uses. These correctly include Stockfarm, Stockfarm Expansion, Stockfarm Wedge, PS-1, Beckman West, Beckman South, East of Fairchild, MSOB, Welch Road, Oak Road, Dean's Lawn, Evening Shift, Mudd, and Keck. Three lots along Quarry Road are outside the cordon, but serve campus uses. These include Quarry South, Quarry Psychiatry, and Rectangle. The driveways to these lots will be counted with tube counters. Hospital trips will be subtracted from the cordon and campus trips will be added to the cordon count. The cordon count adjustment will also need to factor in the potential for hospital trips to park in the campus lots and campus trips to park in the hospital lots. At the beginning and end of the peak hour each lot will need to be scanned to determine if any incorrect parking has occurred. If campus parking permits are observed in hospital lots, they will be added back into the cordon count. If hospital trips are observed in the campus lots they will be subtracted from the cordon count. All vehicles without a parking permit will be assumed to be correctly parked in their respective lots.

**5. Determine Cordon Line Traffic**. Total entering and total exiting traffic will be summed for the 16 cordon stations. A single peak hour will be determined for the entire campus based on the traffic volumes. The percent of through trips calculated by the license plate matching from Item 3 above will be removed. The through vehicles will be removed from both the inbound and the outbound traffic since they will have been observed crossing both an entering and exiting cordon line. Finally, the entering and exiting traffic for hospital uses along Campus Drive West and the campus uses in the Quarry Road lots calculated in Item 4 above will be subtracted from or added to the cordon counts

**TR-5C: Cooperative Trip Reduction**

Stanford may be recognized for participation in initiatives, either on its own or in cooperation with other jurisdictions or agencies, that contribute to reduction of trips in the area surrounding the campus. The County may elect to credit Stanford towards achievement of the "no net new commute trips" standard for participation in these initiatives, to a degree commensurate with the predicted or actual number of trips reduced and the proportion of the cost of the initiative that Stanford is contributing. Only programs that would lead to trip reduction in the area bounded by US 101, Valparaiso Avenue/Sand Hill Road, Interstate 280, and Arastradero Road/Charleston Road may be considered for this credit.

For each program in which Stanford intends to participate, a proposal shall be submitted to the County Planning Office for review and approval in order to receive the credit. The proposal shall describe the program, identify Stanford's role and contribution to the overall cost, and propose a monitoring method and/or mechanism for calculating commute trips reduced. The County Planning Office may elect to modify the monitoring method or trip reduction calculation proposed, or may choose not to approve credit towards trip reduction for Stanford's participation in the program. Once the County Planning Office has accepted the proposal and the program implementation begins, the County Planning Office will factor a calculation of the trip reduction credit into its conclusion regarding Stanford's annual compliance with the "no net new commute trips" standard, with the continuing requirement that Stanford provide continuing evidence of its participation in the program in a manner that can be independently verified.

**TR-5D: Tier 2 Intersection Capacity Expansion**

Tier 2 intersection improvements would only be required if trip reduction monitoring determines that Stanford commute trips are increasing. If cordon counts, as modified by trip reduction credits, exceed the baseline volume as calculated under Measure TR-5B, by 1% or more for any two our of three consecutive years, mitigation of impact to intersections will be required as described below. Many of these intersections are located in jurisdictions other than Santa Clara County, and the County does not have control over approval of the modifications.

If these mitigation measures are needed, Stanford's contribution to the cost of the modifications would be determined by the project's percentage contribution toward the intersections impact. The jurisdiction may choose to use the funds that Stanford contributes for the intersection modifications or for trip reduction measures that benefit the intersection in question. This limitation on Stanford's contribution to the funding does not include those intersections within Menlo Park for which Stanford has agreed to pay the entire cost of a defined set of modifications, if the City chooses to pursue these changes.

**El Camino Real and Valparaiso Avenue (Menlo Park).** Mitigation at this intersection would require changing the right-turn only lanes in both the northbound and southbound directions to shared through/right lanes.

**El Camino Real and Ravenswood Avenue (Menlo Park).** Mitigation at this intersection would require changing the exclusive right turn lanes in both the northbound and southbound directions to shared through/right lanes.

**El Camino Real and Middle Avenue (Menlo Park).** Mitigation at this intersection would require adding a southbound right turn lane. This improvement is not considered feasible because right-of-way would need to be acquired from the Safeway parcel, the sidewalk would have to be relocated, and landscaping would have to be removed.

**Junipero Serra Boulevard and Alpine Road / Santa Cruz Avenue (Menlo Park).** Mitigation at this intersection would require adding an eastbound right turn lane.

**Sand Hill Road and Sand Hill Circle and I-280 (Menlo Park).** Mitigation at this intersection would require adding an exclusive eastbound left turn lane.

**Sand Hill Road and Santa Cruz Avenue (Menlo Park).** Mitigation at this intersection would require adding a westbound right turn lane.

**Sand Hill Road and Oak Avenue (Menlo Park).** Mitigation at this intersection would require adding a through lane in both the eastbound and westbound directions.

**Middlefield Road and Willow Avenue (Menlo Park).** Mitigation at this intersection would require the addition of an eastbound right turn lane. The existing right turn lane is proposed in the future to be a shared through/right. To eliminate impacts at this intersection an eastbound right turn lane will be needed. To make this improvement, right-of-way will need to be acquired, the sidewalk relocated, and existing landscape removed.

**El Camino Real and Churchill Avenue (Palo Alto).** Mitigation at this intersection would require adding a westbound right turn lane and changing the shared left/right turn to an exclusive left turn lane. This improvement is physically feasible with the purchase of right-of-way, and relocation of the existing curb/gutter and sidewalk. An impact occurs at this intersection only with the Project plus the Arena and Theater scenario.

**El Camino Real and Stanford Avenue (Palo Alto).** Mitigation at this intersection would require adding an eastbound right turn lane. This mitigation is not considered feasible because right-of-way would need to be acquired, which would affect the business located in the southwest corner of the intersection. This improvement may cause added traffic to Stanford Avenue that would be undesirable from a neighborhood perspective.

**Middlefield Road and University Avenue (Palo Alto).** Mitigation at this intersection would require adding a northbound right turn lane. This improvement is considered technically feasible. To make this improvement, right-of-way would need to be acquired, the sidewalk relocated, and existing landscaping removed. However, the improvement could be made without affecting existing development.

**El Camino Real and Palm Drive / University Avenue (Palo Alto).** Mitigation at this intersection would require adding a westbound right turn lane. This mitigation is considered technically feasible by moving the existing curb, modifying the access to the CalTrain station, and possibly removing mature landscaping.

**Junipero Serra Boulevard and Page Mill Road (Congestion Management Plan in Palo Alto).** Mitigation at this intersection would require adding a second southbound right turn lane.

**Junipero Serra Boulevard and Stanford Avenue (Santa Clara County).** Mitigation at this intersection would require adding a second exclusive westbound left turn lane on Stanford Avenue. Adding a second westbound left turn lane is physically possible. Southbound Junipero Serra will need to be widened to receive the second left turn lane. The widening shall be extended to the Page Mill Road intersection as an extension of the right turn lane that is currently being constructed. This improvement may cause added traffic to Stanford Avenue that would be undesirable from a neighborhood perspective.

**Junipero Serra Boulevard and Campus Drive West (Santa Clara County).** Mitigation at this intersection would require adding a second westbound right turn lane.

**Sand Hill Road Widening as Alternate Mitigation.** If Sand Hill Road were widened to two lanes in each direction across San Francisquito Creek, along with other improvements identified in the Sand Hill Road project, some of the traffic volumes which use Campus Drive West from the main Stanford Campus and SUMC to I-280 could shift onto Sand Hill Road. The effect of widening Sand Hill Road to a complete arterial would be to reduce Project impacts in some locations. In particular, the shift of traffic from Campus Drive West to Sand Hill Road would eliminate the need for mitigation measures at the intersections of Junipero Serra/Campus Drive West, Santa Cruz/Alpine/Junipero Serra, Santa Cruz/Sand Hill and Sand Hill/Oak Avenue. Mitigation measures identified for Welch Road/Campus Drive West would continue to be necessary in the event that Sand Hill Road is widened. If Menlo Park approved the widening of Sand Hill Road across San Francisquito Creek, it is assumed that they would also approve the entire funded mitigation package from the Sand Hill Road Development Agreement. This agreement included the Sand Hill/Santa Cruz intersection.

After Mitigation: *Significant*

Despite the program of intersection improvements and trip reduction measures proposed above, it is not possible to conclude definitively that intersection levels of service would be reduced to less than significant levels. There are three reasons that the County cannot guarantee the effectiveness of the program. First, Stanford may only be required to make their fair-share contribution to the improvement, and there is no guarantee that the remaining funds for the improvements would be available. Second, many of the intersections are located in other jurisdictions, who may or may not choose to implement the recommended improvements. Third, the County is constrained by statutory limitations that do not allow it to mandate the use of trip reduction measures. Therefore, although it is likely that intersection impacts would be adequately mitigated for GUP related traffic, this impact is considered to be significant and unavoidable.

# Table 4.4-28

## Intersection Level of Service - With Sand Hill Road Widening, Year 2010

| Intersection | City | Peak Hour | Year 2010 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No Project Background | | | With Project Without Arena and Theater | | | With Project Without Arena and Theater With Sand Hill Road Widening | | | Mitigation Required |
| | | | LOS | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay | Yes/No |
| Junipero Serra / Campus Drive West | Santa Clara County | AM | F | 0.966 | 71.4 | F | .0974 | 75.4 | F | .0974 | 75.4 | No |
| | | PM | F | 1.218 | 187.8 | F | 1.268 | 233.4 | F | 1.109 | 108.6 | No |
| Junipero Serra / Alpine / Santa Cruz | Menlo Park | AM | F | 1.252 | 167.6 | F | 1.264 | 176.7 | F | 1.253 | 163.7 | No |
| | | PM | F | 1.15 | 106.0 | F | 1.167 | 115.9 | F | 1.077 | 69.3 | No |
| Sand Hill / Santa Cruz | Menlo Park | AM | F | 1.066 | 73.3 | F | 1.077 | 76.7 | F | 1.114 | 92.9 | Yes |
| | | PM | F | 1.206 | 154.4 | F | 1.188 | 137.2 | F | 1.084 | 79.2 | No |
| Sand Hill / Oak | Menlo Park | AM | F | 1.356 | 245.2 | F | 1.357 | 245.8 | C | 0.942 | 18.8 | No |
| | | PM | F | 1.337 | 225 | F | 1.340 | 228.1 | A | 0.804 | 4.7 | No |
| Welch Road / Campus Drive West | Stanford | AM | B | 0.759 | 6.7 | B | 0.774 | 7.5 | A | 0.797 | 3.9 | No |
| | | PM | F | 1.52 | 109.6 | F | 2.060 | 242.7 | F | 1.981 | 187.4 | Yes |

Note: Theater is also referred to as the Performing Arts Center.

**IMPACT: TR-6: Residential Streets. Will the project result in traffic impacts to surrounding residential neighborhoods?**

Analysis: *Significant*

There is no data showing a relationship between Stanford traffic and cut-through traffic on neighborhood streets in Palo Alto and Menlo Park. However, the public has raised concerns about this issue. At this time, Stanford's future contribution resulting from project-related traffic to "cut-through" traffic on neighborhood streets is unknown. If the policy for "no net new commute trips" is realized, then no increase in peak hour cut through traffic in residential areas should occur, except as trip destinations shift on the campus or commuters change their patterns to avoid increasing background traffic. If the standard is not achieved, impacts may occur to residential streets by either direct Stanford traffic or by non-Stanford traffic that is displaced by increased Stanford traffic. This impact is therefore potentially significant.

Construction of new housing along Stanford Avenue could impact circulation in the vicinity of the College Terrace neighborhood. The construction of up to 75 CP/GUP faculty/staff housing units along Stanford Avenue (CP Site E) could increase congestion on Stanford Avenue if driveways were constructed directly onto Stanford Avenue. The increased number of driveways on Stanford Avenue would slow passing traffic and would conflict with pedestrians and bicycles using the Class II bicycle path that runs along the northern edge of Stanford Avenue. This impact is significant.

Mitigation: **TR-6A: Reduce Cut Through Traffic on Residential Streets**

Stanford shall participate in any future neighborhood traffic studies initiated by the County of Santa Clara, City of Palo Alto or City of Menlo Park that address neighborhood cut-through traffic. Stanford's participation shall be for the purpose of determining how much, if any, of the cut-through traffic is attributable to cars travelling to or from the Stanford central campus. The studies in which Stanford could be required to participate would include those for any neighborhood west of Middlefield Road, south of Willow Road/Santa Cruz Avenue/Sand Hill Road, east of I-280, and north of Page Mill Road/Oregon Expressway. It is the responsibility of each jurisdiction to contact the County Planning Office at the time of study initiation to alert the Planning Office to the need to enforce this requirement. The relevant jurisdiction may waive this requirement of Stanford if desired at the time of each study. If impacts attributable to Stanford traffic are identified from the studies, Stanford would contribute to the identified mitigation measures to a degree proportional to Stanford's impact.

After Mitigation: *Less than Significant*

Implementation of Measure TR-6A: Reduce Cut Through Traffic on Residential Streets would provide an opportunity to quantify Stanford induced cut-through traffic in neighborhoods that are adjacent to the CP boundary and identify measures necessary to reduce the identified impacts. There is currently no data to support that significant cut-through impacts exist.

Mitigation: **TR-6B: Require Site-Specific Traffic Studies for Large GUP Projects**

Stanford shall be required by the County to prepare site-specific traffic studies for large projects allowed in the GUP development. These projects will potentially include, but not be limited to: redevelopment of Escondido Village that exceeds 100 units (including but not limited to housing along El Camino Real adjacent to Escondido Village), West Campus and Lagunita faculty/staff housing development, the Performing Arts Center, the sports arena expansion, Stanford Avenue housing, and major parking structures, among others. These traffic studies will address traffic generation, trip distribution, project access, safety and the effects of the project on nearby streets and intersections, pedestrian and bicycle facilities, parking, transit, and other facilities as deemed appropriate by the County Planning Office. Appropriate mitigation measures will be developed in the study, conditioned through the County review and approval process, and implemented by Stanford to reduce these potential impacts to less than significant levels. The scope of the traffic analysis will be reviewed and approved by the County before the study is undertaken, and the County will review and comment on a draft Report before it is finalized.

After Mitigation: *Less than Significant*

Implementation of Measure TR-6B: Require Site-Specific Traffic Studies for Large GUP Projects would analyze all potential impacts associated with site-specific projects and would provide mitigation measures to reduce identified impacts to a level that is less than significant.

**IMPACT: TR-7: Construction. Will the project create additional construction traffic causing a substantial reduction in access to land uses or a reduction in mobility?**

Analysis: *Significant*

With the addition of construction traffic reduction in access to land uses, or a reduction in mobility would occur for a limited time period. Impacts could include reduction in on-street parking, reduction in pedestrian, bicycle and public transit access, additional peak-hour traffic, use of non-truck routes by construction traffic, damage to roadways, and interference with special events. These impacts are potentially significant.

The following mitigation measures are designed to ensure that as more detailed construction plans are developed, potentially significant transportation system impacts related to construction plans would be reduced to less than significant levels.

Mitigation: **TR-7: Construction Traffic Control Measures**

The following traffic control measures are required to ensure that access is maintained during construction of Stanford GUP projects.

**a. Off-street Parking for Construction Related Vehicles**. Stanford shall be required to provide adequate off-street parking for all construction-related vehicles throughout the construction period. If adequate parking cannot be provided on the construction sites, a satellite parking area shall be designated, and a shuttle bus shall be operated to transfer construction workers to/from the job site.

**b. Maintenance of Pedestrian Access**. Stanford shall be prohibited from substantially limiting pedestrian access during construction of the project, without prior approval from the City of Palo Alto, Department of Public Works. Such approval shall require submittal and approval of specific construction management plans to mitigate the specific impacts to a less than significant level. Pedestrians access-limiting actions would include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian re-routing at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions which may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, covered walkways shall be provided.

**c. Maintenance of Bicycle Access**. Stanford shall be prohibited from substantially limiting bicycle access while constructing the project without prior approval from the City of Palo Alto Department of Public Works. Such approval shall require submittal and approval of specific construction management plans to mitigate the specific impacts to a less than significant level. Bicycle access-limiting actions would include, but not be limited to, bike lane closures or narrowing, closing or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period.

**d. Restriction on Construction Hours**. Stanford shall make feasible attempts to limit the number of construction material deliveries from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM on weekdays When feasible, Stanford shall be required to prohibit or limit the number of construction employees arriving or departing the site between the hours of 4:30 PM and 6:00 PM.

**e. Construction Truck Routes**. Stanford shall be required to deliver and remove all construction-related equipment and materials on truck routes designated by the Cities of Palo Alto and Menlo Park. Heavy construction vehicles shall be prohibited from accessing the site from other routes. Figure 8.4-15 illustrates the Stanford area truck routes that must be used by all trucks.

**f. Phone Number for Complaints**. Stanford shall post at least one sign no smaller than 1,296 square inches at all active construction sites. The sign shall contain the name and telephone number or e-mail address of the appropriate Stanford person the public may contact to report alleged violations of this mitigation measure or to register complaints about construction traffic associated with building projects under this GUP. Stanford shall keep a written record of all such complaints and shall provided copies of these records to the County Planning Office as part of the annual report process.

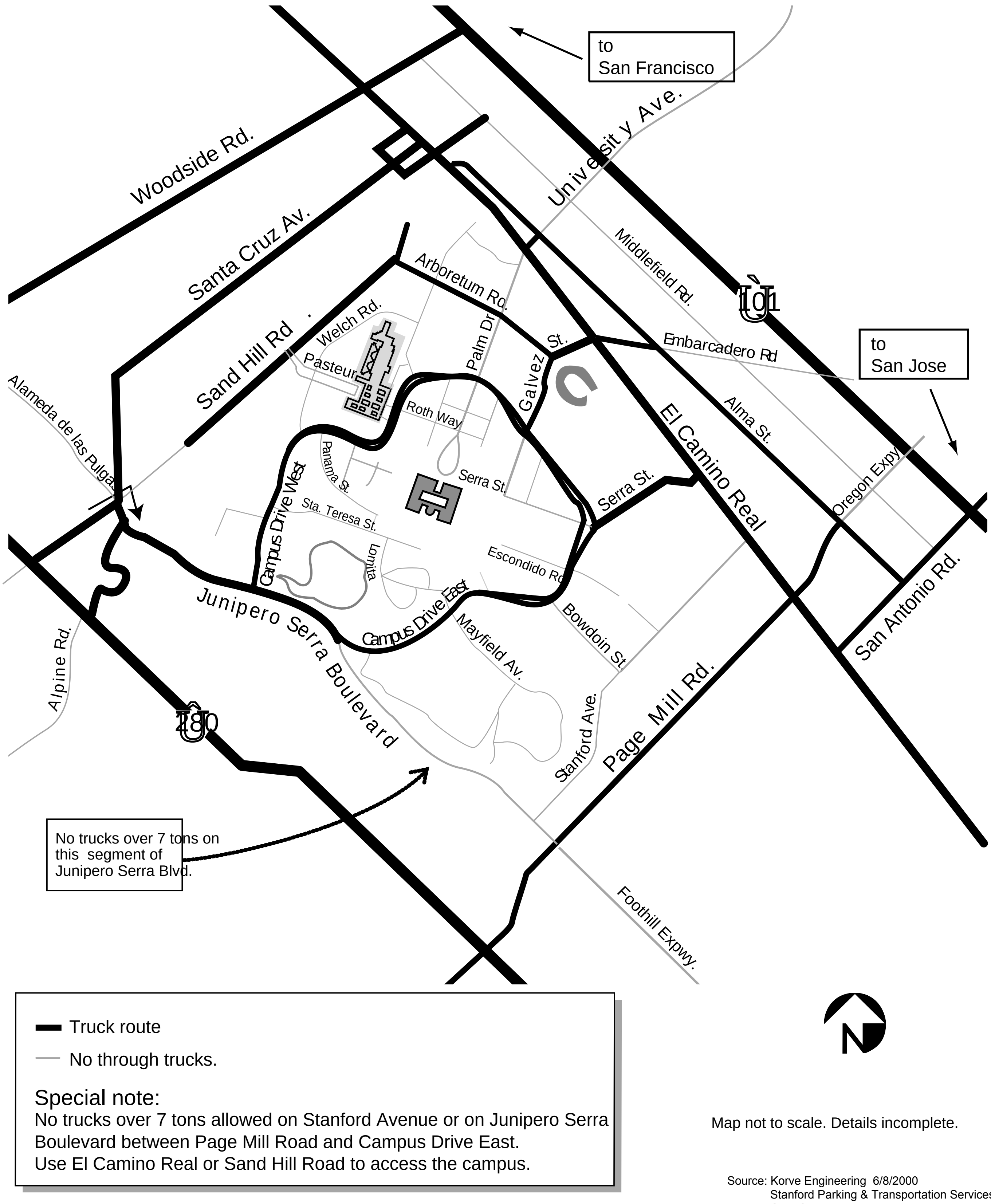
**g. Protection and Maintenance of Public Transit Access and Routes**. Stanford shall be prohibited from limiting access to public transit, and from limiting movement of public transit vehicles, without prior approval from the VTA or other appropriate jurisdiction. Such approval shall require submittal and approval of a mitigation plan to reduce specific impacts to a less than significant level. Potential actions that would impact access to transit include, but are not limited to, relocating or removing bus stops, limiting access to bus stops or transfer facilities, or otherwise restricting or constraining public transit operations.

**h. Construction Impact Mitigation Plan**. In lieu of the above mitigation measures, Stanford shall submit a detailed construction impact mitigation plan to County prior to commencing any construction activities with potential transportation impacts. This plan shall address in detail the activities to be carried out in each construction phase, the potential transportation impacts of each activity, and an acceptable method of reducing or eliminating significant transportation impacts. Details such as the routing and scheduling of materials deliveries, construction employee arrival and departure schedules, employee parking locations, and emergency vehicle access shall be described and approved.

**i. Construction During Special Events**. Stanford shall implement a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events, which attract a substantial number of visitors to the campus. This measure may require a special supplemental permit to be obtained to host such events during significant construction phases.

After Mitigation: *Less than Significant*

Implementation of Measure TR-7: Construction Traffic Control Measures would provide parking for construction workers and other vehicles (related to construction) during the construction time period; Retain the existing pathways for pedestrians so that they are not impacted by construction activities; Retain the existing bicycle pathways so that they are not impacted by construction activities; Help to reduce additional impacts to the surrounding street network during peak travel times; Help to reduce additional impacts to the surrounding street network; Require the project sponsor to any structural damage to public roadways, returning any damaged sections to original structural condition; Require the project sponsor to not affect existing transit routes/facilities; Require the project sponsor to document the measures they will take to eliminate, reduce, and avoid impacts during construction of the project; and help to reduce additional impacts to the surrounding street network during special events




Special note:
No trucks over 7 tons allowed on Stanford Avenue or on Junipero Serra Boulevard between Page Mill Road and Campus Drive East.
Use El Camino Real or Sand Hill Road to access the campus.

Map not to scale. Details incomplete.

Source: Korve Engineering 6/8/2000
Stanford Parking & Transportation Services
City of Menlo Park



# STANFORD AREA TRUCK ROUTES

## 4.4.H CUMULATIVE IMPACTS AND MITIGATION MEASURES

The traffic analysis performed for the project includes background or cumulative conditions. Refer to Section 4.4.G for the cumulative analysis.

# 4.5 HYDROLOGY AND WATER QUALITY

This section discusses the potential of the project to increase runoff, resulting in flooding both within Stanford and in downstream areas. The section also evaluates potential impacts of the project on water quality, both during and after construction of housing and academic buildings. Effects on both surface water quality and groundwater quality are addressed. This section also evaluates the effects of increased impervious surface area on groundwater recharge in the area.

## 4.5.A SETTING

### 4.5.A.1 General

Within Santa Clara County, the 4,017-acre Stanford Community Plan area (project area) is located primarily within the San Francisquito Creek and Matadero Creek watersheds. San Francisquito Creek and Matadero Creeks discharge into the southern portion of San Francisco Bay. The approximate watershed boundaries within the project area are shown in Figure 4.5.1.

- Approximately 1,800 acres of the project area are located within the San Francisquito Creek watershed. Major surface waters in this area include San Francisquito Creek and Los Trancos Creek, Felt Lake (irrigation supply for the campus) and Lake Lagunita (seasonal recreational lake for the campus). San Francisquito Creek and Los Trancos Creek flow in a northerly or northeasterly direction. San Francisquito Creek forms the boundary between Santa Clara and San Mateo Counties.
- Approximately 2,100 acres of the project area are located within the Matadero Creek watershed. The major surface water in this area is Matadero Creek, which flows in a northeasterly direction. A small portion of the watershed drains in an easterly direction towards Deer Creek, which flows in a northerly direction to Matadero Creek. Another small portion of the watershed drains in a southerly direction towards Arastradero Creek, which flows in a southerly direction to Matadero Creek. After leaving the project area, Matadero Creek flows through Palo Alto and is channelized toward the Bay.

Generally, the project area slopes in a northerly direction with elevations ranging from approximately 400 feet on the south (in the foothills south of Junipero Serra Boulevard) to approximately 40 feet on the north near El Camino Real.

Average annual precipitation in the project area vicinity is approximately 14 inches per year based on twelve years of precipitation records (1980 through 1990, and 1992) for a rainfall gage located at the Palo Alto Reclamation Plant (pers. communication with Jim Wang, Engineering Unit Manager, Hydrology, Geology, Geotechnical Engineering Unit, Santa Clara Valley Water District).

The surface soils in the project area vicinity primarily consist of loams and gravelly loams (United States Department of Agriculture Soil Conservation Service, August 1968). Generally, soil drainage ranges from “moderately well” to “good”, soil runoff characteristics range from “very slow” to “medium”, and soil erosion hazard characteristics range from "none" to “moderate.”

Approximately 30 percent of the project area is developed. Within the remaining areas, existing vegetation consists of riparian oak woodland, oak woodland, and annual grassland (see Section 4.8 for more detailed description). Generally, in the undeveloped areas, vegetative cover ranges from about 70 to 100 percent.

### 4.5.A.2 Surface Water Hydrology

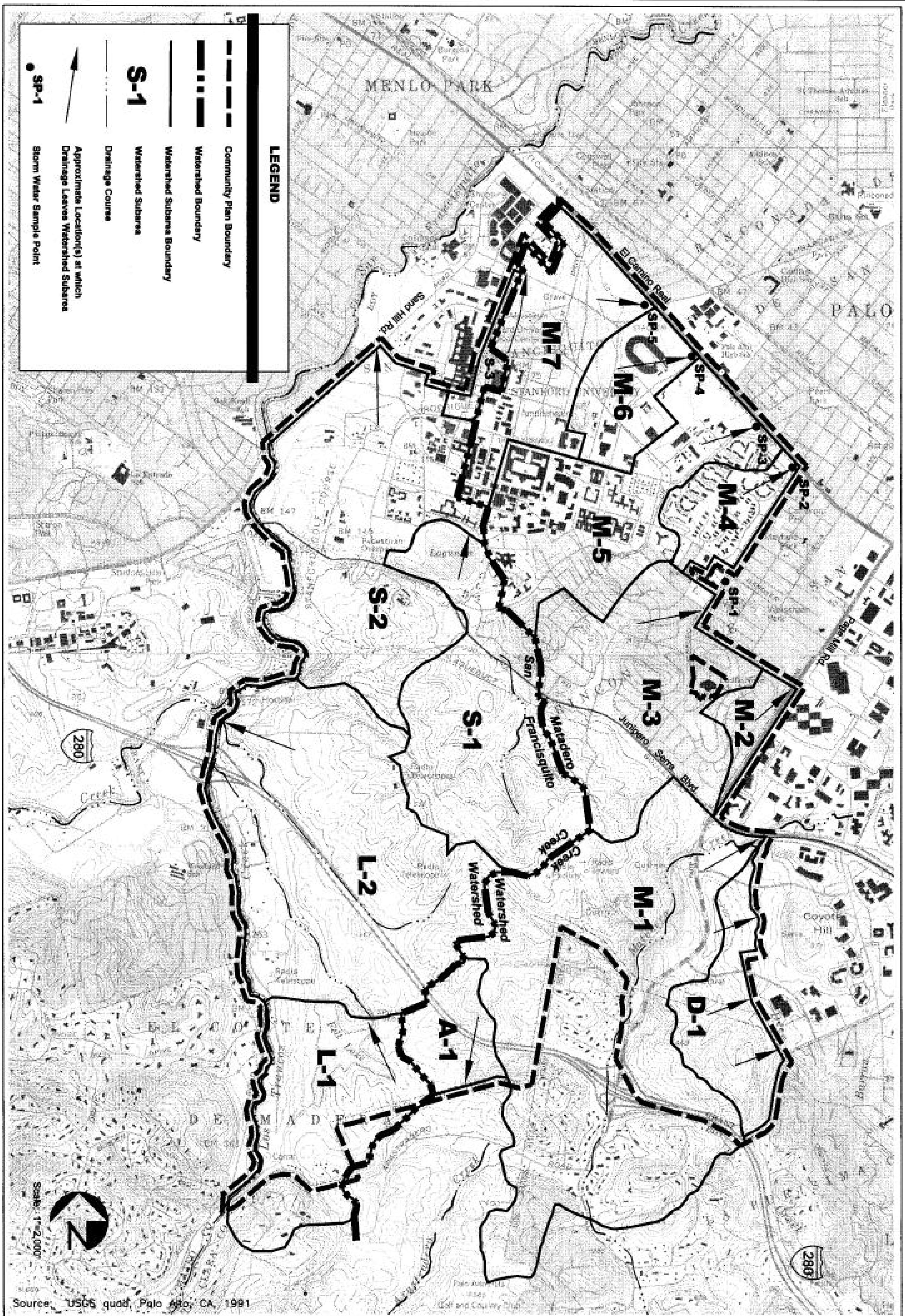
For purposes of hydrologic analysis, the project area has been subdivided into the fourteen watershed subareas shown in Figure 4.5.1. Existing drainage patterns within the subareas are described below.

The areas, which have proposed land use designations of Academic Campus and Campus Residential, that may be developed or redeveloped within the project area (development districts) are shown in Figure 4.5.2. Those areas are primarily located north of Junipero Serra Boulevard and contain approximately 1,750 acres. Additional areas within the project area that are not proposed for development and have future land use designations of Open Space and Academic Reserve, Campus Open Space, and Special Conservation contain approximately 2,250 acres. Table 4.5-1 lists acreage of each watershed area that is currently developed, and their proposed future land use designations. Additional information on each watershed is presented below.

#### *San Francisquito Creek Watershed*

Subareas S-1 and S-2 drain to San Francisquito Creek directly, and Subareas L-1 and L-2 drain to Los Trancos Creek, which flows into San Francisquito Creek.

- Subarea S-1 includes Lake Lagunita. Storm runoff from Subarea S-1 is discharged storm drainage facilities located on the east side of Lake Lagunita.
- Subarea S-2 includes the Stanford Golf Course. Storm runoff from Subarea S-2 enters several existing drainage conduits located in Sand Hill Road and is conveyed to San Francisquito Creek. In addition, the most westerly portions of Subarea S-2 drain directly into San Francisquito Creek.



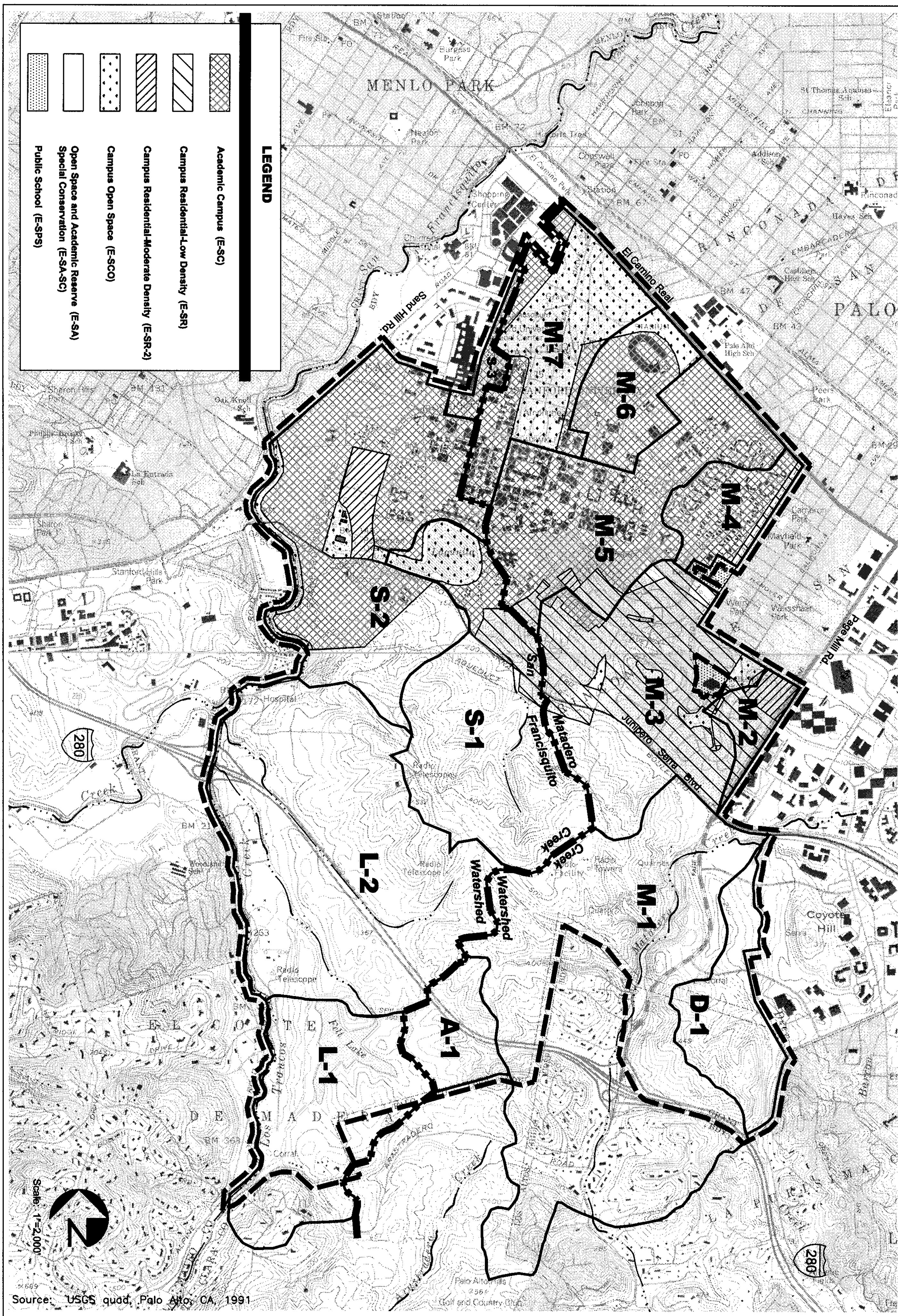



**EXISTING HYDROLOGY and STORM DRAINAGE PATTERNS**

PARSONS

Figure 4.5-1

File: 736167\Graphics\Water Date: 06/20/2000




Stanford University
CP/GUP Project EIR

**PROPOSED LAND USE DESIGNATIONS**
**with DRAINAGE SUBAREAS**

PARSONS

Figure 4.5-2

# Table 4.5-1

## Watershed Characteristics

| Watershed Subarea | Total Area[1] (acres) | Existing Developed Area (acres) | Existing Undeveloped Area (acres) | Area in Proposed CP Land Use Designations (acres) | | | | Total Developable Area[2] (acres) |
|---|---|---|---|---|---|---|---|---|
| | | | | Academic Campus or Public School | Campus Residential | Campus Open Space | Open Space & Academic Reserve or Special Conservation | |
| **San Francisquito Creek** | | | | | | | | |
| S-1 | 380 | 40 | 340 | 30 | 40 | 40 | 270 | 70 |
| S-2 | 520 | 50 | 470 | 360 | 40 | 30 | 90 | 400 |
| S-3 | 30 | 30 | 0 | 30 | 0 | 0 | 0 | 30 |
| L-1 | 220(300) | 0 | 220 | 0 | 0 | 0 | 220 | 0 |
| L-2 | 650 | 0 | 650 | 0 | 0 | 0 | 650 | 0 |
| **Matadero Creek** | | | | | | | | |
| M-1 | 540(980) | 0 | 540 | 0 | 0 | 0 | 540 | 0 |
| M-2 | 50 | 50 | 0 | 0 | 50 | 0 | 0 | 50 |
| M-3 | 440 | 295 | 145 | 20 | 290 | 20 | 110 | 310 |
| M-4 | 110 | 100 | 10 | 100 | 10 | 0 | 0 | 110 |
| M-5 | 390 | 330 | 60 | 360 | 30 | 0 | 0 | 390 |
| M-6 | 140 | 40 | 100 | 120 | 0 | 20 | 0 | 120 |
| M-7 | 270 | 55 | 215 | 100 | 0 | 170 | 0 | 100 |
| D-1 | 160 | 0 | 160 | 0 | 0 | 0 | 160 | 0 |
| A-1 | 100 | 0 | 100 | 0 | 0 | 0 | 100 | 0 |

1. Includes those portions of the watershed subarea within the project area. Where the watershed includes lands outside the project area, the larger total is shown in parenthesis.
2. Developable area includes areas designated as Academic Campus or Campus Residential.

- Storm runoff from Subarea S-3 enters an existing drainage conduit located in Quarry Road between Welch Road and Arboretum Road and is conveyed to San Francisquito Creek.
- Subarea L-1 contains Felt Lake. Storm runoff from Subarea L-1 enters Felt Lake.
- Subarea L-2 contains a large portion of the western area of the foothills, and is bisected by I-280. Storm runoff from Subarea L-2 enters Los Trancos Creek upstream of its confluence with San Francisquito Creek.

### *Matadero Creek Watershed*

Subareas M-1 through M-7 drain to Matadero Creek, Subarea D-1 drains to Deer Creek, which flows into Matadero Creek, and Subarea A-1 drains into Arastradero Creek, which also flows into Matadero Creek.

- Subarea M-1 is traversed by Matadero Creek. Storm runoff from Subarea M-1 enters Matadero Creek upstream of Junipero Serra Boulevard.
- Storm runoff from Subarea M-2 enters an existing drainage conduit located in Page Mill Road and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea M-3 enters an existing drainage conduit located near the intersection of Stanford Avenue and Dartmouth Street and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea M-4 enters an existing drainage conduit located in El Camino Real near Stanford Avenue and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea M-5 enters an existing drainage conduit in El Camino Real near Sierra Street and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea M-6 enters an existing drainage conduit at El Camino Real near the Stadium and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea M-7 enters an existing drainage conduit at El Camino Real near Galvez Street and is ultimately conveyed to Matadero Creek.
- Storm runoff from Subarea D-1 enters Deer Creek upstream of its confluence with Matadero Creek.
- Storm runoff from Subarea A-1 flows in a southerly direction away from the project area and enters Matadero Creek near the intersection of Arastradero and Page Mill Roads.

Based on a review of the improvements proposed in the General Use Permit (GUP) application, the subareas where additional impervious surfaces may be constructed have been identified (S-1, S-2, M-3, M-4, M-5, M-6, and M-7). No additional impervious surfaces and increased storm flows are anticipated in Subareas S-3 and M-2. In addition, the proposed Community Plan land use designations and GUP application do not anticipate any development or redevelopment in Subareas M-1, L-1, L-2, D-1, and A-1.

For each of the subareas where additional impervious surfaces are expected, we have estimated the peak 100-year, 24-hour storm water runoff based on pre-GUP and post-GUP conditions. Based on the *Drainage Manual* for the County of Santa Clara, the 100-year precipitation used for estimating storm runoff was 4.32 inches (or 0.18 inches per hour over a 24-hour period). The peak storm runoff estimates are presented in Table 4.5-2. The hydrologic analysis was performed using the Technical Release 55 (TR-55) model developed by the United States Department of Agriculture Soil Conservation Service (SCS).

Table 4.5-2 shows that under existing conditions, within the subareas where it is anticipated that improvements will be constructed, impervious surfaces currently (pre-GUP conditions) cover approximately 500 acres, about 60 acres in the San Francisquito Creek watershed and 440 aces in the Matadero Creek watershed. Estimated 100-year, 24 –hour storm flows from these watersheds are currently estimated at about 245 cubic feet per second (cfs) for the San Francisquito Creek watershed and about 590 cfs for the Matadero Creek watershed.

### 4.5.A.3 Surface Water Quality

The quality of the storm water runoff in the project area vicinity is summarized in Table 4.5-3. The concentrations are based on samples collected by Stanford University between 1993 and 1999 at five locations. The locations for the numbered sampling points are shown on Figure 4.5-1. The table shows the analytical results for Specific Conductance (electrical conductivity), pH, Total Suspended Solids, Copper, Lead, and Oil and Grease. Although not currently subject to numeric standards, the concentrations shown in Table 4.5.3 appear typical of runoff from urban areas.

### 4.5.A.4 Groundwater/Groundwater Quality

Stanford University has provided data regarding three wells located within the project area (Wells 1, 2, and 5). The locations for these wells and one other agricultural well are shown in Figure 4.5-3. The quality of the groundwater extracted at the Stanford University wells is shown in Table 4.5-4. For each of the listed constituents, the table shows that the constituent concentrations in the groundwater supplies are in compliance with the primary domestic water quality standard for nitrate and the secondary domestic water quality drinking water standards for nine other constituents. The primary standards are intended to protect public health. The secondary standards (consumer acceptance limits) are intended to protect the public welfare and to assure a supply of pure, wholesome and potable water.

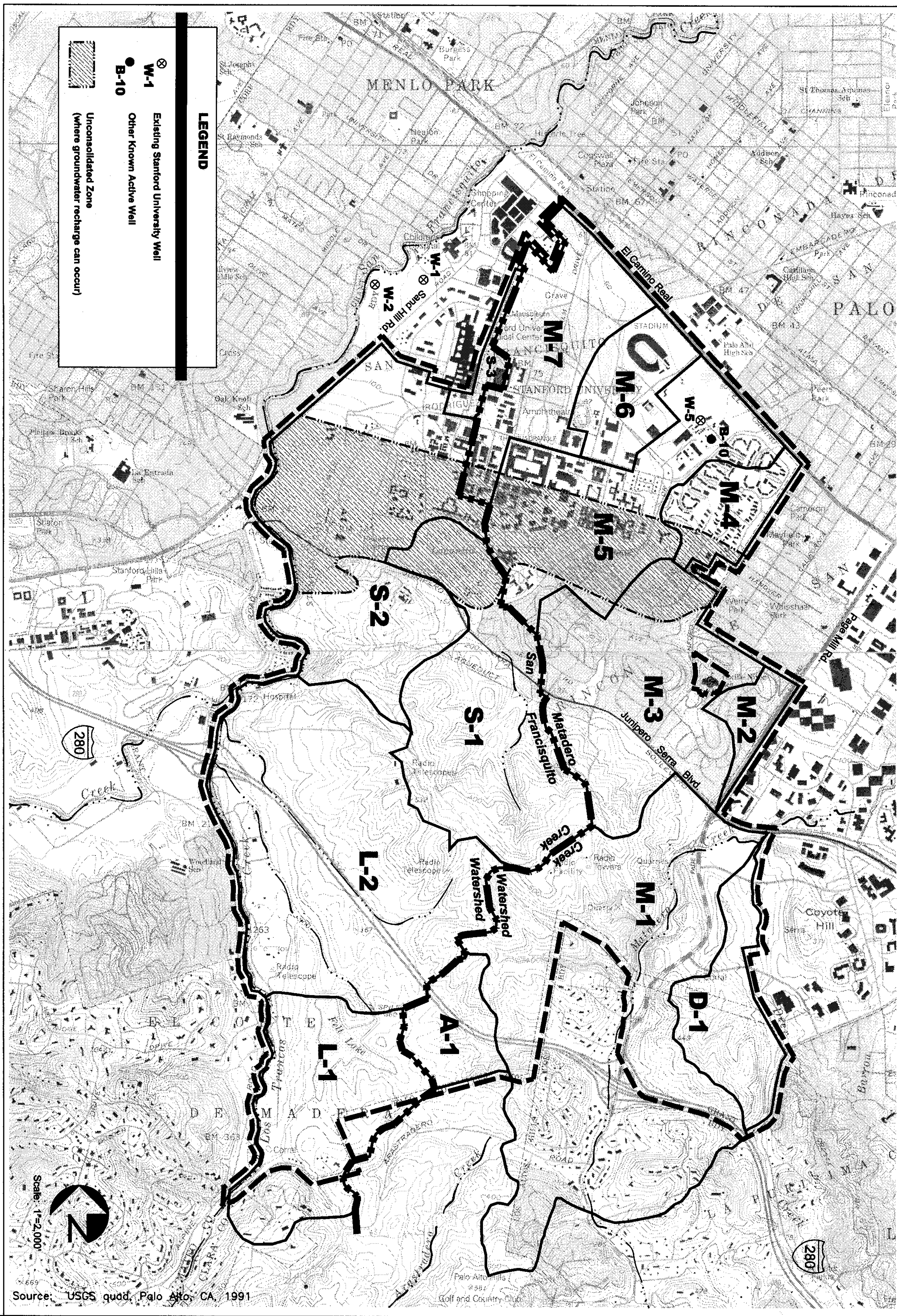
In the Stanford University vicinity, the unconfined zone (where groundwater recharge can occur) is relatively small (letter from Santa Clara County Water District dated March 5, 2000). Groundwater recharge cannot occur in areas outside the unconfined zone because there is an impermeable layer between the ground surface and the aquifer. This area where recharge cannot occur is called the confined zone. The approximate boundaries for the unconfined zone are shown in Figure 4.5-3. The unconfined zone shown thereon is based on the area located between the confined aquifer boundary and the valley floor boundary as depicted on Santa Clara Valley Water District drawing “Groundwater Level Monitoring Wells Santa Clara Valley North County December 1995” (Sheet 1 of 2) dated November 28, 1995.

# Table 4.5-2

## Estimated 100-Year 24-Hour Storm Runoff and Detention Basin Requirements

| | | Estimated Existing Pre-GUP Condition | | | | Estimated Proposed Post-GUP Condition | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Subarea | Total Area (acres) | Existing Imper-vious Area (acres) | SCS Runoff Curve No. (CN) | Total Time of Concen-tration (hours) | Peak 100-Year, 24-Hour Runoff. $Q_{pre}$ (cfs) | Additional Imper-vious Area (acres) | SCS Runoff Curve No. (CN) | Total Time of Concen-tration (hours) | Peak 100-Year, 24-Hour Runoff, $Q_{post}$ (cfs) | Detention Basin Capacity Requirement (cubic feet)[1] |
| S-1 | 380 | 10 | 77 | 0.26 | 174 | 1 | 78 | 0.26 | 185 | 8,300 |
| S-2 | 520 | 51 | 64 | 0.19 | 72 | 19 | 65 | 0.19 | 79 | 8,000 |
| Subtotal, San Francisquito Creek Watershed | 900 | 61 | | | 246 | 20 | | | 264 | 16,300 |
| M-3 | 440 | 117 | 85 | 0.17 | 246 | 1 | 85 | 0.17 | 246 | None[2] |
| M-4 | 110 | 30 | 86 | 0.19 | 56 | 5 | 87 | 0.19 | 58 | 1,600 |
| M-5 | 390 | 209 | 87 | 0.41 | 225 | 7 | 87 | 0.41 | 225 | None[2] |
| M-6 | 140 | 34 | 70 | 0.27 | 26 | 1 | 70 | 0.27 | 26 | None[2] |
| M-7 | 270 | 47 | 64 | 0.51 | 39 | 5 | 65 | 0.51 | 43 | 4,800 |
| Subtotal, Matadero Creek Watershed | 1,350 | 437 | | | 592 | 19 | | | 598 | 6,400 |
| Totals: | 2,250 | 498 | | | 838 | 39 | | | 862 | 22,700 |

1. Estimated detention basin storage capacity required to prevent $Q_{post}$ from exceeding $Q_{pre}$.
2. Although some additional impervious area will be constructed in this subarea, the increase in impervious area is not sufficient enough to cause an increase in the SCS Runoff Curve number and thus an increase in the peak storm runoff discharge.




Stanford University
CP/GUP Project EIR

**WELL LOCATIONS and GROUNDWATER RECHARGE AREA**

PARSONS

Figure 4.5-3

## Table 4.5-3

### Storm Water Runoff Quality in Project Area Vicinity (1993 through 1999)

| Sampling Point No. | Sampling Point Description | Samples Collected | Specific Conductance (umhos/cm) | pH (units) | Total Suspended Solids (mg/l) | Copper (mg/l) | Lead (mg/l) | Oil and Grease (mg/l) |
|---|---|---|---|---|---|---|---|---|
| 1 | Stanford Ave at Dartmouth St | 10 | 51 to 1,100 | 6.9 to 8.8 | 4 to 230 | ND to 0.055 | ND to 0.022 | ND |
| 2 | Stanford Ave at El Camino Real | 10 | 34 to 110 | 6.5 to 8.6 | 9 to 210 | ND to 0.047 | ND to 0.025 | ND to 11 |
| 3 | Sierra St at El Camino Real | 10 | 46 to 110 | 7 to 9.1 | 11 to 200 | 0.014 to 0.07 | ND to 0.062 | ND to 18 |
| 4 | Football Stadium at El Camino Real | 10 | 81 to 910 | 6.8 to 8.9 | 34 to 230 | ND to 0.064 | ND to 0.04 | ND to 14 |
| 5 | Galvez St at El Camino Real | 9 | 51 to 180 | 6.6 to 8.8 | 15 to 180 | 0.015 to 0.035 | ND to 0.015 | ND |
| 6 | 90-inch Storm Drain at San Francisquito Creek (200 feet upstream of El Camino Real) | 10 | 44 to 850 | 7.1 to 8.9 | ND to 54 | ND to 0.23 | ND to 0.029 | ND to 5.5 |
| 7 | 42-inch Storm Drain at San Francisquito Creek (600 feet upstream of El Camino Real) | 10 | 27 to 170 | 6.6 to 8.6 | 3 to 82 | ND to 0.16 | ND to 0.027 | ND to 17 |

Source: Stanford University

ND = Not detected

## Table 4.5-4

### Existing Stanford University Wells in Project Area Vicinity

| Constituent | Units | Drinking Water Standard | Well #1 (570 feet deep) | Well #2 (300 feet deep) | Well #5 (830 feet deep) |
|---|---|---|---|---|---|
| pH | Units | None | 7.7 | 7.5 | 7.8 |
| Specific Conductance | mmhos /cm | 900** (recommended) | 880 | 900 | 860 |
| Total Filterable Residue @ 180 degrees C | mg/l | 500** (recommended) 1,000** (maximum) | 540 | 570 | 500 |
| Foaming Agents | mg/l | 0.5** | <0.02 | <0.02 | <0.02 |
| Apparent Color | Units | 15** | <3 | <3 | <3 |
| Odor Threshold | Units | 3** | <1 | <1 | <1 |
| Lab Turbidity | NTU | 5** | <0.10 | <0.10 | 0.28 |
| Total Hardness (as Calcium Carbonate) | mg/l | None | 330 | 260 | 361 |
| Calcium | mg/l | None | 94 | 75 | 100 |
| Magnesium | mg/l | None | 24 | 17 | 27 |
| Sodium | mg/l | None | 73 | 96 | 49 |
| Potassium | mg/l | None | <1 | <1 | 1.1 |
| Total Alkalinity | mg/l | None | 250 | 250 | 220 |
| Bicarbonate | mg/l | None | 250 | 250 | 220 |
| Sulfate | mg/l | 250** (recommended) | 100 | 130 | 53 |
| Chloride | mg/l | 250** (recommended) | 76 | 62 | 96 |
| Nitrate | mg/l | 45* | 13 | 16 | 5.4 |

Source: Stanford University

* Primary Drinking Water Standard (public health standard)

** Secondary Drinking Water Standard (consumer acceptance standard)

## 4.5.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

An impact is considered to be significant if it meets any of the following criteria:

**Table 4.5-5**

Evaluation Criteria with Points of Significance – Hydrology and Water Quality

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| **Surface Water Hydrology** | | | |
| 1. Will the Project cause increased runoff due to the creation of impervious surfaces? | Increase in the peak 100-year storm runoff to streams | Increase greater than 0 cfs | Santa Clara Valley Water District comments on Stanford Community Plan<br>Santa Clara County Environmental Evaluation Checklist Items H (d) and (e). |
| **Groundwater** | | | |
| 2. Will the Project substantially reduce groundwater quantity? | Reduction in groundwater recharge | Any reduction in groundwater recharge | Santa Clara County Environmental Evaluation Checklist Item H(b) |
| 3. Will the Project substantially degrade groundwater quality? | Presence of any new land use that would contribute to groundwater degradation in an area that has a conduit for such degradation | Any such land use | Santa Clara County Environmental Evaluation Checklist Items H(a) and (f) |
| **Surface Water Quality** | | | |
| 4. Will the Project result in a substantial degradation of surface runoff quality? | Compliance with local and state storm water quality regulations requiring implementation of effective Best Management Practices | Any failure to implement effective, reasonable and appropriate measures | State of California General NPDES Permits for Discharges of Stormwater Associated with Construction and Industrial Activities.<br>Santa Clara County Environmental Evaluation Checklist Items H (a), (c) and (j) |

## 4.5.C IMPACTS AND MITIGATION MEASURES

**IMPACT: HWQ-1: Surface Water Hydrology. Will the project cause increased runoff due to creation of impervious surfaces?**

Analysis: *Significant*

Development of the CP/GUP would require grading and creation of additional impervious surfaces. Impervious surfaces reduce surface water infiltration and increase the volume and rate of surface runoff.

The magnitude of the additional impervious surfaces created (e.g. by paved roads, driveways, sidewalks, and parking lots and by new buildings) will depend upon the ultimate amount of development and site design. Estimated increases in impervious surface have been calculated based on the level of development proposed in the GUP. Impervious surface for each development district was estimated based gross square footage of future buildings, projected number of floors of buildings, and estimates of the current level of development of the site, plus a factor for related impervious surfaces such as sidewalks. The developable area in each watershed is greater than this number and includes all lands that could be developed under the land use designations proposed in the CP. Based on the estimated square footage that will be covered by proposed development within each development district over the next ten years under the GUP, it is estimated that impervious surface would increase by about 39 acres (or an increase of about 8 percent from the existing 498 acres of impervious surface, Table 4.5-2). Thus, peak 100-year 24-hour storm runoff flows from the developed Drainage Subareas within the project area would increase from about 245 cubic feet per second (cfs) to about 265 cfs in the San Francisquito Creek watershed and from about 590 cfs to about 600 cfs in the Matadero Creek watershed (see Table 4.5-2). Since the Santa Clara Valley Water District indicates that the capacity of some existing storm drainage facilities downstream of the project area have been exceeded by previous storm runoff events, additional runoff could increase downstream flooding.

Without construction and operation of on-site storm drainage detention facilities, the impact on downstream flooding is considered significant.

Mitigation: **HWQ-1: Manage Stormwater Runoff**

In order to prevent site development from contributing to downstream flooding, Stanford shall accomplish the following:

- Construct and operate storm drainage detention facilities;
- Consider site design features that would decrease post-development runoff, including features presented in the Bay Area Stormwater Management Agencies' "Start at the Source – Design Manual for Stormwater Quality Protection and Site Planning for Urban Stream Protection"; and

- Consider the use of diversion of parking lot and building runoff to vegetated swales, pervious pavement, reduced building foot prints, infiltration of storm runoff, and other similar measures to reduce peak runoff rates and increased runoff volumes.

The detention facilities and other site features and measures designed, constructed, and implemented by Stanford shall be sufficient to assure that there is no increase in peak downstream storm runoff following development and that the increased post-development runoff volume does not cause downstream flooding. Santa Clara County shall specify the criteria (including the storm event or events and models) that shall be used by Stanford to design detention facilities, site features, or other measures used to prevent impacts caused by increases in post-development storm runoff. The facilities shall be designed to only temporarily store the storm water runoff and not create extended ponding that could result in mosquito breeding. In establishing the appropriate design criteria (e.g., 100 year, 24 hour storm event), Santa Clara County shall consult with Santa Clara Valley Water District regarding the storm events that Stanford shall use in designing facilities that have sufficient capacity to prevent impacts on downstream storm drainage facilities.

Two alternative approaches are possible for implementation of this mitigation measure:

(a) Stanford shall prepare a site-specific hydrology and drainage study for each individual building project. Based on the results of this study, Stanford shall design, construct, and maintain project specific storm drainage system improvements, site features, or measures that are sufficient to assure that the peak storm runoff leaving the project area does not increase and that the increased runoff leaving the project area does not cause downstream flooding. Individual detention facilities, site features, or measures may serve more than one building project, but Stanford must demonstrate adequate capacity to prevent increased runoff as part of the project application. All detention facilities shall be designed to only store the storm water runoff temporarily and not create extended ponding that could result in mosquito breeding. Prior to storm water facility construction, Santa Clara County shall approve the proposed improvements.

(b) As an alternative to preparing site-specific studies for each project, Stanford can elect to prepare a hydrology and drainage study for all or a specified portion of a particular watershed area. Based on the results of this study, Stanford shall design, construct, and maintain storm drainage improvements that include on-site detention facilities, site features, or measures sufficient to assure that the peak storm runoff leaving Stanford lands covered by the study does not increase as a result of new development, and that the increased runoff does not cause downstream flooding. After approval of such stormwater facility construction by Santa Clara County, no further site-specific hydrology and drainage studies would be required for new development, provided that the stormwater facility is in place prior to issuance of new building permits in the subarea addressed by the study.

After Mitigation: *Less than Significant*

Implementation of Measure HWQ-1: Control Stormwater Runoff, would control storm runoff using on-site detention facilities sufficient to insure that peak 100-year storm runoff leaving the site does not increase. This would reduce the impact to less than significant.

**IMPACT: HWQ-2: Groundwater. Will the project reduce groundwater quantity?**

Analysis: *Significant*

Portions of the Development Districts (most of West Campus and Lagunita, southern portions of Campus Center and East Campus, and northern portions of Lathrop and San Juan) overlie the approximately 600-acre area of the unconfined zone (see Figure 4.5-3) where recharge of the underlying groundwater supply occurs within the project area. Because the unconfined zone crosses the central campus, it is possible that a large portion (approximately half) of proposed development (which totals approximately 39 acres of impervious surface) could occur over the unconfined zone, leading to the addition of up to 20 acres of impervious surface in this area. Because groundwater recharge can only occur in the unconfined zone on Stanford lands, land coverage in that zone could reduce groundwater recharge volumes. The majority of recharge occurs through creeks and through Lake Lagunita, which is within the unconfined zone. However some recharge is provided by any open ground within the unconfined zone, and the Santa Clara Valley Water District has indicated that any reduction in recharge volume would be considered an adverse impact. Unless recharge enhancement facilities are constructed to offset reductions in groundwater recharge, this impact is considered significant.

Mitigation: **HWQ-1: Manage Stormwater Runoff**

See description of HWQ-1 above. Additional stormwater detention facilities create opportunities for groundwater percolation if they are in the unconfined zone.

**HWQ-2: Maintain Groundwater Recharge**

(a) Stanford shall prepare a site-specific groundwater recharge study for each project that is proposed to occur within the unconfined zone.

(b) Alternatively, Stanford could prepare a recharge study for development proposed to occur in all or a portion of the unconfined zone. The study or studies may be conducted in conjunction with hydrology and drainage studies as appropriate. The study shall identify the extent that new development will occur in the unconfined zone and the estimated average annual groundwater recharge that occurs in that area under pre-development conditions. Based on the results of this study, Stanford shall design, construct, and maintain facilities (e.g. shallow infiltration basins) that offset "lost" groundwater recharge by increasing recharge in other portions of the unconfined zone. The recharge facilities shall be designed to only temporarily store the storm water runoff and not create extended ponding that could result in mosquito breeding. Prior to construction, Santa Clara County shall approve the "replacement" groundwater recharge facilities. Storm drainage facilities that detain runoff within the project area may also serve as groundwater recharge facilities.

(c) So as to not pollute the groundwater resource, Best Management Practices and site design features shall be used to maintain the quality of storm runoff diverted by Stanford to groundwater recharge facilities shall be equal or better in quality to the runoff that would have recharged naturally at the developed site.

(d) In order to avoid overdraft of the groundwater basin during dry periods when Stanford's Hetch Hetchy allocation may be reduced, Stanford shall develop and implement a plan for responding to such a supply shortage. The plan shall include identification of conservation methods, and an evaluation of other potential sources of supply sources, including any treated water supply that may be soon available to Stanford through Santa Clara Valley Water District.

After Mitigation: *Less than Significant*

Implementation of Measure HWQ-1: Control Stormwater Runoff, would result in construction of on-site detention facilities, which would also serve to provide groundwater recharge, if located in the unconfined zone. Detention facilities in the confined zone would not provide recharge. Measure HWQ-2: Maintain Groundwater Recharge, would ensure that sufficient detention and/or recharge basins are constructed within the unconfined zone to maintain recharge at pre-project levels. This would reduce the impact to less than significant.

**IMPACT: HWQ-3: Groundwater. Will the project degrade groundwater quality?**

Analysis: *Significant*

Construction Activities. Because project construction activities will result in disturbing an area greater than five acres, Stanford University would be required to comply with the California General Permit for Discharges of Storm Water Associated with Construction Activities (NPDES General Permit CAS000002) adopted by the State Water Resources Control Board (California Regional Water Quality Control Board, San Francisco Bay Region letter dated December 29, 1999). The Permit requires that best management practices (i.e. measures to assure proper management of chemicals and wastes used or generated during construction) be used to prevent groundwater pollution. Unless Stanford implements effective BMPs to prevent groundwater pollution caused by construction activities (e.g. routine maintenance of equipment to prevent leaks, cleanup of spills on dirt areas by digging up and properly disposing of affected soil), this impact could be significant.

Improperly Abandoned Wells. Project development may require construction in the vicinity of improperly abandoned wells. It is unclear whether all wells located on Stanford lands have been identified and if they have been properly abandoned. If the wells are not properly destroyed in accordance with State and local requirements (e.g. Water Well standards: State of California Bulletin 74-81, December 1981), the well casing can serve as a conduit or pathway for degradation of groundwater quality. Unless the existing potential "conduits" are eliminated, this impact could be significant.

Proposed Land Uses. Project development within the boundaries of the unconfined zone may result in land uses that could pose a threat to the underlying groundwater quality. Unless Stanford prevents land uses within the boundaries of the unconfined zone that could pose a threat to the groundwater supply, this impact could be significant.

Mitigation: **HWQ-3: Protect Water Quality**

(a) Stanford shall submit a Notice of Intent (NOI) to the State Water Resources Control Board for the construction activities allowed by the GUP to be covered under NPDES General Permit CAS000002. As an alternative, Stanford may also submit additional NOIs for specific major projects. Stanford shall be required to comply with the terms of the NPDES permit at all construction sites (even sites where less than 5 acres are disturbed). This includes preparation of Storm Water Pollution Prevention Plans (SWPPP) covering all projects involving land disturbance that will be constructed pursuant to the General Use Permit. The SWPPPs shall identify effective Best Management Practices (BMPs) for preventing groundwater pollution caused by any construction activities. The SWPPPs shall also identify BMPs that have been demonstrated to be effective in preventing storm water pollution caused by runoff occurring during construction. The NOI shall be submitted to the State Water Resources Control Board (SWRCB) with a vicinity map and the appropriate fee prior to commencement of the construction activities as stated in the General Permit. The SWPPP for construction sites covered under the General Permit shall be developed and maintained at each construction site, prior to any land disturbance, and made available upon request.

(b) Prior to any new construction, Stanford shall perform a survey where development is proposed to occur to determine the location of wells that have not been properly abandoned within the proposed site. If any such wells are located on the site proposed for development, Stanford shall perform an investigation to verify that the well was properly abandoned. If Stanford cannot confirm that the well was properly abandoned, Stanford shall take steps to locate and abandon the well in accordance with State and local standards. Stanford shall request assistance and information from the Santa Clara Valley Water District to locate existing inactive wells on sites to be developed and to confirm procedures for properly destroying inactive wells.

(c) Prior to any construction, demolition, grading, or landscaping within 50 feet from the top of a bank of a Santa Clara Valley Water District watercourse, Stanford shall obtain a permit from the District.

(d) During construction, Stanford shall monitor the effectiveness of storm water pollution prevention best management practices at all construction sites during and after storm events.

(e) As a General Use Permit condition, Santa Clara County shall require that, within the boundaries of the unconfined zone, Stanford shall not engage in new land uses or practices (e.g. storage of chemicals in single wall tanks, application of pesticides that could be transported down to the groundwater supply) that could pose a threat to the groundwater supply. If Stanford leases portions of its property in the unconfined zone, Stanford shall notify and require that the leaseholders comply with the restriction regarding land use practices that could threaten the groundwater supply. Santa Clara County will enforce Stanford's compliance with this restriction.

After Mitigation: *Less than Significant*

Implementation of Measure HWQ-3: Protect Groundwater Quality, would ensure that Stormwater Pollution Prevention Plans would be prepared, requiring that Best Management Practices are employed during construction. Any improperly abandoned wells would be properly sealed, and new land uses with potential to affect groundwater quality would not be allowed within the unconfined zone. This would reduce the impact to groundwater to less than significant.

**IMPACT: HWQ-4. Surface Water Quality. Will the project result in a degradation of surface water runoff quality?**

Analysis: *Significant*

<u>During Construction</u>. Project construction activities could result in water quality impacts including erosion and sedimentation of nearby surface water bodies. Use of materials such as fuels and paints during construction also presents a risk to surface water quality. Surface water quality impacts are reduced by Stanford's existing storm water program, which will continue under the GUP. The current storm water program includes the following measures:

- For each construction project that disturbs over 5 acres, Stanford shall apply to the State Water Resources Control Board for coverage under a storm water NPDES permit as required. The site manager shall be responsible for assuring that a SWPPP is maintained at the site and implemented, and that all required site monitoring is performed.
- All construction on campus shall abide by the Stanford Special Conditions of Storm Water Pollution Prevention, which are included in every construction contract on campus.
- Each construction site shall be visited approximately once per month during the rainy season, and as needed during the summer months by a Stanford employee who reviews storm water best management practices used on site.

Periodically, construction site conditions shall also be reviewed by Santa Clara County staff. Any deficiencies shall be brought to the site manager for immediate correction.

- Regular reminder letters and on-site training shall be performed throughout the year at campus construction sites.
- Stanford Project Managers and Owner's Representatives shall be trained in storm water pollution prevention requirements.

Post-Construction. Subsequent to construction, runoff containing pollutants from developed areas (including sediment, petroleum products, metals, solvents, and pesticides) could cause surface water quality degradation. Unless Stanford constructs and maintains effective and properly designed BMPs (e.g. grassy swales or vegetated filter strips) to remove pollutants before the runoff enters the storm drainage system, this impact could be significant.

Mitigation: **HWQ-3: Protect Water Quality**

See description of HWQ-3 above.

**HWQ-4: Best Management Practices for Preventing Post-Construction Urban Runoff Pollution**

(a) Stanford shall implement site improvements for new buildings and parking lots that include BMPs that are effective for preventing post-construction storm water and groundwater pollution caused by urban runoff, including grassy swales and vegetated filter strips.

(b) Prior to construction, Santa Clara County Land Development Engineering shall review and approve the proposed post-construction BMPs to assure conformance with the Santa Clara County Urban Runoff Management Plan (URMP).

After Mitigation: *Less than Significant*

Implementation of Measure HWQ-3; Protect Water Quality, would ensure that Stormwater Pollution Prevention Plans would be prepared, requiring that Best Management Practices are employed during construction. This would also protect surface water quality. Measure HWQ-4: Best Management Practices for Preventing Post-Construction Urban Runoff Pollution, would minimize post-construction storm water pollution caused by urban runoff by use of measures such as grassy swales or vegetated filter strips. This would reduce the impact to surface water to less than significant.

## 4.5.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

**IMPACT: HWQ-C1: Will the project have a cumulative potential to impact surface water hydrology, groundwater quantity, groundwater quality or surface water quality?**

Analysis: *Significant*

Cumulative development in the project area would contribute to impervious surface area, affecting flooding, groundwater recharge, and water quality. Stanford projects include the proposed Stanford University Medical Center, Center for Cancer Treatment and Prevention; Carnegie Foundation Research/Office Facility; and Sand Hill Road Corridor Projects. New development could also occur in Menlo Park and Palo Alto. The closest of these projects includes the Palo Alto South of Forest Avenue project (north of Stanford across El Camino Real) and the Menlo Park Quadrus 8 Development (west of Stanford on Sand Hill Road). The Quadrus 8 Development could result in new runoff that would enter San Francisquito Creek. Other Menlo Park projects would occur near El Camino Real, west of the Stanford Campus, and would not likely add new impervious surface. According to the City of Palo Alto, proposed developments are in areas that are already developed and would not add new impervious surface.

All of the projects on Stanford lands listed above would contribute runoff to San Francisquito Creek. New development in northern Palo Alto would also contribute runoff to San Francisquito Creek, while development in southern Palo Alto would contribute to runoff in Matadero Creek. In both watersheds past development activities have already exceeded the capacity of some existing storm drainage facilities.

Most of the other proposed Stanford projects take place outside of the unconfined zone and would not affect recharge. Only a very small portion of the Sand Hill Road Corridor Projects would take place over the unconfined zone.

Any construction in the project area has the potential to affect groundwater and surface water quality through runoff from construction and post-construction.

Mitigation: Implementation of the following mitigation measures would reduce both the project and cumulative impacts to a level that is less than significant.

- Measure Number HWQ-1
- Measure Number HWQ-2
- Measure Number HWQ-3
- Measure Number HWQ-4

After Mitigation: *Less than Significant*

Because the measures fully mitigate potential flooding impacts by construction of detention basins, and allow for no increase in peak runoff and no downstream flooding due to additional runoff, the project would not contribute to cumulative flooding in the area. The Sand Hill Road Corridor Projects also include detention basins to detain all of the increase in peak flow during a 100-year storm event.

Because mitigation for the CP/GUP is proposed to fully replace any loss of recharge, the project would not contribute to cumulative reduction in groundwater recharge.

Mitigation to reduce water quality impacts to less than significant is included in the Project. Preparation of Storm Water Pollution Prevention Plans would also be required for all of the other cumulative projects in the area. This would reduce impacts to less than significant.

# 4.6 GEOLOGY AND SEISMICITY

This section describes the geologic setting of the project site including active earthquake faults, exposure to seismic activity, and soil conditions. Geologic hazards such as seismic shaking, landslides, and soil failures and their potential to impact future developments on the Stanford Campus are described and evaluated for significance. The process through which geologic hazard impacts will be mitigated under the Stanford General Use Permit is described.

## 4.6.A SETTING

### 4.6.A.1 Geology

The project area straddles the boundary between the San Francisco Bay alluvial plain to the northeast and the northeastern foothills of the Santa Cruz Mountains, which lie to the south and southwest. The western boundary of the Stanford Community Plan area is located approximately 2 miles east of the San Andreas fault (Figure 4.6-1).

The northwest-trending San Andreas fault is the contact between two crustal plates: the North American plate, which includes the San Francisco Bay/Santa Clara Valley trough and the continental land mass to the east, and the Pacific plate, which includes coastal San Mateo County, the west side of the Santa Cruz Mountains, and the Monterey Peninsula to the west and south. Over many millions of years, the relative movement of these two plates has deformed bedrock units which have, in turn, been eroded differentially, producing the northwest-trending ridges and valleys present in Santa Clara County and throughout the Coast Ranges of California. The plate boundary is defined by many nearly parallel northwest-trending faults. Continued movement of the Pacific Plate relative to the North American Plate has caused strain to accumulate in the bedrock. Strain is periodically released by rupture along the San Andreas fault and other related faults producing earthquakes of various magnitudes. The San Andreas fault and these other nearby faults are the main sources of seismic activity in the vicinity of the project site.

#### *Active Faults*

The San Francisco Bay Area is a seismically active region dominated by movement along active, predominantly right lateral, strike-slip, northwest-trending faults of the San Andreas system. Three major active branches of this fault system, the San Andreas fault, the Hayward fault, and the Calaveras fault are located close enough to the Stanford campus to produce strong seismic ground motions in the project area. Figure 4.6-1 shows the location of the project area relative to the major faults. Table 4.6-1 summarizes data on active faults in the area. Throughout the following discussion, earthquake magnitudes reference the Moment Magnitude Scale, which has been found in recent years to best describe large earthquakes (M >6.5). Richter Magnitude measures the amount of shaking generated by the earthquake, while Moment Magnitude measures the extent of rupture produced by a seismic event.

### *San Andreas Fault*

In the past, the San Francisco Peninsula segment of the fault ruptured with large magnitude earthquakes in 1838 (estimated magnitude 7) and in 1906 (magnitude 7.9). In 1989, the magnitude 6.95 Loma Prieta earthquake was centered on a closely related subordinate fault and caused severe damage and loss of life in Oakland and San Francisco more than 60 miles from the epicenter. The 1906 and 1989 earthquakes also caused extensive property damage on the Stanford campus. Damage to some buildings on campus from the 1989 earthquake has yet to be repaired.

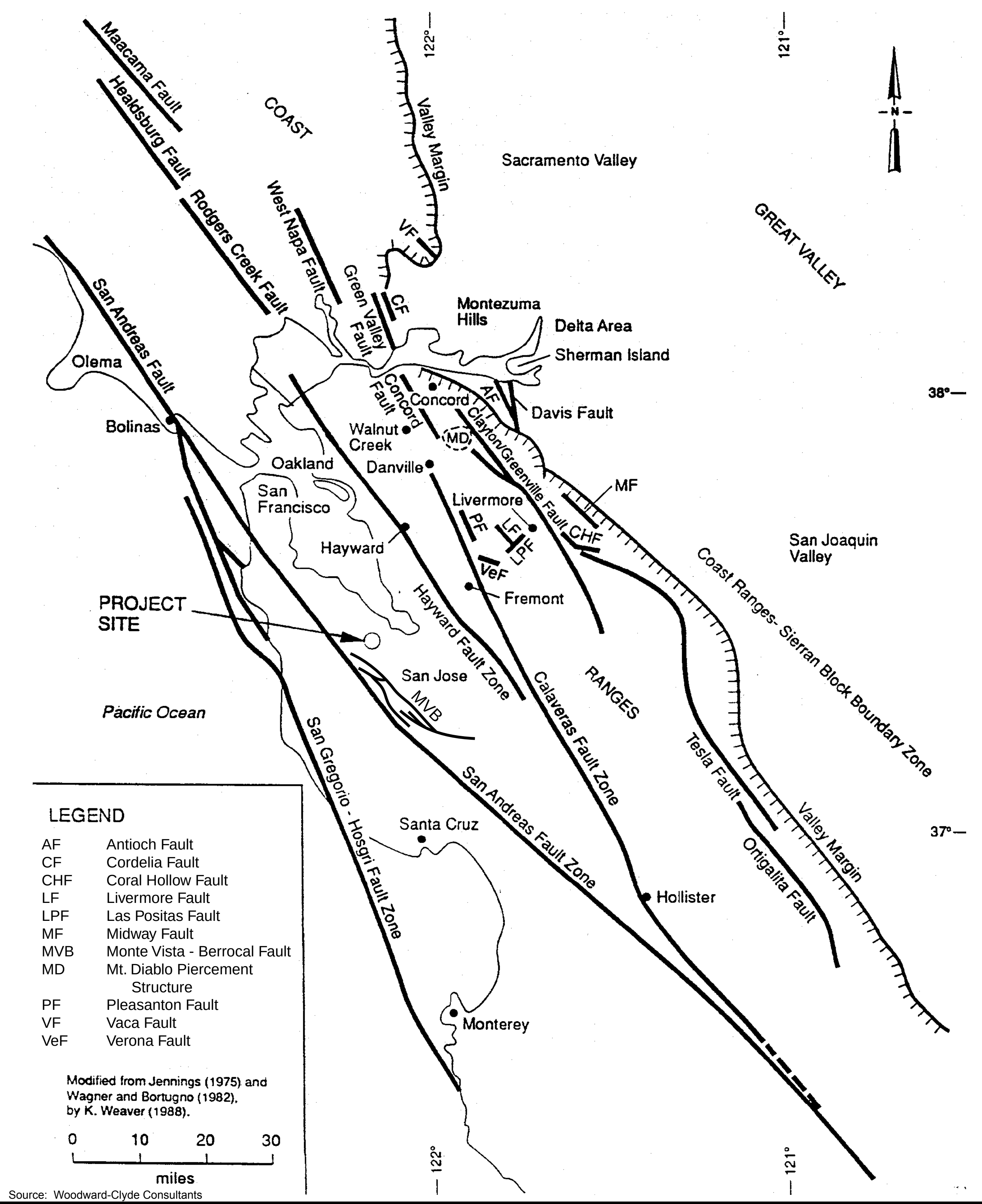
Despite the occurrence of the Loma Prieta earthquake, the probability of another magnitude 7 event occurring on the San Andreas fault in the San Francisco Bay Area in the next 30 years is estimated to be 21 percent (Working Group on California Earthquake Probabilities 1999). The maximum earthquake magnitude is considered to be 7.1 for the Peninsula segment of the San Andreas (CDMG 1996) and 7.9 for the 1906 rupture segment . Slip rates for these two segments of the San Andreas fault are assessed as 17+3mm/year and 24+3mm/year, respectively.

### *Hayward Fault*

The Hayward fault is approximately 65 miles long and extends from San Pablo Bay to southeastern San Jose where it probably converges with the Calaveras fault. The total ongoing seismic fault strain accumulation which is periodically released in earthquakes has been evaluated to be 9.0 mm per year (Working Group on California Earthquake Probabilities 1999). Magnitude 7 earthquakes occurred on the Hayward fault in 1836 and 1868. Little is known about the first of these events except that it ruptured the northern part of the fault in the vicinity of Berkeley and Oakland. The October 21, 1868 earthquake had 3 feet of horizontal fault displacement and had a total rupture length of at least 20 miles. The 1868 earthquake was centered in Hayward and caused soil liquefaction and severe damage to communities situated along the fault as well as in San Jose and San Francisco. The probability of a magnitude 7 earthquake occurring again on the Hayward fault in the next 30 years has been assessed as 23 percent (Working Group on California Earthquake Probabilities 1999). The maximum earthquake is considered to be about magnitude 7.1.

### *Calaveras Fault*

The Calaveras fault extends about 100 miles from Concord to Hollister where it merges with the San Andreas fault zone. The Calaveras fault is considered to be capable of generating a magnitude 7.3 maximum credible earthquake (CDMG 1996) for the fault segment north of Calaveras Reservoir. In recent decades moderate earthquakes and rapid fault creep have been associated with the segment south of San Jose. The April 24 1984, magnitude 6.2 Halls Valley earthquake and the August 10, 1979, magnitude 5.9 Coyote Lake earthquake originated on the Calaveras fault. The Calaveras fault is also considered to be the source of the July 3, 1861 earthquake of estimated magnitude 6, which caused ground rupture in the San Ramon and Amador valleys.




## LEGEND

| | |
|---|---|
| AF | Antioch Fault |
| CF | Cordelia Fault |
| CHF | Coral Hollow Fault |
| LF | Livermore Fault |
| LPF | Las Positas Fault |
| MF | Midway Fault |
| MVB | Monte Vista - Berrocal Fault |
| MD | Mt. Diablo Piercement Structure |
| PF | Pleasanton Fault |
| VF | Vaca Fault |
| VeF | Verona Fault |

Modified from Jennings (1975) and Wagner and Bortugno (1982), by K. Weaver (1988).



Source: Woodward-Clyde Consultants

Stanford University
CP/GUP Project EIR

# SIGNIFICANT QUATERNARY FAULTS of the SAN FRANCISCO BAY REGION

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.6-1

### *San Gregorio Fault*

The San Gregorio fault lies about 10 miles to the southwest of the San Andreas fault and is capable of an earthquake of maximum magnitude 7.3, but with a longer recurrence interval than the other major faults in the Bay Area (Table 4.6-1). This fault generated several moderate earthquakes in the Monterey Bay area in 1926, but the northern portion in San Mateo County has caused only microearthquakes in historic time.

### *Monte Vista/Berrocal Fault*

The Monte Vista and Berrocal faults are part of a northwest trending system of faults located in the foothills east of the San Andreas fault above Los Altos and Cupertino. They may converge with the San Andreas fault at Portola Valley. The fault system is approximately 60 miles long and several miles wide and includes numerous traces that appear to have thrust offsets. Geologic evidence for recent offset is lacking. However, the fault is considered to be active by the Santa Clara County Geologist on the basis of associated seismicity. Several dozen earthquakes have occurred on this fault and seismological evidence is consistent with a southwest-dipping thrust (Brabb and Olson, 1986). This fault experienced sympathetic displacement in the 1989 Loma Prieta earthquake on the San Andreas fault.

### *Other Faults*

Several other faults have been mapped within the central Stanford campus area. The Frenchman’s Road fault, the Stanford fault, the San Juan Hill fault, the Basalt Quarry fault and other geologic structures were evaluated by Kovach and Page (1995). These faults were all found to be no longer than 2.5 miles and have not been found to have evidence for recent displacements that would allow them to be categorized as “active” (having surface displacement in the last 11,000 years).

### ***Stock Farm Monocline***

The Stock Farm Monocline is a northwest-trending, northeast-facing flexure in the Quaternary Santa Clara Formation and younger strata. The monocline is expressed by a northeast-facing rise located between Page Mill Road and Campus Drive West. This structural feature has been studied extensively and evaluated to be an active fold in the strata. The underlying “blind” thrust fault is believed to produce the folding. It is not clear whether it is capable of generating earthquakes. Although no surface deformation was recorded on the monocline in 1906 or during the 1989 Loma Prieta earthquake, it is regarded as capable of minor ground deformation along its lower hinge that could occur in association with an earthquake on the San Andreas fault or on another fault concealed at depth beneath the Stanford Campus. This type of deformation that is associated with an earthquake at another location is known as “co-seismic" deformation. A zone of special consideration has been established by the Santa Clara County Geologist along the lower hinge of the Stock Farm Monocline where it crosses the Stanford Campus. (based upon Dames & Moore 1995)

### 4.6.A.2 Seismicity

The intensity of on-site shaking is a function of the potential magnitude of an earthquake and the distance of the project area from the event. In the event of a large earthquake on either the San Andreas, Calaveras, or Hayward fault, the project area could experience "very strong" seismic shaking (ABAG 1999 and Borcherdt, Gibbs, and Lajoie 1975). This rating corresponds generally to maximum levels of VIII to IX on the Modified Mercalli (MM) Scale, which relates to human perception and amount of damage. Table 4.6-2 describes the Modified Mercalli Scale. Because of Stanford's proximity to the San Andreas fault, an event on this fault could result in the highest intensity of on-site shaking.

**Table 4.6-1**

Active Faults in the Project Area

| Fault | Distance[1] (miles) | Maximum Magnitude[3] (Moment Magnitude Scale) | Fault Slip Rate[3] (mm/yr) | Estimated Recurrence Interval (years) | Seismic Source Type[4] |
|---|---|---|---|---|---|
| San Andreas | 2 to 5 | 7.2 | 17+4 | 220 | A |
| Hayward | 12 | 7.1 | 9+2 | 236 | A |
| Calaveras | 17 | 7.0 | 6+2 | 324 | A |
| Monte Vista | <1 | 6.8 | 0.4+0.3 | 2410 | B |
| Blind (Concealed) Thrust Fault Beneath Stock Farm Monocline | 5 [2] | 5.5 | 0.1 to 0.5 | 200 | C |
| San Gregorio | 14 | 7.3 | 5+2 | 438 | A |
| Greenville | 30 | 6.9 | 2+1 | 1057 | B |
| Rogers Creek | 50 | 7.1 | 9+2 | 236 | A |

Sources of Information: Dames & Moore (1995), Woodward-Clyde Consultants (1995a), Kovach and Page (1995); Jim Baker, Santa Clara County Geologist (personal communication 2000)

1. Distance from fault to nearest portion of project area; for the San Andreas fault the distances shown are to the nearest and farthest corners of the Stanford Community Plan boundary.
2. Distance of Blind Thrust is vertical (depth beneath the site).
3. Information mostly from WGCEP (1999) except Monte Vista and Blind Thrust Fault. Recurrence time is for any large earthquake M> 6.7.
4. Seismic Source Type for use in seismic design according to UBC 1997/CBC 1998.

The project area experienced widespread MM intensity VII and localized MM VIII shaking during the Loma Prieta earthquake in 1989 and probable MM intensity VIII in 1906. MM VIII is the intensity at which major structural damage begins to take place. However, major financial losses due to damage of building contents can occur at Intensity VII. In 1989, extensive and very costly damage occurred on the Stanford Campus due to an earthquake of less severity than the anticipated maximum earthquake for the San Andreas fault. A recent publication developed new equations relating site ground motion parameters of Peak Ground Acceleration (PGA) and Peak Velocity (PGV) with MMI (Wald and others 1999). According to this work, MMI IX correlates with site PGA in the range of 0.65g to 1.24g and PGV in the range of 60 to 116 centimeters per second.

Table 4.6-1 provides estimates of maximum probable magnitudes for earthquakes originating on the capable faults in the project area and fault classifications suitable for determining seismic ground motion criteria for project engineering design. Seismic parameters for the Design Basis Earthquake (DBE = 10% probability of exceedance in 50 years) for the Stanford vicinity will be calculated using procedures of UBC 1997/CBC 1998.

## Table 4.6-2

### Modified Mercalli Intensity Scale

| Rating | Description of Damage or Human Perception |
|---|---|
| I. | Not felt except by a very few under especially favorable circumstances. |
| II. | Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended object may swing. |
| III. | Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration like passing of truck. Duration estimated. |
| IV. | During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably. |
| V. | Felt by nearly everyone, many awakened. Some dishes, windows, and so on broken; cracked plaster in a few places; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes notices. Pendulum clocks may stop. |
| VI. | Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster and damaged chimneys. Damage slight. |
| VII. | Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars. |
| VIII. | Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving cars disturbed. |
| IX. | Damage considerable in specially designed structures; well designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken. |

**Table 4.6-2**

Modified Mercalli Intensity Scale

| Rating | Description of Damage or Human Perception |
|---|---|
| X. | Some well built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed, slopped over banks. |
| XI. | Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly. |
| XII. | Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown into the air. |

[1] Abridged Modified Mercalli Intensity Scale (1956 version)

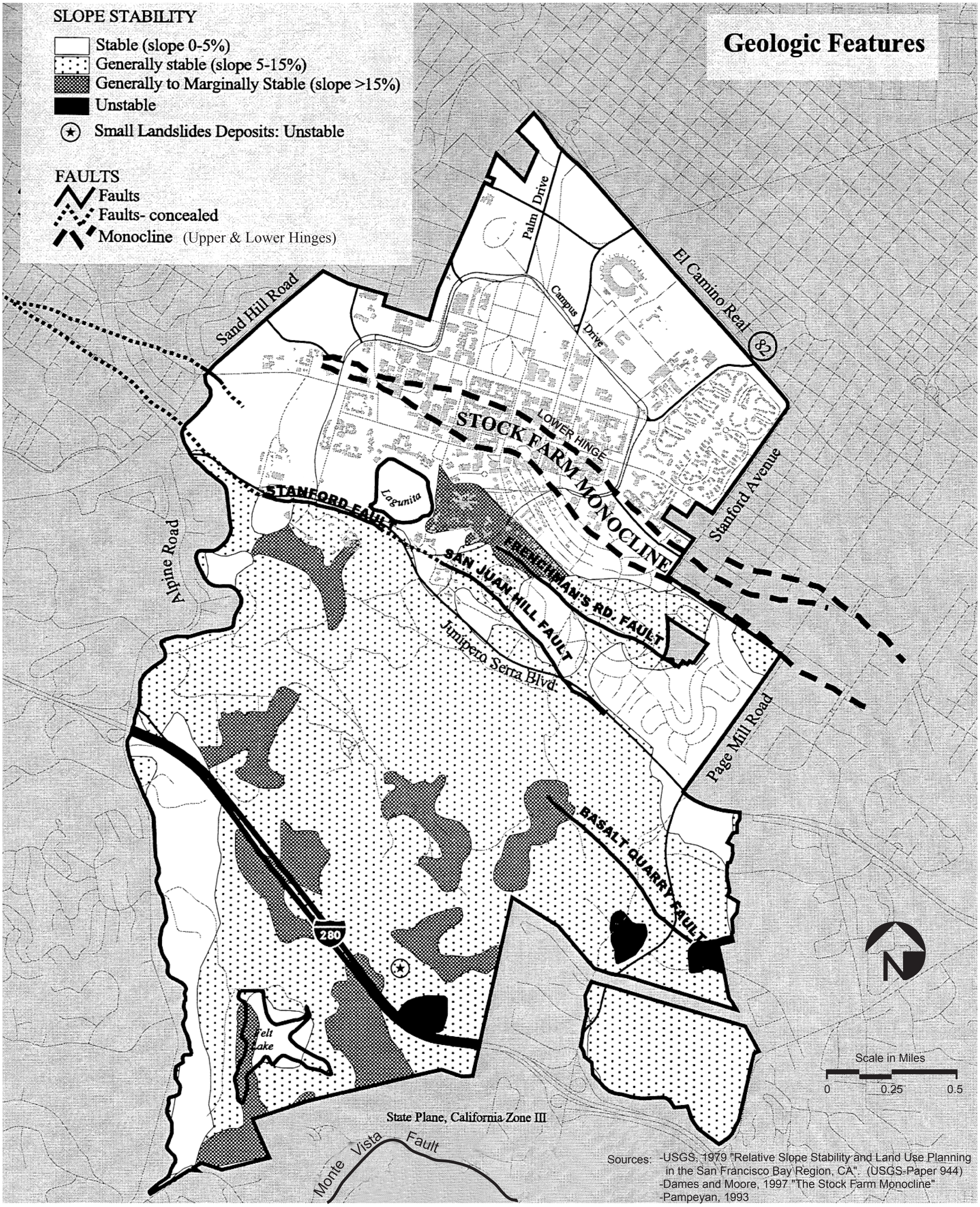
## 4.6.A.3 Geologic Hazards

Major geologic hazards that may be present within the project area include potential for strong earthquake ground shaking and unstable geologic conditions. This section discusses some of the mechanisms of geologic instability.

### *Slope Instability*

Landsliding is a natural process in the Coast Ranges of the San Francisco Bay Area and is a common occurrence in certain types of geologic materials. Geologic materials rich in clay minerals have a great capacity to absorb water, resulting in reduction of shear strength. The force of gravity can cause landslides when water saturation reduces the shear strength of soil and underlying rock below the minimum stability threshold. Areas that are susceptible to slope instability on the project site have been delineated by the USGS and are shown in the Stanford Community Plan (Figure 4.6-2). The steepness of the topography is a major factor in slope instability. Areas of marginal stability and high landslide potential are located within the upland open space areas of the project site.

Human modifications of topography and drainage such as road cuts, surface runoff diversion, or impounding water can result in reduced natural shear strength of slopes, thereby generating landsliding, even in areas of normally low susceptibility.




Stanford University
CP/GUP Project EIR

# GEOLOGIC FEATURES in STANFORD COMMUNITY PLAN AREA

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.6-2

### Earthquake-induced Slope Instability

Bedrock formations and unconsolidated deposits (soils) respond differently to seismically induced ground shaking. As a general rule, the severity of ground shaking increases with proximity to the epicenter of the earthquake. However, given similar location and seismic energy output, the least amount of potentially damaging vibration would occur on a site that was entirely underlain by bedrock at the ground surface. A site underlain by a major thickness of alluvium would experience considerably more damaging vibration because of the unconsolidated material's tendency to amplify ground motions in critical frequencies to a greater degree than the bedrock.

Earthquake-induced landsliding of steep slopes can occur in either bedrock or unconsolidated deposits. Firm bedrock can usually support steeper, more stable slopes than slopes cut in unconsolidated or poorly consolidated material. However, rock type, grain size, degree of consolidation, and bedding angle all contribute to the strength or weakness of a bedrock hillside. Shales and deeply weathered rocks are very susceptible to slope failures during strong seismic ground shaking. Project component sites that have a moderate to high risk of landsliding would also be at risk for earthquake-induced slope failure. Figure 4.6-3 shows areas with low, moderate and high potential for earthquake induced landsliding.

### Co Seismic Deformation

Damage due to surface rupture and related ground deformation (e.g. cracking, bending, and buckling) is limited to the actual surface location of the fault rupture, unlike damage from ground shaking that can occur at significant distances from the source fault. Surface rupture can damage buried pipelines that have not been especially protected where they cross fault traces.

A zone of special consideration for possible coseismic ground deformation has been established along the lower hinge of the Stock Farm Monocline where it crosses the Stanford Campus. The cause of the deformation would be coseismic slip on a blind thrust fault at depth below the Stock Farm Monocline. Several centimeters of deformation along the trace of the lower hinge were predicted in a study by Dames and Moore (1995a). The effects, which could damage building foundations, would be several centimeters of uplift, tilting and crumpling (shortening) of the ground surface.

### Liquefaction

A hazard related to severe ground shaking in saturated soils is liquefaction. This transformation from a solid to a semi-liquid ("quicksand") state can result in ground settling, landsliding, and lateral spreading. Liquefaction can occur in alluvial areas adjoining streams, and in valleys and along shorelines if specific conditions exist (e.g. loose sandy deposits and shallow groundwater). If loose granular soils (predominantly silt and fine sand) are present and seasonal maximum groundwater levels are within 20 feet of the ground surface, there is a high potential for liquefaction. If groundwater levels in liquefaction prone soil are between 20 feet and 50 feet of the ground surface, there is a moderate potential for liquefaction to occur (Rogers and Williams 1974). Liquefaction in sediments where the groundwater is more than 50 feet below the ground surface does not generally result in surface ground failure. The portions of the study area that could be potentially affected by liquefaction are the Academic Campus and Residential areas north of the Stock Farm Monocline, particularly the northwest corner of the Site where groundwater tends to be within 20 feet of the surface. Liquefaction potential is strongly dependent on site-specific soil conditions and local depth to groundwater. Figure 4.6-3 shows areas of high and moderate potential for liquefaction in the vicinity of the project site.

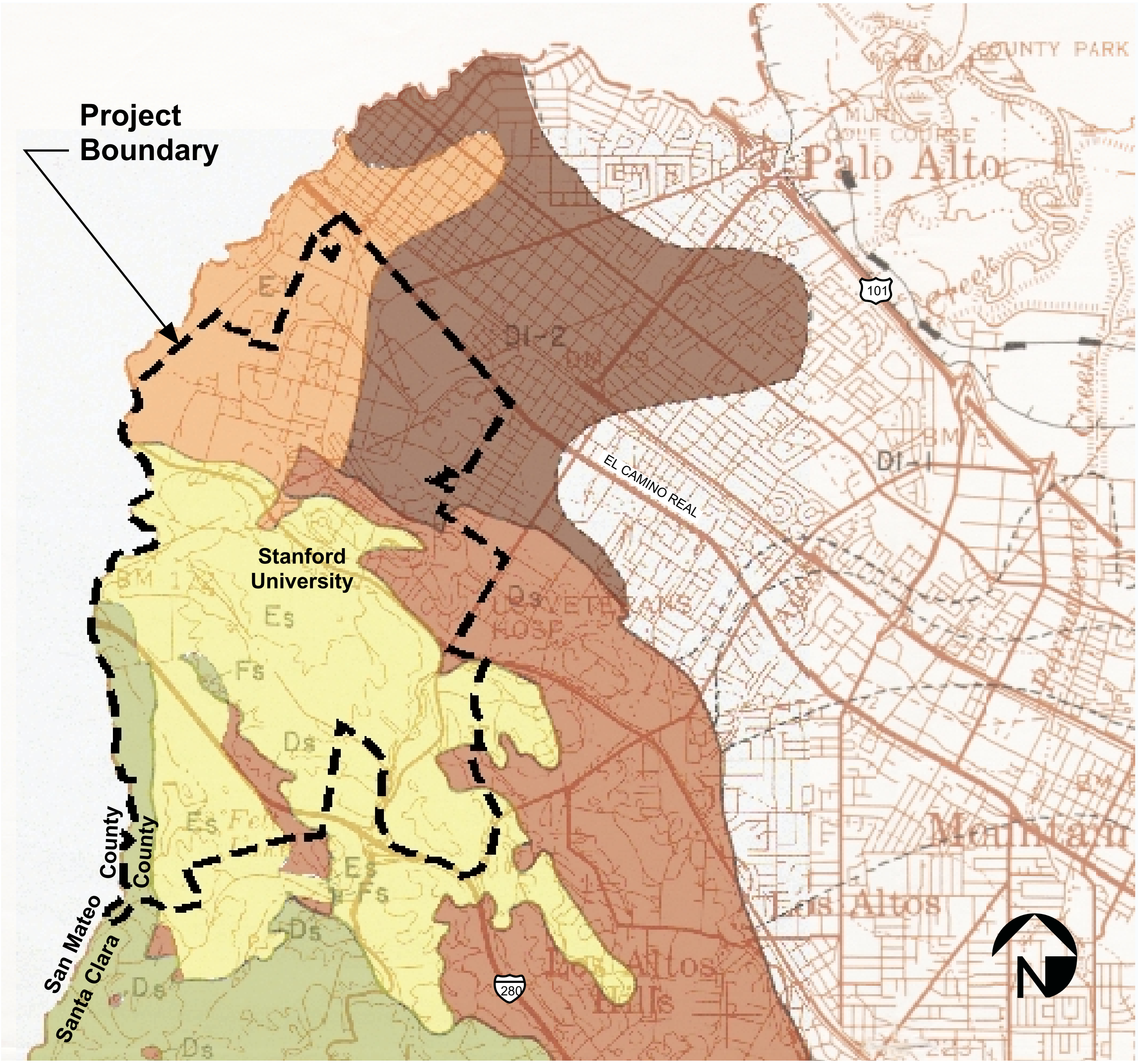
### 4.6.A.4 Regulatory Framework

#### *Seismic Considerations for Building Permits*

Stanford has an ongoing program that encompasses both new and existing structures. The threat of potential damage caused by a major earthquake at Stanford is primarily due to the existence of buildings constructed of unreinforced masonry (URM), and is the focus of an ordinance approved by Santa Clara County shortly after the Loma Prieta earthquake. In 1989 a dozen of approximately 50 of these structures at Stanford were closed due to earthquake damage. At Stanford, the need to repair and strengthen these earthquake-damaged facilities, in addition to undamaged URMs and to strengthen other seismically vulnerable buildings, has resulted in an ongoing seismic rehabilitation program totaling over $250 million.

Over 175 structures on the Stanford Campus were surveyed during the six months immediately following the Loma Prieta earthquake to assess structural damage and seismic performance. The buildings surveyed encompassed nearly 7 million square feet (approximately 63 percent of all building space at that time), and included most, if not all, of the major buildings on the campus. In the years since the 1989 earthquake, Stanford has undertaken a reconstruction program. Building space encompassing approximately 2.2 million square feet of the 2.7 million square feet identified for upgrading has been reinforced. Approximately 100 seismic rehabilitation programs have been completed since 1989. An important portion of these strengthening projects has involved rehabilitation of student residences and dormitories. The remaining 500,000 square feet of space is planned to be completed by 2006.

Current work includes the retrofitting of 45 hazardous URM buildings by the year 2000 to conform to the Santa Clara County URM Ordinance. The ongoing program for new buildings meets the most current Uniform Building Code (International Conference of Building Officials, UBC 1997) supplemented by the California amendments (1998). The Monte Vista fault is mapped as a potential source of earthquakes in the 1997 UBC. Beyond the life safety risk, the program gives priority to facilities that are an integral part of the Campus Emergency Plan and to maintain functional operations. These include medical, communications, utilities, and other facilities critical to health and safety.




Note: although this mapping has been superceded by Official Geologic Hazard Maps (1978), the hazard maps do not show areas of liquefaction potential, so this earlier, more complete mapping is being used.

Source: California Division of Mines and Geology, Special Report 107, 1974

**LEGEND**

| | |
|---|---|
| **DI-2** | **Areas of high potential for liquefaction, lurching, and lateral spreading. Water table 10 to 20 feet.** |
| **Ds** | **Areas of high potential for earthquake induced landslides.** |
| **El** | **Areas of moderate potential for liquefaction, lurching, and lateral spreading.** |
| **Es** | **Areas of moderate potential for earthquake induced landslides.** |
| **Fs** | **Areas of low potential for earthquake induced landslides.** |

**Stanford University**
**CP/GUP Project EIR**

# SLOPE STABILITY HAZARD MAP

parsons
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

**Figure 4.6-3**

### *Stock Farm Monocline Agreement*

As a result of concerns about potential co-seismic ground deformation in the Stock Farm Monocline area, Stanford entered into an agreement with the Santa Clara County Planning Office (Jones 1996a) regarding building design and permit approval for all projects within the area. The limits of a zone of special consideration along the lower hinge of the Stock Farm Monocline were defined in specific detailed engineering geologic studies (Dames & Moore 1995a, 1995b, and 1995c) and approved by the Santa Clara County Geologist.

For all projects within the Stock Farm Monocline Zone a state-licensed Engineering Geologist reviews and comments on the project plans in light of current technical knowledge of geologic conditions in the Stock Farm Monocline Zone and submits a letter to the County Geologist prior to building permit issuance. In addition, the County expects that the following approach is followed as needed and the UBC requirements are met or exceeded:

- The structural design is reviewed by the Stanford Seismic Criteria Panel of national experts in earthquake engineering.
- The detailed design drawings are given extensive formal scrutiny of a structural engineering peer reviewer.
- A plan check is conducted by the structural section of the Santa Clara County Building Office prior to issuing a construction permit.
- The geotechnical engineer of record for each project inspects and accepts all foundation excavations during construction.

### *Santa Clara County Hazard Zone Maps*

The County Geologist with the Santa Clara County Planning Office maintains geologic hazard maps that delineate known hazard areas. These hazard areas include the Alquist-Priolo Earthquake Fault Zones (known as Special Studies Zones prior to 1994) originally established by the State. Map zones for high risk geologic hazard areas indicate high susceptibility to landsliding (Ds), compressible soils (Dc), liquefaction (Dl), and fault rupture (Dr) and have been subsequently modified in response to new hazard information. Project plans are evaluated for susceptibility to these hazards as part of the permit review process.

Projects located within high hazard zones are required to have an engineering geologic report submitted to the County Geologist for review prior to project approvals. Requirements for mitigation of identified geologic hazards are incorporated into conditions of approval. . At Stanford mapped zones include zones of landsliding, compressible soils and liquefaction.

## 4.6.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

An impact is considered to be significant if it meets any of the following criteria: Criteria generally relate to property damage, but are ultimately intended to protect the public. If damage to structures is prevented, the safety of the public is protected.

**Table 4.6-3**

Evaluation Criteria with Points of Significance – Geology and Seismicity

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 1. Will project facilities be damaged by ground surface rupture and related fault deformation? | Hazards associated with location of facilities within an Alquist-Priolo Earthquake Fault Zone or other designated surface rupture zone | Greater than 0 structures without appropriate seismic design features located within an earthquake fault zone | Santa Clara County Geologic Hazard Zone Maps<br>Alquist-Priolo Earthquake Fault Zones Act.<br>CDMG mapping of other fault zones<br>Santa Clara County Environmental Evaluation Checklist Item F(a)(i) |
| 2. Will earthquake-induced strong ground shaking damage Project facilities? | Structural design and construction not in conformance with requirements of seismic design standards | Greater than 0 structures not in compliance with the provisions of the Uniform Building Code<br><br>Greater than 0 structures of unique design not covered by the ordinary provisions of the Uniform Building Code | Santa Clara County Building Permit Dept. plan review<br>Santa Clara County URM Ordinance<br>Uniform Building Code (1997) with California amendments (1998)<br>Santa Clara County Environmental Evaluation Checklist Item F(a)(ii)<br>California Division of Mines and Geology (CDMG) Guidelines (1997) Chapter 4 |
| 3. Will project facilities be damaged by co-seismic ground deformation? | Hazards associated with location of facilities within Stock Farm Monocline zone | Greater than 0 structures without appropriate seismic design features located within designated zone of potential co-seismic deformation | Santa Clara County Geologic Hazard Zone Maps<br>Dames and Moore (1995) map<br>Stock Farm Monocline Agreement (Zone map maintained by Santa Clara County Planning Department)<br>Santa Clara County Environmental Evaluation Checklist Items F(a)(iii) |

## Table 4.6-3

### Evaluation Criteria with Points of Significance – Geology and Seismicity

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 4. Will project facilities be damaged by liquefaction or settlement during an earthquake? | Hazards associated with CDMG rating of potential for liquefaction, or more detailed geo-technical assessment of liquefaction potential (CDMG Guidelines 1997) | Greater than 0 structures without appropriate seismic design features located within an area high risk for liquefaction or settlement | Santa Clara County Geologic Hazard Zone Maps (1978)<br>Santa Clara County Environmental Evaluation Checklist Items F(a)(iii)<br>State Seismic Hazard Map Program Maps (pending)<br>CDMG Guidelines (1997) Chapter 6 |
| 5. Will project facilities be damaged by unstable slope conditions? | Hazards associated with location in an area of moderate to high landslide risk, defined by Santa Clara County, including roads with slopes greater than 20% and buildings on slopes greater than 30 percent | Greater than 0 structures located within an area of moderate to high landslide risk without appropriate slope stabilization | Santa Clara County Geologic Hazard Zone Maps<br>Santa Clara County Environmental Evaluation Checklist Items F(a)(iv) and (c) and G(k) and (l)<br>State Seismic Hazard Map Program Maps (pending)<br>CDMG Guidelines (1997) Chapter 5 |
| 6. Will project facilities be exposed to damage due to expansive soils or soils with moderate to high erosion potential? | Shrink-swell potential and erosion potential as rated in Santa Clara County Soil Survey (Soil Conservation Service) | Greater than 0 structures not covered by the Uniform Building Code located on soils with a rating of moderate to high for shrink-swell or high for erosion potential | Site-Specific Geotechnical studies<br>USDA Soil Conservation Service (SCS) Report<br>Santa Clara County Environmental Evaluation Checklist Items F(b) and (d) |

## 4.6.C IMPACTS AND MITIGATION MEASURES

**IMPACT: G&S-1: Will project facilities be damaged by ground surface rupture?**

Analysis: *Less than Significant*

No active or potentially active faults have been mapped in the immediate vicinity of the project site. Several parallel northwest trending faults, the Frenchman's Road fault, the Stanford fault, and the San Juan Hill fault, have been mapped within the project site boundaries. These faults lack evidence for recent offsets that would categorize them as active. No other faults in the area are expected to cause ground rupture on the project site. However, in the course of normal project geotechnical review, Santa Clara County may require additional site-specific studies. Based on the results of such studies, set backs may be required from such features. A blind thrust fault is thought to exist at depth; but geological analyses indicate that it does not intersect the ground surface. However, as noted in the above discussion, projects that are located within the lower hinge zone will require additional site-specific evaluation.

Mitigation: No mitigation is necessary.

**IMPACT: G&S-2: Will earthquake-induced strong ground shaking damage project facilities?**

Analysis: *Less than Significant*

Large earthquakes caused extensive property damage at the project site in 1906 and in 1989. There is a high probability that another major earthquake event will occur within the next 30 years. However, planning, design, and construction of all new structures and support facilities are carried out on a project-specific basis according to California and Santa Clara County standards. These include the Santa Clara County Unreinforced Masonry Ordinance and the 1997 UBC with 1998 California amendments with stringent peer review for major structures. The main objectives of seismic design measures are to prevent building collapse, limit property damage, and minimize risk to human life and health. Assuming that these objectives are met, seismic shaking hazards would be less than significant. The residual damage level would be acceptable within California standards. Compliance with existing County procedures and regulatory requirements make the impact less than significant.

Mitigation: No mitigation is necessary

**IMPACT: G&S-3: Will project facilities be damaged by co-seismic ground deformation?**

Analysis: *Less than Significant*

The Stock Farm Monocline, a northwest-trending linear fold in the ground surface across the project area, has been studied extensively. It is a flexure zone along which Quaternary and younger strata are deformed, but apparently not offset. Although no co-seismic ground deformation was observed or measured in 1906 or 1989, it is possible that minor sympathetic deformation along this zone could be induced by a major earthquake on the San Andreas fault or a moderate earthquake centered on a blind thrust fault believed to be located beneath the site at an approximate depth of 5 miles. The zone crosses the Campus Center, East Campus and the northern margin of the Lagunita and San Juan Development Districts. Development in all of these areas could be subject to co-seismic ground deformation.

Project plans and designs for new facilities within the Stock Farm Monocline Zone are subject to special study and review by an independent Engineering Geologist, the Santa Clara County Building Department, and the County Geologist. Building and facility foundations will be arranged to avoid or designed to tolerate co-seismic ground deformation. With these measures incorporated in the project the impact would be less than significant. In the future, the requirements of the agreement may be altered as current knowledge and conditions dictate.

Mitigation: No mitigation is necessary.

**IMPACT: G&S-4: Will project facilities be damaged by liquefaction or settlement during an earthquake?**

Analysis: *Less than Significant*

Portions of the project site, particularly the northern third of the project site, are designated as having moderate to high potential for liquefaction due to shallow groundwater and/or low-density, compressible soils. Areas immediately adjacent to creeks and lakes may also be susceptible to liquefaction-caused lateral spreading resulting in inward movement on properties adjacent to water bodies. Project-specific, localized screening investigations to assess liquefaction potential will be performed, as needed, followed by more-detailed investigation, testing, and geotechnical analyses following State guidelines (CDMG 1997, Chapter 6).

Engineering designs required by the County Geologist and/or the County Building Inspection Office will include foundation design measures, for example, distributed loadings, deep supports, earthwork, or dewatering to prevent or compensate for deformations that could occur due to liquefaction or earthquake-induced settlement. With incorporation of these standard measures the impact would be reduced to an acceptable level of risk and is thus less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: G&S-5: Will project facilities be damaged by unstable slope conditions?**

Analysis: *Less than Significant*

Portions of the project site (generally the hillside areas) have been designated as having moderate to high potential for slope instability. Most of these unstable areas are located in the proposed Open Space and Academic Reserve designation of the CP and have been depicted as “unstable” and “generally to marginally stable (slopes > 15%)” on CP maps. However, some areas of potentially unstable slopes are within areas proposed for future development under the CP land use designations and GUP. As shown on Figure 4.6-3, which is based on independent sources of geohazard information, about half of the San Juan Development District has high potential for slope instability and portions of the rest of the San Juan District and the Lagunita area have moderate potential for slope instability. Housing proposed for these areas (CP Sites B, J, K, L, and N) would be potentially subject to slope instability. However, these conditions can be compensated for by using appropriate foundation design and construction procedures.

The Santa Clara County Geologist maintains hazard maps showing areas of moderate to high landslide risk and reviews all project plans. Site-specific engineering geologic and geotechnical investigations including assessment of slope stability will be required for all project structures and facilities located on land with steep slopes or located on bedrock and soil that may have marginal stability properties. Site-specific geotechnical recommendations for engineering design for such developments will include appropriate foundation support recommendations, retaining wall designs, drainage control, and earthwork grading measures to prevent landsliding and foundation distress. With incorporation of these standard mitigation measures, the impact would be less than significant.

Mitigation: No mitigation is necessary.

**IMPACT: G&S-6: Will project facilities be exposed to damage due to expansive soils or soils with moderate to high erosion potential?**

Analysis: *Less than Significant*

Surface soils in the steeper upland of the proposed Open Space and Academic Reserve portions of the project site have generally high susceptibility to erosion from concentrated runoff that could result from project developments (buildings and the roadways and parking lots appurtenant to them). Surface soils in the flat to gently sloping Academic Campus and Residential areas are typically susceptible to excessive shrink-swell behavior due to their clay mineral content. Geotechnical investigations will be performed for developments in areas designated as having soils with high erosion potential and/or shrink-swell properties as defined according to the UBC. Site-specific geotechnical recommendations for engineering design for these developments will generally consist of standard foundation engineering and grading measures to control drainage runoff and to prevent seepage and saturation of foundation soils. With implementation of these standard mitigation measures, impacts would be less than significant.

Mitigation: No mitigation is necessary.

## 4.6.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

No significant geologic or seismic impacts were identified. Although the project would contribute to cumulative development levels in the Bay Area, an area of high seismic risk, these impacts are site specific, and with incorporation of standard seismic design measures would be less than significant. No significant cumulative impacts would occur.

# 4.7 HAZARDOUS MATERIALS

This section discusses the programs and policies that Stanford University has implemented to address the potential hazards associated with the handling of hazardous materials and hazardous waste (chemicals, radiologicals and biologicals) in its laboratories, clinics, studios and shops. This section assesses the potential for new development to expose the public to hazards and evaluates the adequacy of University practices designed to afford protection from hazardous waste and hazardous materials. Federal, State and local policies and regulations regarding the handling, storage and shipment of hazardous materials and hazardous waste are also addressed.

## 4.7.A SETTING

The Environmental Protection Agency (EPA) defines a “hazardous” substance as one “which because of its quantity, concentrations, or physiochemical or infectious properties, may either increase mortality or produce irreversible or incapacitating illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Chemicals and wastes that exhibit hazardous properties require special handling and management. In addition, their treatment, storage, transport and disposal are tightly regulated by the Federal, State and local governments. At Stanford University, the safe management of hazardous materials and hazardous wastes, and compliance with regulatory requirements are the responsibility of the University’s environmental health and safety programs.

### 4.7.A.1 County, State and Federal Regulations

Over the past two decades there has been significant legislation passed at all levels of government that attempts to better regulate hazardous materials and hazardous waste for the protection of public health and the environment. However, because regulations were developed relatively quickly, newly passed regulations were sometimes in conflict with existing regulations or created multiple reporting requirements that were both difficult to manage for businesses and institutions and cumbersome to implement for Federal, State or local agencies. Recent regulatory developments in hazardous materials and hazardous waste management have attempted to consolidate reporting requirements and streamline the regulatory process while maintaining the intent of the original requirements to protect the public and environmental health and safety.

One of the most important of the consolidating processes has been the designation of Certified Unified Program Agencies in accordance with legislation passed by the State in 1993. The Certified Unified Program Agencies are county departments that implement regulations and programs at the local level. In Santa Clara County the Certified Unified Program Agency is the County Department of Environmental Health, which includes the County’s Hazardous Materials Compliance Division.

The County Department of Environmental Health performs inspections of hazardous materials and hazardous waste storage facilities, develops and reviews emergency response plans, and collects information about acutely or extremely hazardous substances in accordance with State and Federal regulations.

The following sections discuss the policies, ordinances, laws and regulations developed by Santa Clara County, the State of California and the Federal government to regulate hazardous materials and hazardous waste.

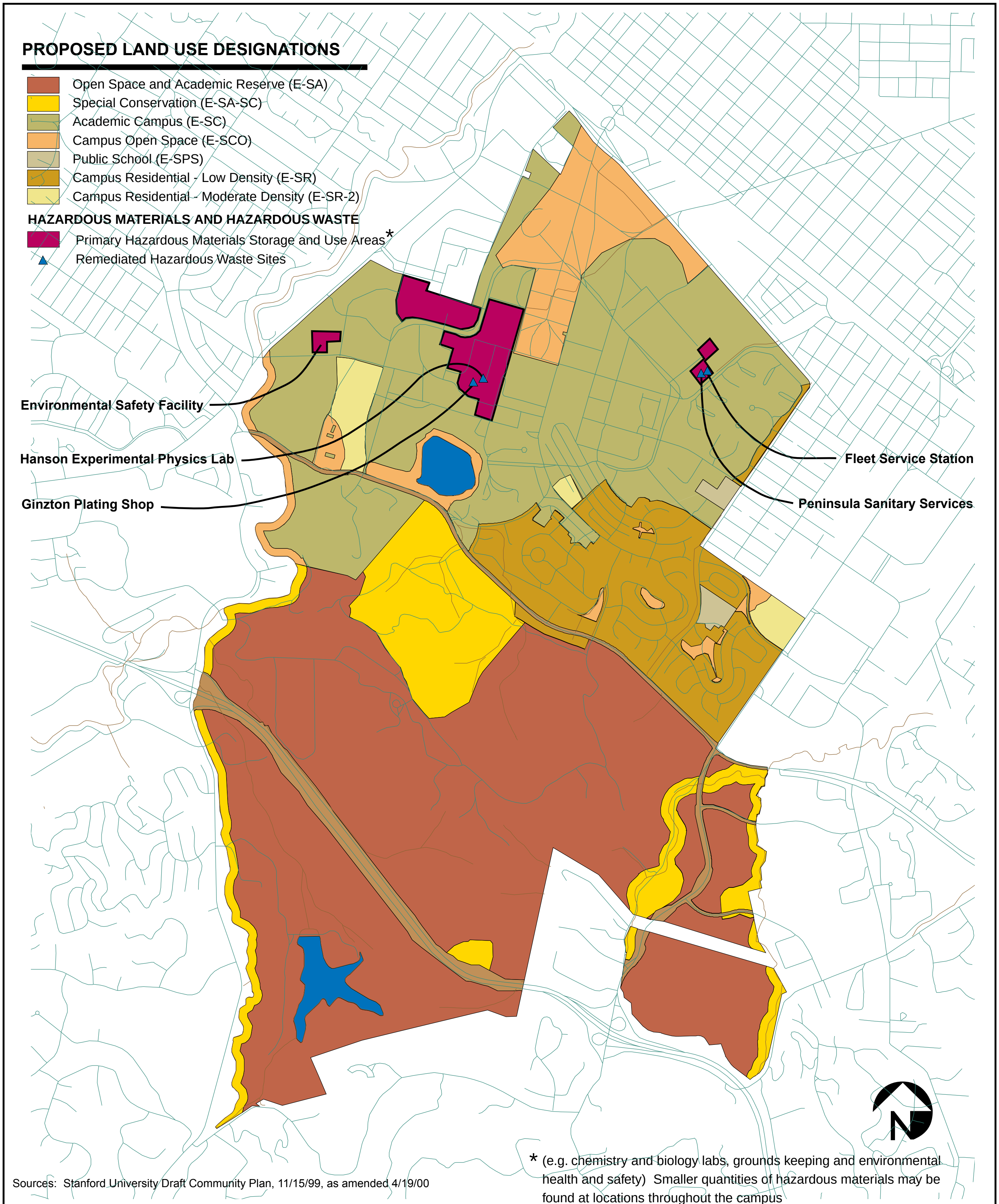
### *Santa Clara County Ordinances and Policies*

The County's Hazardous Materials Storage Ordinance and other local regulations that affect the management of hazardous materials and hazardous waste in the County, including Stanford facilities, are described in this section.

#### *Santa Clara County Hazardous Materials Storage Ordinance*

The Santa Clara County Hazardous Materials Storage Ordinance requires that businesses, including Stanford University, obtain a permit for any facility (including aboveground and underground storage tanks) in which hazardous materials are stored. For the purposes of the Hazardous Materials Storage Ordinance, a facility is a free-standing building that has been permitted for occupancy under the Uniform Building Code and the Uniform Fire Code. Storage rooms inside buildings and storage sheds attached to buildings are not considered separate facilities under the Hazardous Materials Storage Ordinance. The ordinance was developed in 1983 in response to serious groundwater contamination incidents that arose in the County from leaking underground storage tanks. The state passed a similar statute (the Waters Bill) in 1985. The ordinance and the statute require businesses to develop procedures to handle hazardous materials safely. These procedures are compiled in a plan called a "business plan" or Hazardous Materials Management Plan.

For each permitted facility, Stanford submits a Hazardous Materials Management Plan to the County that describes procedures for monitoring the stored materials to detect releases, for regular testing of the detection systems and for inspections. In addition, Stanford provides appropriate emergency equipment and develops post-emergency procedures for each location where hazardous materials are stored. Fifty Hazardous Materials Management Plans for existing campus laboratory buildings were updated and submitted to the Santa Clara County Environmental Health Hazardous Materials Compliance Division between September 1, 1998 and August 31, 1999. In all, Stanford maintains approximately 100 Hazardous Materials Management Plans for facilities in various jurisdictions, with the majority of these covering facilities in Santa Clara County. Most of the stored materials covered by the Hazardous Materials Management Plans are associated with research facilities on Central Campus, with the Environmental Safety Facility, and with groundskeeping and maintenance facilities on Serra Street (Figure 4.7-1). Typical hazardous materials include compressed gases, acids, bases, solvents, fuels and pesticides.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

* (e.g. chemistry and biology labs, grounds keeping and environmental health and safety) Smaller quantities of hazardous materials may be found at locations throughout the campus

Stanford University
CP/GUP Project EIR

**LOCATIONS THAT STORE and USE HAZARDOUS MATERIALS or THAT ARE REMEDIATED HAZARDOUS WASTE SITES at STANFORD UNIVERSITY**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.7-1

***Level of Concern Definitions:***

***"Level of Concern"*** *is defined by the Santa Clara County Toxic Gas Ordinance as the maximum concentration of a substance in air that will not cause serious health effects in the majority of the population when exposed to the substance for a relatively short period of time. For purposes of the ordinance, the Level of Concern is equal to 0.1 of the Immediately Dangerous to Life and Health value, as defined in Article 80 of the Fire Code, if the particular substance has an established IDLH, or if not, an estimated Level of Concern value is based on acute toxicity data of 0.01 LC50, 0.1 LCLo, 0.001 LD50, or 0.01 LDLo.*

***"Lethal Concentration"*** *("LC50") means the median lethal concentration level, at which 50 percent of appropriate test animals die when exposed by inhalation for a scientifically appropriate specified time period.*

***"Lethal Concentration Low"*** *("LCLo") means the lowest dose [concentration] of a chemical at which some test animals died following inhalation exposure.*

***"Lethal Dose Median"*** *("LD50") means the dose at which 50 percent of these animals die following exposure. The lethal dose is given in milligrams per kilogram [mg/kg] of body weight of the test animals.*

***"Lethal Dose Low"*** *("LDLo") means the lowest dose of a chemical at which some test animals died following exposure.*

The Hazardous Materials Storage Ordinance also requires Stanford to submit a Hazardous Materials Inventory Statement, which is an inventory of all hazardous materials stored at its facilities. The EH&S Department submits Stanford's inventory to the County each year. An inventory of the hazardous materials stored by facility at Stanford in late 1999 and early 2000 is available at the County Planning Office. Failure to submit an adequate inventory to the County would expose the University and individual researchers to criminal and civil penalties of up to $500 per day for each violation.

### *Santa Clara County Model Ordinance for Toxic Gas Regulation*

The Santa Clara County Model Ordinance for Toxic Gas Regulation was adopted in September 1990 and became fully effective in September 1993. The purpose of the ordinance is to prevent, control and respond to potentially dangerous conditions and to protect the public from acute exposure to toxic gas due to an accidental release. The ordinance applies to any material for which there is an established "Level of Concern," that is shipped in compressed gas cylinders and that acts as a gas upon release at normal temperature and pressure.

The EH&S Department's *Toxic Gas User's Handbook* addresses the proper handling of toxic gases at Stanford (Stanford University 1997c). The Handbook covers the general requirements of the ordinance, which include seismic protection, security, leak testing, separation of incompatibles, protective plugs/caps, emergency drills, fire extinguishing systems, and annual maintenance. The EH&S Department provides a series of flowcharts on its website to help Stanford personnel determine whether the gases they use are regulated under the ordinance and, if so, what procedures must be followed to properly handle and manage them.

### *Santa Clara County Hazardous Waste Management Plan*

California enacted legislation in 1986 intended to improve local and statewide capabilities to ensure that adequate capacity is developed to manage hazardous wastes in the state.

The Hazardous Waste Management Planning and Facility Law, usually referred to as the Tanner Bill, created a set of planning processes designed to inform each county of the hazardous waste generated within its jurisdiction, and to support the development of local hazardous waste management programs. The Tanner Bill authorizes each county to prepare a County Hazardous Waste Management Plan.

The Santa Clara County Hazardous Waste Management Plan was developed with the oversight of an eleven member committee consisting of representatives from the Board of Supervisors, several city councils, the semiconductor and manufacturing industries, public interests groups, environmental groups and special districts. It creates a comprehensive and countywide approach to hazardous waste management in the county. The plan development process provided an opportunity for local, regional, and state agencies, as well as the general public, to participate.

The primary objective of the County Hazardous Waste Management Plan is to protect the health, safety and economic well-being of both the County's citizens and the environment. The Plan maintains this objective while also recognizing the State-mandated responsibility to address the specific hazardous waste needs of local businesses and households. Specifically, the plan encourages waste reduction and on-site treatment and establishes a clear process for the siting of appropriate new hazardous waste facilities. The Santa Clara County Department of Environmental Health has responsibility for implementing the Plan.

### *Santa Clara County General Plan*

In addition to ordinances and programs that specifically target hazardous materials and hazardous wastes, Santa Clara County addresses the management of hazardous materials and hazardous wastes in the Health and Safety Element of its General Plan. The Santa Clara County General Plan establishes the County's strategies and policies and then makes recommendations for implementing them. Implementation is the responsibility of the County and city governments, and other groups (e.g., industries, agriculture, environmental groups). Some of the recommendations for implementing County policies include:

- C-HS(i) 6. Comply with all federal- and state-mandated hazardous materials planning and regulatory measures.
- C-HS(i) 9. Join with local business, agricultural and environmental organizations for the purpose of seeking revisions to federal and state hazardous materials regulations which will result in more effective, efficient and economical implementation.
- C-HS(i) 10. Assess all local hazardous materials regulations and procedures to determine how they might be carried out more effectively and with a reduction in time and cost to all users, including local government agencies.
- C-HS(i) 13. Continue implementing and improving the countywide Household Hazardous Waste Management Program.

### State and Federal Laws and Regulations

The Federal Government and the State of California have passed numerous laws governing the management of hazardous materials and hazardous waste. They require specific actions by businesses, local governments and institutions in assessing and planning for the safe handling and disposal of hazardous materials. Among these laws are:

#### *State*

- Hazardous Materials Management Plan (Waters Bill)
- Accidental Release Prevention Law (La Follette Bill)
- Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
- Hazardous Waste Management Planning and Facilities Law (Tanner Act)
- Laboratory Treatment of Research-generated Chemical Wastes
- Asbestos and Lead Programs

#### *Federal*

- Resource Conservation and Recovery Act of 1976 as amended by the Hazardous and Solid Waste Amendments of 1984
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- Emergency Planning and Community Right-to-Know Act of 1986

Numerous regulations have been promulgated based on these laws. The regulations describe the procedures that must be followed to implement the laws. Brief summaries of some of the relevant and applicable Federal and State laws and regulations affecting the management of hazardous materials and hazardous waste at Stanford are provided in the following sections. Some State laws, such as the Waters Bill, which is based on Santa Clara County's Hazardous Materials Storage Ordinance, and the Hazardous Waste Management Planning and Facilities Law, which authorizes counties to prepare Hazardous Waste Management Plans, have been discussed in preceding sections.

### California Laws and Regulations

#### *Accidental Release Prevention Law*

In 1986, California adopted the La Follette Bill, which was the predecessor to the Accidental Release Prevention Law. The La Follette Bill regulated "acutely hazardous materials" and was intended to expand control over materials that can produce toxic clouds after fires, explosions or other accidents. In 1996, the State codified the programs created under the La Follette Bill into the Accidental Release Prevention Law. This new law provided improved consistency with Federal laws (i.e., the Emergency Preparedness and Community Right-to-Know Act and the Clean Air Act) that allows local oversight of both the State and Federal programs. The State and Federal laws are similar in their requirements, however the California threshold planning quantities for regulated substances are lower than the Federal values. Local agencies may set lower reporting thresholds or add additional chemicals to the program.

Beginning in 1997 the Accidental Release Prevention Law has been implemented by the State's local Certified Unified Program Agency, which, in Santa Clara County, is the Department of Environmental Health. Any business, including Stanford, where the maximum quantity of a regulated substance exceeds the specified threshold quantities must register with the County as a manager of regulated substances and prepare a Risk Management Plan. A Risk Management Plan must contain an offsite consequence analysis, a five-year accident history, an accident prevention program, an emergency response program, and a certification of the truth and accuracy of the submitted information.

Stanford has submitted and maintains a Risk Management Plan for anhydrous ammonia used in its Central Energy Facility's recently constructed chilled water refrigeration system. The plan was developed during the construction permitting process in 1998 and 1999. It was submitted to the County in March 1999. There are no other materials at Stanford that exceed the threshold planning quantities for a Risk Management Plan.

### *Safe Drinking Water and Toxic Enforcement Act*

The Safe Drinking Water and Toxic Enforcement Act is more commonly referred to as Proposition 65, which was an initiative passed by the citizens of California in 1986. The purpose of Proposition 65 is to ensure more public information about the presence of chemicals that cause cancer (carcinogens) or birth defects (teratogens); to restrict discharges of these chemicals to sources of drinking water; and to strengthen enforcement by government agencies and private litigants.

Proposition 65 requires that businesses inform the public about environmental exposures to chemicals listed by the State as carcinogens or teratogens. The State's list of chemicals was developed by the Office of Environmental Health Hazard Assessment, which has responsibility for most Proposition 65 functions. The list of chemicals is published in the California Code of Regulations. Businesses meet the informational requirement by posting the commonly seen warning signs that read "Warning: This area contains a chemical known to the State of California to cause cancer" or "Warning: This area contains a chemical known to the State of California to cause birth defects or other reproductive harm." Stanford has conducted risk assessments to determine that its routine operations do not trigger Proposition 65 warning requirements. Areas on campus where listed chemicals are stored or used are specifically posted.

### *Regulated Carcinogens*

The Federal Occupational Safety and Health Administration (OSHA) and California OSHA regulate twenty six chemicals as carcinogens. Use of these chemicals in the workplace, including laboratories, can trigger special handling procedures and programs. Half of the chemicals require special programs regardless of exposure levels. The special requirements for handling these materials include training, use of personal protective equipment, development of standard operating procedures, labeling, emergency measures, posting of warnings, and, in some cases, medical surveillance and exposure monitoring. In

California, California OSHA is authorized to enforce both the Federal and State requirements.

### *Laboratory Treatment of Research-generated Chemical Wastes*

California passed legislation in September 1999 (Assembly Bill 966) that allows laboratories to treat small amounts of chemical wastes generated in research activities. This legislation was prepared in cooperation with California's academic research laboratory institutions, including Stanford. A typical process covered by this legislation might include the neutralization of small amounts of acidic or alkaline solutions. At Stanford, the EH&S Department reviews any proposed laboratory treatment prior to implementation, although the review process is not required by law.

### *Asbestos Program*

The removal and handling of asbestos-containing materials is driven primarily by EPA regulations under Title 40 of the Code of Federal Regulations (National Emission Standards for Hazardous Air Pollutants) but is implemented locally by the Bay Area Air Quality Management District. Federal OSHA also has a survey requirement under Title 29 of the Code of Federal Regulations (Asbestos Standard in the Construction Industry), which is implemented by California OSHA under Title 8 of the California Code of Regulations.

Prior to any facility renovation or demolition at Stanford, a comprehensive survey is performed by certified EH&S Department inspectors to identify and quantify previously installed asbestos-containing products. Surveyed materials that are found to contain asbestos, and will be disturbed by the renovation or demolition process, are removed or encapsulated by an EH&S approved, licensed and certified asbestos abatement contractor prior to other demolition or renovation activities. Asbestos abatement work is performed under the direct supervision of the EH&S Department and in accordance with Stanford's Uniform Asbestos Abatement Specification, which incorporates safety measures that exceed regulatory requirements. Hazardous asbestos waste generated from the demolition process is only disposed of in certified Class II landfills that have been inspected and pre-approved by the EH&S Department's Hazardous Waste Management Program.

### *Lead Program*

The California OSHA lead standard for the construction industry, Title 8 of the California Code of Regulations, applies to any construction activity that may release lead dust or fumes including, but not limited to, manual scraping, manual sanding, heat gun applications, power tool cleaning, rivet busting, abrasive blasting, welding, cutting or torch burning of lead-based coatings. Unless otherwise determined by approved testing methods, all paints and other surface coatings, e.g., varnish, shellac, stain, lacquer, etc., applied prior to 1979 are presumed to contain lead at concentrations at or above 5,000 parts per million (ppm) (0.5%) by weight. Paints and surface coatings applied between 1979 and 1993 are presumed to contain lead at concentrations at or above 600 ppm (0.06%) but less than 5,000 ppm by weight, paints and surface coatings applied after 1993 are presumed to contain lead at concentrations up to 600 ppm. Lead is a regulated hazardous material. Stanford requires that contractors take all necessary precautions to protect their employees, sub-contractors, students, visitors and University employees from exposure to lead-containing dust.

### *Federal Laws and Regulations*

#### *Resource Conservation and Recovery Act*

The Federal hazardous waste laws are generally known as the Resource Conservation and Recovery Act (RCRA). These laws provide for the "cradle to grave" regulation of hazardous wastes. Any business, institution or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused or disposed.

The EPA has primary responsibility for implementing RCRA but individual states are encouraged to seek authorization to implement some or all RCRA provisions. California received authorization to implement RCRA in August 1992. The California EPA's Department of Toxic Substances Control is responsible for implementing RCRA. The Department of Toxic Substances Control is also responsible for implementing and enforcing California's own hazardous waste laws, which are known collectively as the Hazardous Waste Control Law. The California Hazardous Waste Control Law and its associated regulations are similar to RCRA but regulate a larger number of chemicals because they define hazardous waste more broadly. Hazardous wastes regulated by California but not by EPA are called non-RCRA hazardous wastes.

The Department of Toxic Substances Control has delegated some of its authority for the enforcement of RCRA and California hazardous waste regulations to county health departments and other local Certified Unified Program Agencies. In its capacity as Certified Unified Program Agency, the Santa Clara County Department of Environmental Health regularly inspects the hazardous materials and hazardous waste storage areas of businesses and institutions in Santa Clara County, including Stanford's facilities. It can issue citations or take other appropriate enforcement actions in the event that it discovers a violation.

Stanford completed a full RCRA Facility Assessment and Facility Investigation of the campus from 1994 through 1998 at the direction of the California Department of Toxic Substances Control. During this process, fifteen sites on campus were identified and investigated where hazardous materials may have been released to the environment. The RCRA investigation concluded that eleven sites required no further investigation or action because no contamination was detected in environmental samples, because all contaminated materials were collected and disposed of during the investigation or because no significant release to the environment (soil, air or water) had occurred. Two sites (Ginzton Plating Shop and Former Fleet Service Station) were already being investigated by Santa Clara County or the Santa Clara Valley Water District, and two sites (Hanson Experimental Physics Laboratory and Peninsula Sanitary Service, Inc.) were investigated and evaluated as part of the RCRA Facility Investigation (EMCON 1997, 1998; Fluor Daniel GTI 1998). The four sites are located near the Recycling Center on Serra Street (Peninsula Sanitary Services, Inc., and Former Fleet Service Station) or near the Science and Engineering Quad (Ginzton Plating Shop and Hanson Experimental Physics Laboratory) (Figure 4.7-1).

Although some residual contamination remains at the four sites, the reports describing the RCRA investigations and cleanup activities conclude that this contamination does not present a significant hazard to site occupants (students or university employees) or to construction workers. As of July 1998, the University has completed all activities and met the remediation goals established in the RCRA Facility Investigation and Interim Measures Workplan and Report. The Department of Toxic Substances Control has indicated in a letter to the University that site characterization sampling and analysis data show that concentrations of constituents-of-concern met remediation goals and that no corrective actions are necessary on the campus (Department of Toxic Substances Control 1998).

### *Comprehensive Environmental Response, Compensation, and Liability Act*

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly called Superfund, created a national policy and procedures to identify and clean up sites contaminated by releases of hazardous substances. The law was amended and strengthened in 1986 by the Superfund Amendments and Reauthorization Act. One important provision of the amendments was to expand public participation in the clean up process. Funding is now available to advisory groups composed of persons affected by releases from a site.

The EPA has primary responsibility for implementing Superfund regulations, but state agencies may be authorized to take the lead at some clean up sites. In California, the California EPA's Department of Toxic Substances Control cooperates with the EPA's Region IX as the state's lead agency. The Department of Toxic Substances Control also enforces the State's own Superfund Law. Where groundwater contamination is the primary concern, one of California EPA's Regional Water Quality Control Boards (Regional Boards) may be the lead agency or a cooperating agency for the clean up. The San Francisco Bay Regional Board has jurisdiction in Santa Clara County.

There are no ongoing environmental investigations or cleanups, nor any unresolved known contamination issues, on Stanford properties within unincorporated Santa Clara County. There are a number of active environmental cleanup projects in Stanford Research Park that are being conducted primarily by commercial tenants within the park. These projects are under the auspices of either the California Department of Toxic Substances or the Regional Board. However, none of these sites are within unincorporated Santa Clara County.

### *Emergency Planning and Community Right-to-Know Act*

The Emergency Planning and Community Right-to-Know Act (EPCRA) was adopted as Title III of the Superfund Amendments and Reauthorization Act of 1986. It was developed partly as a response to the December 1984 toxic gas disaster in Bhopal, India. The incident focused attention on the possibility that accidents at facilities handling hazardous chemicals could harm neighboring communities. The law is intended to increase public access to information about the storage and use of hazardous chemicals.

EPCRA establishes four programs for making information about hazardous chemicals available to emergency response agencies and the general public. These include emergency planning for facilities that handle extremely hazardous substances; reporting requirements for spills and leaks of extremely hazardous substances; reporting hazardous substances in the workplace; and compilation of toxic release inventories.

At the Federal level the EPA administers EPCRA. However, some of its components overlap with state requirements (e.g., the Waters and LaFollette Bills) that predated EPCRA, and these are implemented at the state or local level. The state and local requirements are described in the previous sections under the headings, State Laws and Regulations and Santa Clara County Ordinances and Policies. Businesses, institutions and other entities in Santa Clara County, including Stanford, that use, store or release hazardous substances submit most of the required information to the County's Department of Environmental Health, the State's local Certified Unified Program Agency.

### *Bloodborne Pathogens*

In 1992, OSHA published regulations to protect workers from potential exposures to the Human Immunodeficiency Virus (HIV), Hepatitis B virus and other bloodborne pathogens. The bloodborne pathogen rule applies to all employees who could be "reasonably anticipated" to come into "bodily contact with blood and other potentially infectious materials" as a result of performing their jobs. The majority of persons who are affected by the standard are health care workers. However, other University employees are covered by the standard including researchers, biowaste technicians and some housekeeping staff because bloodborne pathogens may be contained in the medical waste that is generated by some research facilities and medical clinics at Stanford.

The *Stanford Safety Manual* describes the components of the University's bloodborne pathogen safety program. It requires compliance with "Universal Precautions" to prevent contact with bloodborne pathogens (e.g., handwashing, use of protective gloves, shields, eyewear and gowns) and describes the program requirements, including engineering and work practice controls, training, medical surveillance program, recordkeeping, hazard communication and housekeeping.

### *Laboratory Standards*

In January 1990, the Federal OSHA and California OSHA issued laboratory standards that are intended to protect laboratory workers in the unique environments of the research or clinical laboratory. The standards exempt research and clinical labs from California OSHA requirements intended for industrial settings and replace them with regulations more appropriate for labs, except that workplace air standards (i.e., OSHA's Permissible Exposure Limits) still apply and chemical uses that are not on a "laboratory scale" are still regulated under the broader industrial standards. Typically, “laboratory scale” means small quantities of chemicals that can be manipulated by one person and that are not part of a production process.

Stanford has prepared and makes available to employees and students a written *Chemical Hygiene Plan* that sets forth the procedures to protect employees’ health around hazardous chemicals and to conform to the requirements specified in the regulations. The Plan also covers control measures, equipment performance measures, employee training, prior approval criteria for hazardous procedures, medical examinations, appointment of a Chemical Hygiene Officer, and extra protection measures for particularly hazardous substances, including provisions for designated areas, containment, waste removal and decontamination. Many of these requirements were extracted by OSHA from the National Research Council’s *Prudent Practices for Handling Hazardous Chemicals in Laboratories* (National Research Council 1981).

### 4.7.A.2 University Committee on Health and Safety

The University Committee on Health and Safety has oversight of all health and safety programs at Stanford (Figure 4.7-2). The Committee is comprised of thirteen voting members consisting of faculty, student, administrative and community representatives that provide advice and make recommendations on Stanford's health and safety programs, policies and organization. The Committee reviews and recommends University-wide policies on health and safety matters. Its actions are intended to foster cooperation among units having operational responsibility for health and safety. Near the end of each academic year it holds an open meeting for the members of the University community and its neighbors to report to the community on health and safety conditions at Stanford and to raise questions or concerns about Stanford's teaching or research activities, facilities or support services as they may affect the health and safety of lab personnel, laboratory subjects, employees, students, the general public and the environment. The most recent meeting was held in May 2000.

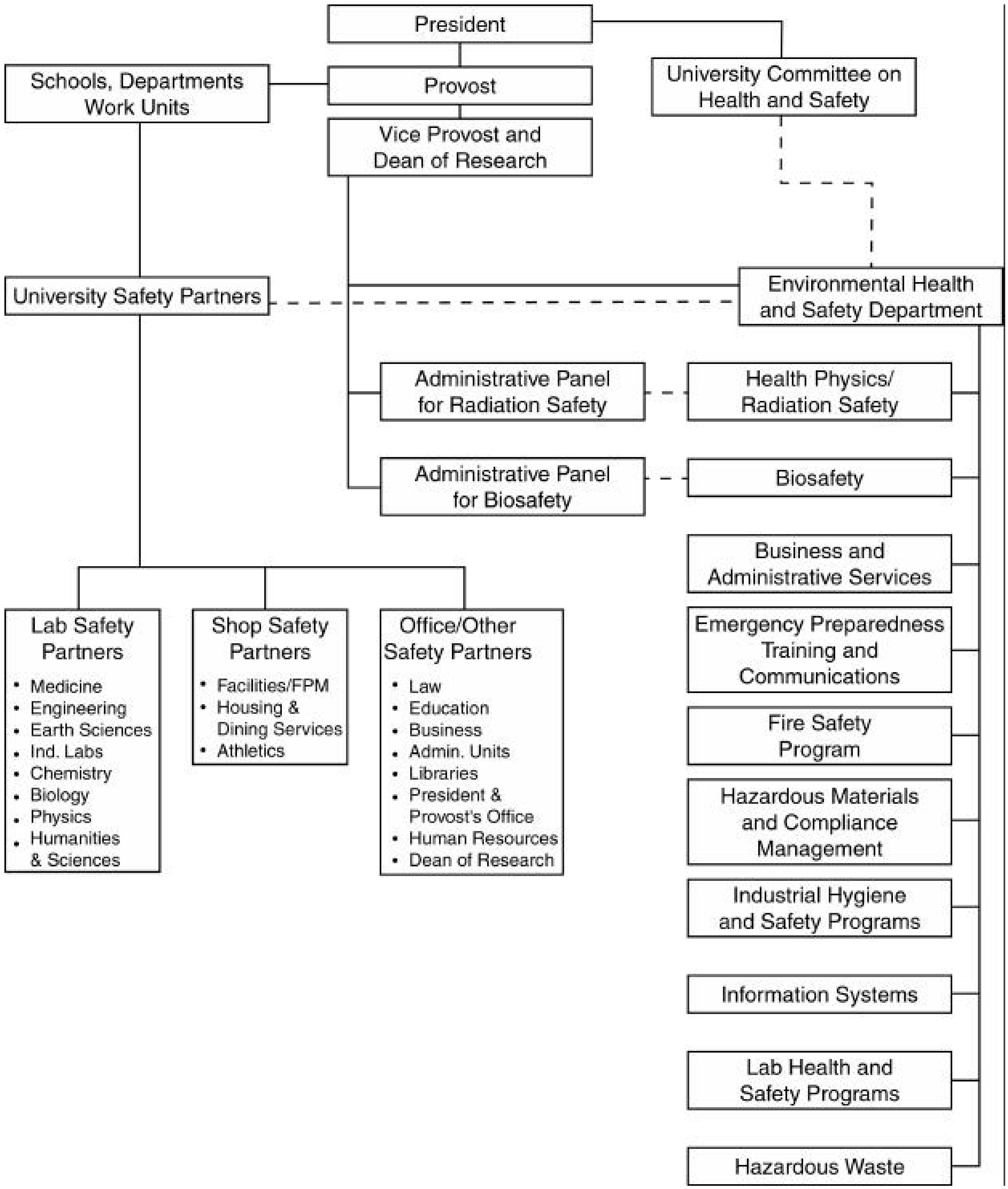



**Figure 4.7-2 Environmental Health and Safety at Stanford**

### 4.7.A.3 University Safety Partners

The University Safety Partners (i.e., Lab Safety Partners, Shop Safety Partners, and Office/Other Safety Partners) are the health and safety representatives of the Deans from each school and several administrative areas at Stanford. They provide a forum for reviewing laws, regulations, and University policies and procedures concerning environmental health and safety practices at Stanford. They facilitate the transfer of environmental health and safety information between the school or administrative area that they represent and the Department of Environmental Health and Safety (EH&S). The University Safety Partners meet at least monthly. Many of the University Safety Partners have more frequent contact with EH&S Department personnel.

### 4.7.A.4 Lab Safety Representatives

Each of the University's schools and independent units with a chemical laboratory designates a Lab Safety Representative. This person and the laboratory's principal investigator or supervisor are responsible for providing and reviewing annually a Lab Safety Plan covering the operation of their laboratory. The Lab Safety Plans supplement the University's *Chemical Hygiene Plan* (Stanford University 1998). Specifically, each Lab Safety Plan assigns health and safety responsibilities at the laboratory level; defines information and training requirements not included in the *Chemical Hygiene Plan*; describes standard operating procedures; and provides an annual chemical inventory of the laboratory (by room).

### 4.7.A.5 Department of Environmental Health and Safety

The EH&S Department is responsible for day-to-day management of health and safety operations at Stanford, including the management of hazardous materials and hazardous wastes. It provides resources and technical support to ensure employees are protected from chemical and safety hazards. The EH&S Department also develops and recommends health and safety policies although approval of these policies rests with other University bodies, such as the University Committee on Health and Safety, the Faculty Senate, the Committee on Research and others. The main job of the EH&S Department is to help employees of the University—faculty, staff and students—in providing safe and healthy conditions for work, research and study.

The EH&S Department operates several programs that address hazardous materials issues and compliance matters associated with chemical, biological and radiation safety. These include the Laboratory Safety, Hazardous Materials and Environmental Programs, Biosafety Program, Safety Engineering, Industrial Hygiene, Fire Safety, the Hazardous Waste Program and Health Physics. Each has a role in assuring the safe use, storage and/or disposal of hazardous materials or hazardous waste at Stanford.

The Laboratory Safety and Hazardous Materials and Environmental Programs, for example, maintain inventories of hazardous materials and chemicals, manage regulatory compliance for chemical storage and use, and schedule county health inspections of the University's facilities. The Biosafety Program oversees the handling and management of infectious agents and recombinant DNA. It produces the University's *Biosafety Manual* that is used to educate investigators, students and staff in proper procedures for handling and managing these materials

(Stanford University 1995a). The Health Physics Program oversees the use of equipment and materials that present radiation hazards. Potential safety concerns include the use of ionizing radiation (including radioactive chemicals), lasers, microwaves and magnetic fields in research and medical procedures. The Health Physics Program produces the University's *Radiation Safety Manual* (Stanford University 1997b).

The Hazardous Waste Program develops, implements and monitors University policies and programs for managing all hazardous wastes in accordance with applicable local, state and federal regulations. The Hazardous Waste Program encourages source reduction and waste minimization. Source reduction is achieved by chemical users through actions that reduce the quantity of hazardous waste generated. Waste minimization is achieved by the treatment, reduction or recycling of waste chemicals already generated, such as the on-site solvent reclamation and chemical recycling operations at the Environmental Safety Facility. When wastes cannot be recycled or reused, the Hazardous Waste Program is responsible for the offsite disposal of the chemical waste.

### 4.7.A.6 Hazardous Materials Safety System

Taken together the environmental health and safety programs provide a system that tracks the University's hazardous materials from the time that they are acquired through use to disposal. Although many different labs, clinics and shops order, use and store hazardous materials there is a common thread that connects all of these disparate elements. That thread is the University's Hazardous Materials Safety System, which has four components—hazardous materials transportation, hazardous materials acquisition, hazardous materials use and hazardous waste disposal (Figure 4.7-3).

#### *Hazardous Materials Transportation*

Hazardous materials are delivered to the University by vendors or by secondary carriers, such as the United Parcel Service or Federal Express. The transport of hazardous materials by these carriers is regulated by the United States Department of Transportation (DOT) under the authority of the Hazardous Materials Transportation Act and Title 49 of the Code of Federal Regulations. Air shipments are also regulated by the International Air Transport Association, which publishes its Dangerous Goods Regulations annually.

When hazardous materials arrive at Stanford, they are most commonly delivered directly to the lab, clinic or shop that ordered them. This "just-in-time" delivery system reduces the quantity of hazardous materials stored in centralized locations (i.e., stockrooms). However, in cases where demand dictates that a "bulk purchase" of a hazardous material is more economical or convenient, the hazardous material may be received by and stored in a stockroom and then distributed. Typical bulk purchases consist of up to several one-gallon containers. Stanford research facilities do not receive bulk shipments as defined and regulated by the DOT. The DOT defines bulk shipments as packaging containing 450 liters of a liquid, 400 kilograms of a solid, or 454 kilograms of a gas (for gases, the weight of the cylinder is included in the calculation). Personnel who accept hazardous materials shipments are trained to understand the warning labels on the hazardous material package, to inspect the package for damage, and to properly handle and store the hazardous materials after they arrive at the University.

### *Hazardous Materials Acquisition*

Hazardous materials are procured through a number of offices at Stanford. Regardless of the source of the order, all chemicals delivered on campus must be recorded in the University's Chemical Safety Database so that proper reporting for emergency response planning and other regulatory requirements can be addressed. General chemicals are delivered directly to user locations. Radiological materials must be pre-approved by the EH&S Department’s Health Physics Program and are delivered to a central location for clearance. From there they are delivered to the appropriate lab or clinic. Compressed gases are ordered directly through vendors approved by the University's procurement department.

The amount of material that is obtained is limited by both the fact Stanford is a research and teaching facility, and only laboratory research amounts will be ordered, and the fact that space in its research facilities is limited and of value for other than storage purposes. Therefore, researchers maintain only amounts of practical and reasonable need. Larger quantities of fuels for motor vehicles and emergency generators and some facility support chemicals are ordered by designated staff with specific responsibilities in those areas.

All laboratory and shop personnel and students who use chemicals are trained in proper chemical handling upon arrival at Stanford or when chemical handling duties are assigned. Training is updated as necessary for new job duties or activities. All individuals with a need to or responsibility for procuring chemicals are trained in proper chemical handling.

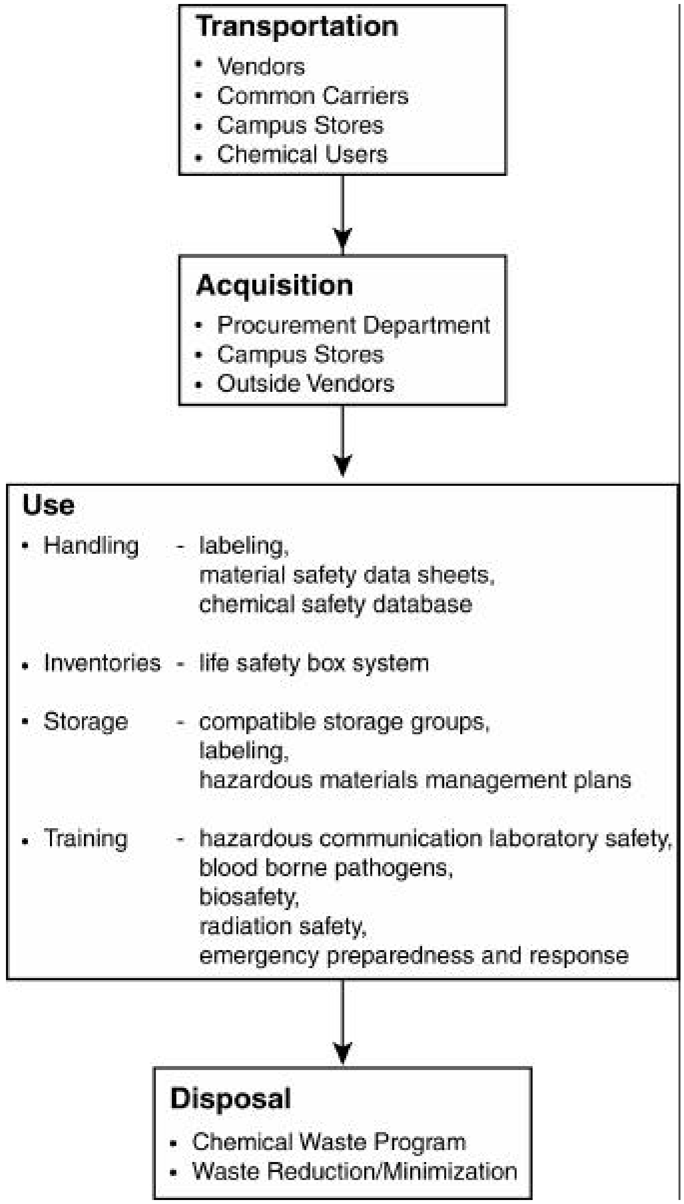



**Figure 4.7-3 Hazardous Materials Safety System at Stanford University**

### *Hazardous Materials Use*

The proper and safe use (including storage and disposal) of hazardous materials ultimately rests with the people who use the materials in Stanford's labs, clinics, studios and shops. Faculty, students and staff are all required to have training in hazardous materials handling if they use these materials in their work. Principal investigators and supervisors are responsible for ensuring that the people who work for them receive the appropriate level of training. Tools that are available to assist in the proper management of hazardous materials include the University's Training, Hazard Communication and Emergency Preparedness and Response Programs, and the Life Safety Box System.

### *Training*

Stanford policy requires training of employees in hazardous materials handling. Schools, Departments and Principal Investigators provide various levels of training throughout the University. The EH&S Department is a key resource in the planning, development and implementation of effective environmental, health and safety training programs. Where appropriate and possible, the EH&S Department develops in-house training programs that enable University managers and supervisors to deliver health and safety training directly to their staff.

Surveys of campus and medical center shops, labs and studios are conducted on a routine basis by the EH&S Department's Compliance Assistance Team to provide assistance toward compliance with hazardous materials, hazardous waste, fire safety, biological, radiological,and chemical safety requirements. All areas where hazardous materials are stored are surveyed. Personnel conducting the surveys often work one-on-one with personnel in shops, labs, and studios to help them understand pertinent compliance requirements.

Radiological safety training programs are provided by the EH&S Department's Health Physics Program. Some aspects of the training are to encourage substitution of non-radioactive substances whenever feasible and to instruct researchers to keep extraneous items that may become contaminated out of work areas. It also informs researchers of proper radiological waste disposal procedures.

EH&S Department personnel who are specifically responsible for handling hazardous wastes and hazardous materials responses are trained by certified independent professionals and by professional EH&S Department staff in accordance with local, State, and Federal regulations.

### *Hazard Communication*

It is Stanford University's policy that all faculty, staff and students who may come into contact with hazardous materials either in the workplace or in labs receive information concerning the particular hazards to which they may be exposed and that these personnel will be informed of methods by which they may deal with these materials in a safe and healthful manner. As required by State and Federal "employee right-to-know" regulations, the hazard communication program must consist of a written program, training for employees, provision of Material Safety Data Sheets and proper labeling of chemicals.

The *Stanford Safety Manual* describes the requirements of the hazard communication program including the chemical labeling requirements and general information about the EH&S Department's Chemical Safety Database (Stanford University 1995b). Material Safety Data Sheets are available on the EH&S Department's website (http://www.stanford.edu/dept/EHS/).

### *Emergency Preparedness and Response*

Emergency preparedness and response is implemented on many levels at Stanford. The University has prepared general emergency guidelines in its *Campus Emergency Plan* and *Department Emergency Planning Guidelines* (Stanford University 1999a, 1997d). It has set forth guidelines specifically for hazardous materials releases in the University's *Emergency and Hazardous Material Release Response Policy* (Stanford University 1993). All of these guidelines are available to the University community on the EH&S Department's website. The University also has developed site-specific plans (i.e., Hazardous Materials Management Plans) for areas that store hazardous materials. These plans include a description of the procedures to be followed in the event of a spill, fire or other emergency and an evacuation plan.

In the case of an emergency involving a hazardous materials release that is "health threatening" or "released to the environment" (these terms are defined in the *Emergency and Hazardous Material Release Response Policy*) the University's policy is that the Palo Alto Fire Department is to be called immediately and/or a fire alarm should be pulled if the building needs to be evacuated or if a telephone is not available. Once involved, the Palo Alto Fire Department is in command until the hazard has been fully abated and they relinquish command. In the case of a release that is "non-health threatening" and "contained" as defined in the policy, the University's Hazardous Materials Response Team should be contacted. They assume command until relinquishing it to the Palo Alto Fire Department or the hazard has been fully abated.

### *Life Safety Box System*

A Life Safety Box System is used at Stanford to provide helpful information to emergency response personnel. A Life Safety Box is located outside each laboratory or shop where hazardous materials are used or stored. The Life Safety Box contains an inventory of the chemicals used in that lab or shop, an up-to-date room map and emergency notification sheets. The hazard associated with the chemical inventory in each Life Safety Box is classified using the Stanford Chemical Safety Classification System. The Chemical Safety Classification System provides emergency response information for incidents involving a large number of different chemicals in small quantities; it ensures safe chemical storage and segregation of incompatible chemicals; it provides a summary of hazardous materials information for users of chemicals; and it tracks chemicals with specific regulatory restrictions.

Classification of the chemical hazards of each lab's inventory is done by the EH&S Department using information from Material Safety Data Sheets and/or other hazardous materials references. Material Safety Data Sheets are documents that are supplied by chemical manufacturers. They contain information about the hazardous properties of chemicals and chemical mixtures. Each Material Safety Data Sheet contains information about the manufacturer (e.g., name, address, phone number), the hazardous ingredients of the chemical, its physical and chemical characteristics, fire and explosion hazard, reactivity data, health hazard data, precautions for safe handling (including spill clean-ups) and recommended personal protection measures. This information is made available to assist laboratory and clinical personnel as well as emergency responders.

The Life Safety Box System also addresses the requirements of California's Safe Drinking Water and Toxic Enforcement Act (Proposition 65). The Life Safety Boxes contain a list of any Proposition 65-regulated substance used in the laboratory. Additional information about Proposition 65 chemicals is available on Stanford's Chemical Safety Database.

### *Hazardous Waste Disposal*

The hazardous materials used by laboratories, clinics, maintenance facilities and other entities as a normal part of their operation eventually yield a variety of wastes that must be disposed. Some of these wastes are hazardous. Three types of waste streams are regulated as hazardous: chemical, radiological and biological. A waste may be chemically hazardous because it is toxic, corrosive, reactive or ignitable. Radiological wastes are potentially hazardous because they emit ionizing radiation. Biological wastes are potentially hazardous because they may contain infectious agents that cause disease. Stanford University has on-going management programs for the safe storage, handling and disposal of each type of waste stream. Some of these programs are described in the *Stanford Safety Manual*, *Biosafety Manual*, *Radiation Safety Manual*, and *Hazardous Chemical Waste Management Reference Guide for Laboratories* (Stanford University1995a, 1995b, 1997b, 1999b).

The University's Hazardous Waste Program is responsible for collecting, recycling and disposing of waste chemicals and low-level radioactive waste generated by laboratories, shops and clinics at the University and at the Medical School. The waste is collected from points of generation and transported in specially equipped vehicles to the University's Environmental Safety Facility by appropriately trained Hazardous Waste Technicians. Prior to collection, some of the waste may be accumulated at "Satellite Accumulation Areas," which are areas under the control of the person managing the waste generating activity. Hazardous chemical waste may be accumulated in a Satellite Accumulation Area for no more than nine months from the first day that it is generated, after which it must be transferred to the Environmental Safety Facility.

Stanford's Environmental Safety Facility (Figure 4.7-1) is operated with oversight by local, state and federal agencies. The Environmental Safety Facility managed chemical hazardous waste in accordance with a permit issued by the State of California from 1981 until November 1998. The permit allowed Stanford University to store chemical waste at the Environmental Safety Facility until the volume limit of the facility was reached. There was no time limit *per se* for the facility, however this permit contained specific restrictions regarding which activities were allowed and how they should be conducted.

In 1994, the University decided that the benefits of the flexibility afforded by the extended storage time limit were outweighed by the operational inflexibility of the permit. In August 1994, the EH&S Department filed a revised closure plan and informed the State's Department of Toxic Substances Control that it wished to begin the closure (depermitting) process in accordance with the plan. In September 1994, the Department of Toxic Substances Control approved the plan and closure (depermitting) was initiated.

In November 1998, Stanford completed the regulatory prescribed process and the Department of Toxic Substances Control issued a notice that the permit for the facility was "closed." The University is now considered a generator of hazardous chemical waste, rather than a permitted facility for long term storage, and the Environmental Safety Facility operates pursuant to the regulations as a 90-day "Waste Accumulation Area." Current State regulatory requirements for operation of 90-day Waste Accumulation Areas include the following:

- Provisions for preparedness for and prevention of spills; e.g. secondary containment, spill control equipment
- Written contingency plan which details actions to be taken in case of an incident
- Waste characterization and classification
- Proper labeling and proper use of containers
- Weekly Inspections
- Recordkeeping

The facility still operates under the State of California Department of Toxic Substances regulations, which are enforced by the Santa Clara County Hazardous Materials Compliance Division. Typical classes of hazardous waste and the maximum volume that can be stored at the Environmental Safety Facility are listed in Table 4.7-1. Hazardous wastes that are shipped off-site are packaged, marked, labeled, manifested, and transported in accordance with applicable local, state and federal regulations. The Hazardous Waste Program tracks all Uniform Hazardous Waste Manifests for waste materials shipped from the campus.

## Table 4.7-1

### Environmental Safety Facility Waste Inventory[1]

| Description | | Maximum Volume |
|---|---|---|
| | Waste Lab Debris | 2,000 pounds |
| **Reactives** | Waste Water-Reactive Liquids | 150 gallons or 1,500 pounds |
| | Waste Water-Reactive Solids | 1,500 pounds |
| | Waste Spontaneously Combustible Liquids | 50 gallons or 500 pounds |
| | Waste Spontaneously Combustible Solids | 500 pounds |
| **Bases and Aerosols** | Waste Aerosol Cans | 500 cubic feet |
| | Waste Flammable Gasses | 300 cubic feet |
| | Waste Corrosive Gasses | 100 cubic feet |

## Table 4.7-1

### Environmental Safety Facility Waste Inventory[1]

| Description | | Maximum Volume |
|---|---|---|
| | Waste Poison Gasses | 100 cubic feet |
| **Corrosive Acids** | Waste Acidic Corrosive Liquids | 300 gallons or 3,000 pounds |
| | Waste Acidic Corrosive Solids | 1,000 pounds |
| **Non-RCRA Waste** | Waste Toxic Liquids | 200 gallons or 2,000 pounds |
| | Waste Toxic Solids | 1,500 pounds |
| | Waste PCB oils | 55 gallons or 550 pounds |
| | Waste Asbestos | 250 pounds |
| **Waste Bases** | Waste Basic Corrosive Liquids | 300 gallons or 3,000 pounds |
| | Waste Basic Corrosive Solids | 1,000 pounds |
| **Oxidizers** | | 400 gallons or 4,000 pounds |
| | Waste Oxidizing Liquids | 300 gallons or 3,000 pounds |
| | Waste Oxidizing Solids | 1,000 pounds |
| | Waste Oxidizing Gasses | 100 cubic feet |
| | Waste Organic Peroxides | 1 gallon |
| **Poison Liquids and Solids** | Waste Poison Liquids | 200 gallons or 2,000 pounds |
| | Waste Poison Solids | 200 gallons or 2,000 pounds |
| **Recyclable Flammable Solvents** | | 400 gallons or 4,000 pounds |
| **Overflow and Glassware** | Waste Photofixer/Developer | — |
| | Waste Oil | — |
| **Flammable Liquids and Solids** | Waste Flammable Liquids | 425 gallons or 4,250 pounds |
| | Waste Flammable Solids | 1,250 pounds |

Table Source: Stanford University 2000

1 Hazardous wastes are categorized by Department of Transportation hazard class.

All waste management personnel at the Environmental Safety Facility have completed California State Certified Hazardous Materials Technician training, and receive annual training in accordance with regulatory requirements applicable to a 90-day Waste Accumulation Area. The facility is staffed by a full time Hazardous Waste Programs Manager, with support from appropriate technical and supervisory staff. In accordance with its role as a Certified Unified Program Agency, the Santa Clara County Department of Environmental Health conducts regular inspections of the Environmental Safety Facility.

The State of California has also issued a license to Stanford University for the accumulation and management of radioisotopes including radioactive waste. This license allows the University to hold certain radioisotopes in a central facility until the level of activity has decayed to levels below the regulated limits. Once these wastes have decayed to acceptable levels, they are shipped off-site for disposal.

All locations where hazardous materials or hazardous waste are stored at Stanford University are inspected annually by the Santa Clara County Hazardous Materials Compliance Division. The County began its most recent inspection in September 1999 and is about 75 percent complete. During the inspection, two to four inspectors spend one day each week at Stanford inspecting all hazardous materials storage and use areas. There have been a few citations to date, mostly of an administrative nature (e.g., Hazardous Materials Management Plan format change requested) and some that address container management issues (e.g., secondary containers dirty) and some for minor record keeping omissions. Many of these issues are corrected while the inspectors are present.

### *Chemical Waste*

No disposal of regulated hazardous chemical wastes occurs at Stanford. The University ships its hazardous waste to permitted off-site facilities for disposal. Between September 1, 1998 and August 31, 1999 the University's Hazardous Waste Program shipped 254 tons (including weight of shipping containers and packaging materials) of chemical wastes generated at the University to permitted off-site facilities. A chemical waste tracking system is used to track all waste shipments. The system helps identify and monitor waste streams that may be candidates for the waste minimization program and is a key element of the hazardous waste management plan.

Waste generating processes have been evaluated in laboratories producing larger volumes of waste to determine options for source reduction and waste minimization. A system has been developed to redistribute unwanted, but usable, chemicals to potential users. A laboratory-scale solvent reclamation program has been operational at the Environmental Safety Facility since 1991. As appropriate, solvents are reclaimed and returned to on-campus generators for reuse.

Stanford has partnered with the County of Santa Clara Household Hazardous Waste Program and has periodically provided facilities at the University for the County Program to set up for collection of household hazardous waste from County residents. Each event lasts a full Saturday, and results in the collection of approximately 20,000 pounds of waste. About 50 percent of this material comes from County residents on Stanford land, and the remainder from residents in unincorporated County areas of Los Altos Hills and other nearby communities in Santa Clara County. The last event was held on April 24, 1999. The University also collects household hazardous waste from student residences twice per year.

### *Radioactive Waste*

All radiological materials are tracked from receipt to disposal. Low-level radioactive wastes are tracked by the University's Hazardous Waste Program through the Environmental Safety Facility. After proper radiological decay in accordance with Stanford's license, 1,640 cubic feet of non-radioactive dry waste was shipped off-site for incineration between September 1, 1998 and August 31, 1999. During the same period, 65 fifty-five gallon drums of liquid low-level radiological wastes were disposed off-site in accordance with applicable regulatory requirements.

Stanford minimizes the volumes of radioactive waste by storing dry and biological waste containing radioisotopes with radioactive half-lives less than 90 days until the radioactivity is transformed to levels indistinguishable from background. The non-radioactive items are then incinerated at a permitted off-site facility to reduce the volumes of materials discharged to a sanitary landfill.

Effective January 1, 1993, Washington State and Nevada no longer permit disposal of low-level radioactive wastes. This action adversely impacted disposal options for all generators of low-level radioactive wastes in California. The lack of disposal sites and a switch to safer radioisotopes for some research work (the safer isotopes present a lower risk to workers but take longer to decay to safe levels) has contributed to Stanford's need for increased on-site storage capability. To address these needs, the University constructed a facility adjacent to the Environmental Safety Facility (Figure 4.7-1) in 1996 for managing these wastes in accordance with a license issued by the State Department of Health Services, Bureau of Radiological Health. The expansion of the facility increased the University's net storage space by about 60 percent, from about 3,000 square feet spread over two areas of the campus to a consolidated net square footage of about 4,800 square feet of net storage space. The facility operates at approximately 60 percent of capacity for decay of low-level radioactive waste.

Use of this facility helps to ensure that appropriate on-site storage space for low-level radioactive wastes is available for the indefinite future. When the State of California develops adequate off-site capacity for managing low-level radioactive waste, long-lived wastes will be shipped to the California sites. Stanford periodically investigates the possibility of other out-of-state disposal sites, but no appropriate site has been identified to date.

In November 1996, the Administrative Panel on Radiation Safety, the University's Radiation Safety Committee established policies that require the Radioisotope Use Committee to review and approve processes that will generate "mixed" wastes. Mixed wastes are a mixture of hazardous chemicals and radioactive materials. These mixed wastes require special handling and disposal and the University intends to minimize their generation.

The Environmental Safety Facility maintains and operates an incinerator to manage low-level radioactive wastes containing tritium and carbon-14. These wastes are incinerated on-site when necessary. In June 1999, the incinerator was operated for three days and treated approximately 5,800 pounds of decayed low-level radioactive waste containing tritium and carbon-14 isotopes only. Because of their extremely long life, these wastes cannot be practically held for decay. Expected use of the incinerator will remain at three to five days annually.

Because small amounts of tritium and carbon-14 are released to the air during waste incineration current use of the incinerator is regulated by the Bay Area Air Quality Management District and the disposition of the carbon-14 and tritium containing materials is pursuant to a license issued by the State of California Department of Health Services. An EPA air model has been used to predict the average yearly radiation dose that an individual may receive as a result of the tritium and carbon-14 emissions. The model was run prior to the construction of the Environmental Safety Facility as part of the studies for the facility's 1986 EIR. An updated version of the model was run in 1987, in support of an amendment to the California Radioactive Materials License filed in accord with California Department of Health Services regulations requiring maintenance of doses as low as reasonably achievable.

The first modeling study (for the Environmental Safety Facility EIR) showed that the maximum radiation dose to any individual from incineration at the maximum proposed activity (quantity of radioactivity) would be about 2 microrems per year. The average natural dose to persons (excluding radon doses) in coastal plain areas of California is approximately 90,000 microrems per year. (A rem is a unit of absorbed energy adjusted for its potential harmful effects on humans. A millirem is one thousandth of a rem; a microrem is one millionth of a rem.) The second modeling study showed that the maximum dose would be 7.6 microrems per year. The current regulatory limit for a dose to a member of the general public (all ages) from activities conducted by an incinerator licensee is 100,000 microrems per year. The two modeling studies also assessed the collective dose (i.e., the sum of all of the doses to everyone in each of the areas studied) to the population residing at various distances from the facility up to 100 kilometers from the site. That collective dose from exposure to the tritium and carbon-14 emissions was 81.5 person-millirems. The total collective dose to all persons from natural radiation sources in the same area (excluding radon) is 459 million person-millirems.

The modeled incremental dose to persons, either taken individually or collectively, from the operation of the Environmental Safety Facility incinerator while treating the maximum levels of tritium and carbon-14, is very small compared to natural radiation sources and to regulatory limits. Currently, the incinerator treats less than the permitted amounts under the Department of Health Services license. In addition, over the past decade measured radiation levels at the unrestricted perimeter of the Environmental Safety Facility have been at or very near natural background and measurements at the stack exit during incineration have been less than allowed in regulations for continual exposure of the public.

### *Biological Waste*

Approximately 155 tons of biological waste generated on the Stanford campus (including Stanford Medical School), as well as another 650.8 tons of medical and biological waste generated by Stanford University Medical Center, which includes Stanford University Hospital and Lucile Salter Packard Children's Hospital, were transported off-site for incineration or other appropriate treatment during the period between September 1, 1998 and August 31, 1999. The University ceased on-site incineration of medical-biological wastes effective May 1, 1994.

On an on-going basis, the generators of medical and biological wastes evaluate possible ways to minimize the amounts of waste requiring, by law, disposal by incineration. Some of these alternatives include: waste stream segregation at the point of generation to help keep general refuse out of the biohazardous waste stream; continuing educational programs on proper waste management for biohazardous materials users and minimization techniques; and, using recyclable laboratory materials and/or biohazardous waste containers instead of disposable ones. Such measures are being evaluated according to their environmental soundness and their overall effectiveness in minimizing the amounts of medical and biological waste generated that will require processing by incineration.

## 4.7.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

The evaluation criteria for hazardous materials and hazardous waste are based on standards promulgated by the Federal Government and by the State of California, and by the strategies, policies and/or implementation recommendations of Santa Clara County (Table 4.7-2).

The proposed Health and Safety Element of the Stanford Community Plan will be evaluated based on whether it complies with existing hazardous materials and hazardous waste standards of the Federal, State and local governments. This evaluation criterion is based on the requirements of Federal and State laws and regulations and of policies identified in the Health and Safety Element of the Santa Clara County General Plan. The General Plan states that all feasible measures to safely and effectively manage hazardous materials and site hazardous materials treatment facilities should be used, including complying with all federal and state mandates. Potential for new facilities built under the GUP to affect public safety will also be evaluated.

The General Plan also recognizes that it is desirable to simplify and coordinate locally-implemented hazardous materials management regulations and that policies should be developed and implemented to achieve a more effective, efficient and economical regulatory environment. The importance of simplification and coordination is also recognized as evidenced by the recent implementation of laws authorizing the Certified Unified Program Agencies and the treatment of research-generated chemical waste.

# Table 4.7-2

## Evaluation Criteria with Points of Significance – Public Health and Safety

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the Project provide safeguards to protect the public from exposure to hazardous materials at concentrations detrimental to human health? | Proposed measures governing the onsite storage and use of hazardous chemical, radioactive, and biological materials. | Measures that don't adequately protect public health because they do not comply with existing Federal, California and Santa Clara County laws, regulations, ordinances and policies governing the management of hazardous materials. | Laws, regulations, ordinances, and policies governing the management of hazardous materials<br>– Federal RCRA<br>– Federal EPRCA<br>– Federal and California OSHA regulations governing carcinogens, blood-borne pathogens, laboratory standards, lead-based paint, and asbestos.<br>– California Hazardous Waste Control Law<br>– California Proposition 65<br>– California Accidental Release Prevention Law<br>– SCC Hazardous Materials Storage Ordinance<br>– SCC Model Ordinance for Toxic Gas Regulation<br>– SCC General Plan<br>Santa Clara County Environmental Evaluation Checklist Items G(a), (b), (c) and (d) |

## Table 4.7-2

### Evaluation Criteria with Points of Significance – Public Health and Safety

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 2. Will the Project provide safeguards to protect the public from exposure to hazardous waste at concentrations detrimental to human health? | a. Proposed measures governing the on-site storage and off-site disposal of hazardous chemical, radioactive, and biological waste. | a. Measures that don't adequately protect public health because they do not comply with existing Federal, California and Santa Clara County laws, regulations, ordinances and policies governing the on-site storage and off-site disposal of hazardous waste. | Laws, regulations, ordinances, and policies governing the management of hazardous waste<br>– Federal CERCLA<br>– Federal RCRA<br>– California Superfund Law<br>– California Hazardous Waste Control Law<br>– SCC Hazardous Waste Management Plan<br>– SCC General Plan<br>Santa Clara County Environmental Evaluation Checklist Items G(a), (b), (c) and (d) |
| | b. Proposed measures governing the on-site disposal (incineration) of low-level radioactive waste. | b. Measures that don't adequately protect public health because they do not comply with existing Federal, California and Santa Clara County laws, regulations, ordinances and policies governing the on-site disposal of low-level radioactive waste. | Laws, regulations, ordinances, and policies governing the on-site disposal of low-level radioactive waste<br>– California Department of Health Services<br>– BAAQMD<br>– SCC Hazardous Waste Management Plan<br>– SCC General Plan |

## 4.7.C IMPACTS AND MITIGATION MEASURES

**IMPACT: PHS-1: Will the Project provide safeguards to protect the public from exposure to hazardous materials at concentrations detrimental to human health?**

Analysis: *Significant*

Stanford University has established and implements a comprehensive Hazardous Materials Safety System for managing hazardous materials at its facilities. The system is implemented by the Hazardous Materials and Compliance Management Program within the University's Environmental Health and Safety Department. The Hazardous Materials Safety System is responsible for ensuring compliance with laws and regulations governing the transport, acquisition, use, storage and disposal of hazardous materials. The University currently complies with all Federal, State and local laws and regulations governing hazardous materials.

In addition to the University's system for managing hazardous materials, the County of Santa Clara ensures compliance with hazardous materials laws and regulations by performing regular inspections of the University's hazardous materials storage areas. All locations where hazardous materials are stored at Stanford University are inspected annually by the Santa Clara County Hazardous Materials Compliance Division. Although there were a few citations issued by the County to Stanford during the most recent inspection in the fall of 1999, most were of an administrative nature, were for container management issues (e.g., secondary containers dirty) or were for minor record keeping omissions. Many of these issues were corrected while the inspectors were present.

Any new or expanded facilities constructed under the General Use Permit would be subject to the requirements of the University's Hazardous Materials Safety System. This system would be adequate to ensure compliance with current and future regulations and laws governing the management of hazardous materials. The types of hazardous materials used at any new or expanded facilities constructed under the GUP will be similar to those used at current facilities. There may be an increase in hazardous materials use and storage, however it is anticipated that as new or expanded facilities are completed and become operational older facilities will be taken out of service. The newer facilities would provide as safe or safer conditions for using and storing hazardous materials than the current facilities.

Hazardous materials would be stored in the same general areas of campus (e.g., research labs and maintenance facilities) as are currently used to store hazardous materials. The locations and nature of these storage areas would only become known as specific projects are proposed and designed within the development areas of the campus covered by the CP/GUP. As is the currently the case, most new and expanded facilities would handle only small quantities of hazardous materials and thus spills and releases would only have a local effect (i.e., within the room or building where the spill or release occurred). However, it is possible that new facilities could be developed under the GUP that would have the potential to expose the public to releases of harmful quantities of hazardous materials. Facilities that have the potential to affect a larger population would be subject to California's Accidental Release Prevention Law. The preparation of a Risk Management Plan would be required for these facilities. The Plan would contain an offsite consequence analysis, a five-year accident history, an accident prevention program, an emergency response program, and a certification of the truth and accuracy of the submitted information

Potential impacts of use of hazardous materials during construction are addressed in the Hydrology and Water Quality Section. Measures for protection of water quality during construction would be included in the Storm Water Pollution Prevention Plan.

Mitigation: **PHS-1: Risk Management Plan**

Stanford shall disclose the projected quantities and types of hazardous materials associated with each proposed building project and identify measures for storing materials and protecting users from potential risks as part of their application to the County Planning Office. If a specific development project is proposed that would involve quantities of hazardous materials that trigger the California Accidental Release Prevention Law requirements, the University shall prepare a Risk Management Plan and shall implement all measures identified in the accident prevention program to reduce the off-site consequences to a point at which the public would not be exposed to harmful levels of hazardous materials. If feasible, the quantities of hazardous materials stored shall be reduced to below the California Accidental Release Prevention law thresholds, or a less hazardous type of chemical shall be used.

After Mitigation: *Less than Significant*

Implementation of measures incorporated in a Risk Management Plan would reduce impacts to less than significant.

**IMPACT: PHS-2: Will the Project provide safeguards to protect the public from exposure to hazardous waste at concentrations detrimental to human health?**

Analysis: *Less than Significant*

The University's Hazardous Waste Program is responsible for collecting, recycling and disposing of waste chemicals and low-level radioactive waste generated at the University and at the Medical School. The Hazardous Waste Program operates the Environmental Safety Facility, which manages the University's hazardous waste in accordance with the State's regulatory requirements for 90-day Waste Accumulation Areas. No disposal of regulated hazardous chemical wastes occurs at Stanford. The University ships its hazardous waste to permitted off-site facilities for disposal. The Hazardous Waste Program tracks all Uniform Hazardous Waste Manifests for waste materials shipped from the campus. The

University currently complies with all Federal, State and local laws and regulations governing hazardous waste.

Low-level radioactive waste is stored in accordance with a license issued by the State Department of Health Services, Bureau of Radiological Health. The low-level radioactive waste is stored at a facility adjacent to the Environmental Safety Facility. It operates at approximately 60 percent of capacity for decay of low-level radioactive waste. Occasionally, the Environmental Safety Facility incinerates low-level radioactive wastes containing tritium and carbon-14. The incremental dose of radiation to individuals from the operation of the Environmental Safety Facility incinerator is very small compared to natural radiation sources and is within regulatory limits. It is the University's policy to minimize the production of low-level radioactive wastes and mixed wastes, which contain both low-level radioactive waste and hazardous waste. The University currently complies with all Federal, State and local laws and regulations low-level radioactive waste.

The University transports medical-biological waste off-site for incineration or other appropriate treatment. On-site incineration of medical-biological wastes ceased effective May 1, 1994. The University currently complies with all Federal, State and local laws and regulations medical-biological waste.

In addition to the University's system for managing hazardous, low-level radioactive and medical-biological wastes, the County of Santa Clara ensures compliance with hazardous waste laws and regulations by performing regular inspections of the University's hazardous waste storage areas. In its role as a Certified Unified Program Agency, the Santa Clara County Department of Environmental Health conducts regular inspections of the Environmental Safety Facility. In addition, locations where hazardous waste are stored are inspected annually by the Santa Clara County Hazardous Materials Compliance Division.

Any new or expanded facilities constructed under the GUP would be subject to the requirements of the University's Hazardous Waste Program, which is subject to ongoing review by the County in various forms. The types of hazardous wastes generated by any new or expanded facilities constructed under the GUP are anticipated to be similar to those generated by current facilities. There may be some increased volume in hazardous wastes, however the increase would not exceed the permitted storage and handling capacity of the Environmental Safety Facility. The Hazardous Waste Program's requirements would be adequate to ensure compliance with all current and future regulations and laws governing the management of hazardous wastes, low-level radioactive wastes and medical-biological wastes.

Mitigation: No mitigation is necessary.

## 4.7.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Impact:** **PHS-C1: Will the project plus cumulative projects provide safeguards to protect the public from exposure to hazardous materials and wastes at concentrations detrimental to human health?**

Analysis: *Significant*

The proposed Stanford University Medical Center, Center for Cancer Treatment and Prevention would also involve use of hazardous materials and generation of hazardous waste. These projects would also require implementation of standard measures required by the County.

Mitigation: Mitigation measure PHS-1 would reduce risks associated with the use of hazardous materials to a less than significant level. Other cumulative projects would also be required to implement standard measures as required by the County or other local jurisdictions. No further mitigation is required.

After Mitigation: *Less than Significant*

# 4.8 BIOLOGICAL RESOURCES

## 4.8.A SETTING

This section describes the plant communities, wildlife habitats, and special-status species that occur within the project area (defined by the Stanford University Community Plan boundary) and addresses potential project-specific and cumulative impacts to these resources. Impacts evaluated include the potential for loss of sensitive plant communities and wildlife habitats, potential for loss of jurisdictional wetlands and waters of the U.S., potential for loss of special-status (endangered, threatened, rare, or protected) species (individuals or habitat), blockage of major migration corridors, potential for loss of trees protected by the Santa Clara County tree ordinance, and potential detrimental effects to nesting raptors. The section also identifies mitigation measures that, upon implementation, will reduce the magnitude of significant impacts.

### 4.8.A.1 Plant Communities

The plant community descriptions and nomenclature used in this analysis are based on Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). The project area supports three plant communities based on this nomenclature: riparian oak woodland, oak woodland, and annual grassland. Some of these habitats have been modified from natural conditions in a variety of ways, primarily due to disturbance and invasion (or plantings) of non-native species. These vegetation communities have been modified by agriculture, a golf course, an equestrian facility, and other development. The natural and modified vegetation communities in the project area are mapped in Figure 4.8-1.

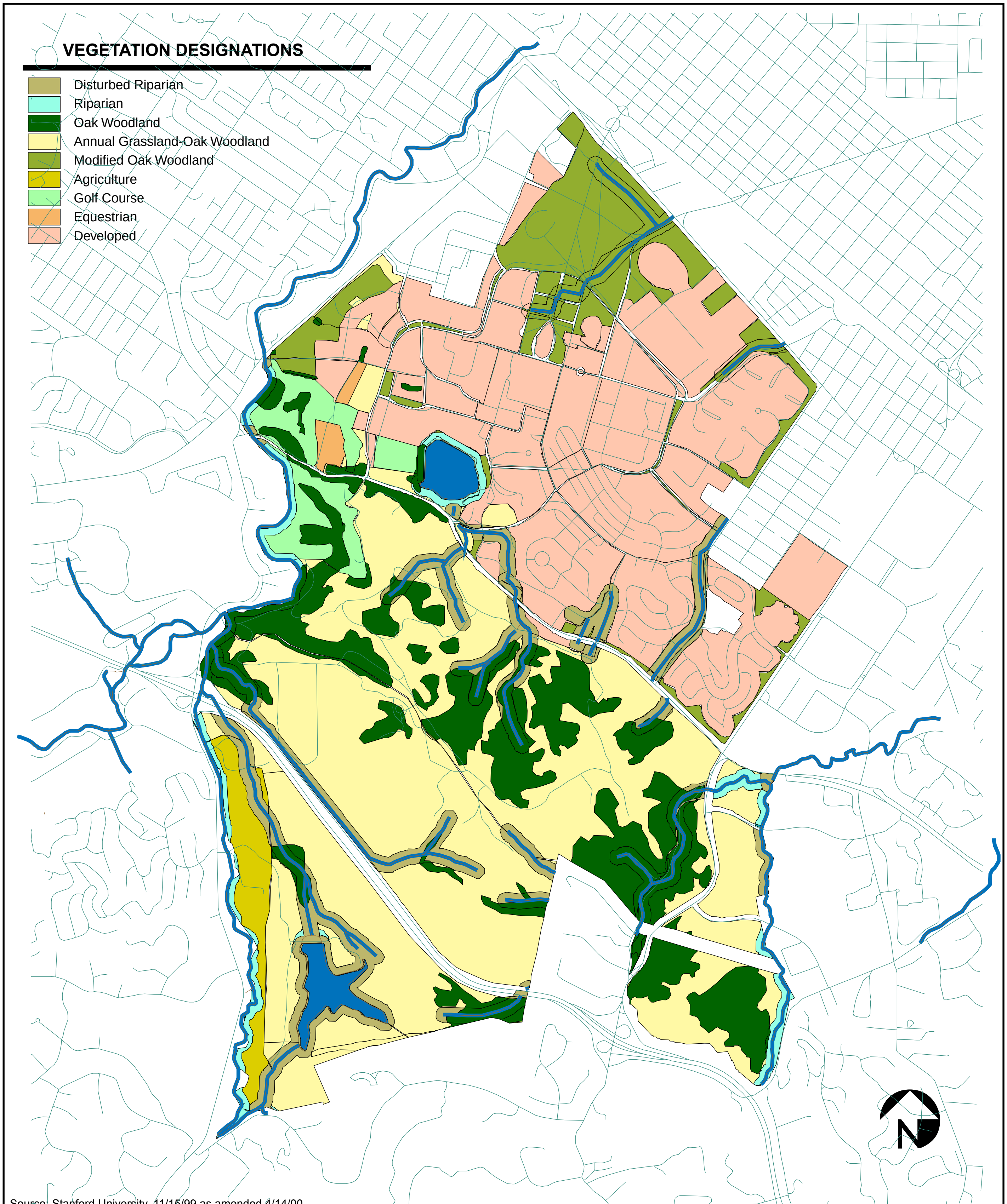
Figure 4.8-1 also delineates buffer zones around all stream corridors in the project area. These buffer zones are not intended to indicate the presence of specific vegetation communities; rather, they represent a standard planning-level setback in Santa Clara County from all project area streams. Buffer zones containing riparian oak woodland vegetation are mapped as "riparian." Buffer zones where the natural riparian vegetation no longer exists due to clearing, intensive grazing, or other disruptive land management practices are mapped as "disturbed riparian."

The natural and modified vegetation communities in the project area are described below.

#### *Riparian Oak Woodland*

Riparian oak woodland is present within the project area along San Francisquito, Los Trancos, Materadero, and Deer Creeks. Vegetation in these drainages consists primarily of a moderately closed canopy of valley oak (*Quercus lobata*) and coast live oak (*Q. agrifolia*) that ranges from approximately 30 to 50 feet in height. Associated species within this community include California buckeye (*Aesculus californica*), red willow (*Salix laevigata*), and alders (*Alnus* sp.). An understory shrub layer occurs beneath much

File: 736167\graphics\veg Date: 6/20/2000




Source: Stanford University, 11/15/99 as amended 4/14/00

Stanford University
CP/GUP Project EIR

**STANFORD UNIVERSITY LANDS**
**VEGETATION CLASSIFICATIONS**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.8-1

of the riparian canopy, particularly in areas where gaps in the overstory allow direct sunlight. Shrub species present include poison oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), California rose (*Rosa californica*), common snowberry (*Symphoricarpos albus* var. *californicum*), blue elderberry (*Sambucus mexicana*), and occasionally coyote brush (*Baccharis pilularis*).

Small clumps of native and non-native grasses and forbs are present in the understory of the riparian oak woodland, including ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), horehound (*Marrubium vulgare*), pink star-thistle (*Centaurea calcitrapa*), poison hemlock (*Conium maculatum*), wild radish (*Raphanus sativus*), field mustard (*Brassica rapa*), milk thistle (*Silybum marianum*), bull thistle (*Cirsium vulgare*), and California mugwort (*Artemisia douglasiana*). Aquatic vegetation found intermittently along the creek channels includes water cress (*Rorippa nasturtium-aquaticum*), iris-leaved juncus (*Juncus xiphioides*), broad-leaved cattail (*Typha latifolia*), and curly dock (*Rumex crispus*).

### *Oak Woodland*

Oak woodland occurs within the project area primarily along a band of rolling foothill terrain south of Junipero Serra Boulevard from the Stanford Golf Course southeast to Matadero Creek. Additional scattered oak woodland patches occur on the hills between Matadero Creek and Deer Creek. This vegetation community is dominated by valley oaks, which generally create a semi-open overstory canopy. Coast live oak and California buckeye are also important plant species found in the community. Coast live oak is occasionally codominant with valley oaks, particularly along the moister north-facing slopes. Understory species include a variety of shrubs consisting of poison oak, toyon, common snowberry, blue elderberry, and occassional dense patches of coyote brush along the edges of the woodland. Common grass species and herbs found beneath the oak woodland canopy include ripgut brome, wide-leaf filaree (*Erodium botrys*), soft chess (*Bromus hordeaceous*), Italian rye (*Lolium multiflorum*), soft geranium (*Geranium dissectum*), California figwort (*Scrophularia californica*), Indian lettuce (*Claytonia parviflora* ssp. *parviflora*), goldenback fern (*Pentagramma triangularis* var. *triangularis*), and California mugwort.

### *Modified Oak Woodland*

Modified oak woodland refers to areas that are co-dominated by native oaks and non-native ornamental species. This vegetation type occurs within the developed portions of the project area. The understory is typically comprised of a ruderal (weedy) annual grassland or ornamental landscaping.

### *Annual Grassland*

Annual grassland is the predominant habitat type in the non-urbanized sections of the project area south of Junipero Serra Boulevard. This habitat consists primarily of non-native annual grasses and forbs forming a continuous cover of herbaceous vegetation. Non-native plant species dominating this habitat include ripgut brome, Italian rye, wall barley (*Hordeum murinum* ssp. *leporinum*), wide-leaf filaree, poison hemlock, bristly ox-tongue (*Picris echioides*), common groundsel (*Senecio vulgaris*), soft geranium, and milk thistle. Native forbs that commonly occur within this community include California man-root (*Mara fabaceus*), Indian lettuce, California buttercup (*Ranunculus californicus*), blue-eyed grass (*Sisyrinchium bellum*), terrestrial brodiaea (*Brodieaea terrestris* ssp. *terrestris*), blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), small-flowered linanthus (*Linanthus parviflorus*), and Ithuriel's spear (*Tritelia laxa*). Occasional individual oak trees or small, open-canopied groupings of oaks occur within this habitat type. The community is therefore mapped as "annual grassland-oak woodland" in Figure 4.8-1.

#### *Agriculture*

This mapping unit delineates a tree nursery.

#### *Golf Course*

This mapping unit is used to illustrate areas covered by fairways, greens, and other landscaped areas associated with the Stanford golf course. The golf course is intermittently broken by oak woodlands and other natural vegetation communities that were retained within the golf course design.

#### *Equestrian*

This mapping unit describes areas that are occupied by intensive equestrian uses, including barns, stables, corrals, and associated driveways and parking lots. Vegetation within these areas is primarily limited to scattered trees and ornamental plantings.

#### *Developed (Urban)*

This category refers to areas that are occupied by academic, residential, and other development zones. Vegetation is typically limited to scattered native and non-native trees, ruderal annual grasslands, and ornamental landscaping.

### 4.8.A.2 Wildlife Habitats

Wildlife habitat provides cover, food, and water necessary to meet the biological requirements of one or more individuals of an animal species. Changes in habitats and changes in essential habitat elements that relate to reproduction, foraging, and cover requirements may impact abundance, distribution, diversity, and interactions between wildlife species.

The wildlife habitats in the project area are identified herein based on the habitat classification system developed by the California Department of Fish and Game for the California Wildlife Habitat Relationships (CWHR) program. Table 4.8-1 identifies the CWHR habitat type that corresponds with each plant community found in the project area. The vegetative components of each wildlife habitat type generally correlate with the plant communities described above. The wildlife habitats in the project area are described below in Table 4.8-1 in terms of the assemblage of wildlife species that they typically support.

**Table 4.8-1**

Plant Community/Wildlife Habitat Relationship System Habitat Type Comparison

| Plant Community | Corresponding CWHR Habitat |
|---|---|
| Modified Oak Woodland, Golf Course, Equestrian, Developed | Urban |
| Annual Grassland | Annual Grassland |
| Oak Woodland | Coastal Oak Woodland |
| Riparian Oak Woodland | Valley Foothill Riparian |

Source: Mayer and Laudenslayer, Jr., 1988

### *Annual Grassland*

Annual grasslands provide habitat for a relatively simple diversity of terrestrial wildlife. Amphibians include western toad (*Bufo boreas*), Pacific treefrog (*Hyla regilla*), and California tiger salamander (*Ambystoma californiense*). Reptiles such as western fence lizard (*Sceloporus occidentatalis*), gopher snake (*Pituophis melanoleuca*), and common garter snake (*Thamnophis sirtalis*) also occur here. Avian seed eaters including western meadowlark (*Sturnella neglecta)* and grasshopper sparrow (*Ammodramus savannarum*) may nest in grazed annual grasslands, while other grassland associate species such as red-winged blackbirds (*Agelaius phoeniceus)* are more likely to nest in taller ungrazed vegetation. A variety of other species including lesser goldfinch (*Carduelis psaltria*), California towhee (*Pipilo crissalis*), loggerhead shrike (*Lanius ludovicianus*), and northern mockingbird (*Mimulus polyglottos*) nest in scattered shrubs thoroughout annual grasslands. Raptors, including white-tailed kite (*Elanus caeruleus*), red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*), and American kestrel (*Falco sparvarius*), nest in nearby trees and forage in the grasslands. Aerial foragers, including tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), cliff swallow (*Petrochelidon pyrrhonota*), barn swallow (*Hirundo rustica*), and white-throated swift (*Aeronautes saxatilis*) may also frequent annual grasslands.

Small mammals that forage on the seeds found in this habitat type include deer mouse (*Peromyscus maniculatus*), California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*). Larger mammals, such as coyote (*Canis latrans*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), black-tailed jackrabbit (*Lepus californicus*), and black-tailed deer (*Odocoileus hemionus*) also use annual grasslands to some extent, though other habitats are required for cover.

### Coastal Oak Woodland

The wildlife community typically associated with coastal oak woodland is diverse. Oak acorns are an essential food resource for many wildlife species including western gray squirrel (*Sciurus griseus*), California ground squirrel, black-tailed deer, deer mouse, dusky-footed woodrat (*Neotoma fuscipes)*, acorn woodpecker (*Melanerpes formicivorus*), band-tailed pigeon (*Columba fasciata*), northern flicker (*Colaptes auratus*), and western scrub jay (*Aphelocoma californica*). The abundant insect life found in the bark and foliage of oaks provides food for bird species such as white-breasted nuthatch (*Sitta carolinensis*), bushtit (*Psaltriparus minimus*), oak titmouse (*Baeolophus inornatus*), and ash-throated flycatcher (*Myiarchus cinerascens*). Avian predators that nest and forage in the coastal oak woodland habitat include great horned owl (*Bubo virginianus*), western screech-owl (*Otus kennicotti*), red-tailed hawk, and red-shouldered hawk (*Buteo lineatus*).

Oak trees and other hardwoods in this community provide shelter, shade, and breeding habitat for mammal species such as raccoon, striped skunk, cottontail (*Sylvilagus audubonii*), and gray fox (*Urocyon cinereoargenteus*). A variety of woodpecker species are primary-cavity nesters in oak trees, while house wren (*Troglodytes aedon*), western bluebird (*Sialia mexicana*), and American kestrel are secondary-cavity nesters (i.e., utilizing abandoned woodpecker cavities). Coastal oak woodland is also important to neotropical migrant songbirds (i.e., warblers, vireos, grosbeaks) in terms of providing feeding, resting, and nesting habitat.

Typical amphibian and reptile species that utilize this habitat include California tiger salamander, ensatina (*Ensatina eschscholtzi*), western skink (*Eumeces skiltonianus*), California slender salamander (*Batrachoseps attenuatus*), arboreal salamander (*Aneides lugubris*), sharp-tailed snake (*Contia tenuis*), ringneck snake (*Diadophis punctatus*), Pacific tree frog, western terrestrial garter snake (*Thamnophis elegans*), western fence lizard, and northern alligator lizard (*Gerrhonotus coeruleus*).

Cooper's hawk (*Accipiter cooperi*), white-tailed kite, and golden eagle (*Aquila chrysaetos*) are special-status wildlife species that may be found in association with oak woodlands.

### Valley Foothill Riparian

Riparian woodland can support more species (i.e., more than 250 species) than any other terrestrial habitat type in the project area (Grenfell 1988). Riparian woodland provides abundant food, cover, and breeding sites for wildlife in close proximity to water. These factors and the structural diversity of riparian woodland are largely responsible for the high productivity of this habitat type. Bird species that are characteristic of this habitat include California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), western wood-pewee (*Contopus sordidulus*), California towhee, and song sparrow (*Melospiza melodia)*. A number of these species nest or roost in riparian woodland and feed in adjacent habitat types, such as annual grasslands. Riparian woodlands also provide important feeding, resting, and nesting habitat for neotropical migrant songbirds such as warblers, vireos, grosbeaks, and flycatchers.

Mammals found within riparian woodland habitats may include opossum, raccoon, deer mouse, broad-footed mole (*Scapanus latimanus*), striped skunk, gray fox, and ringtail (*Bassariscus astutus*). Amphibians and reptiles that are likely to occur in this community include California newt (*Taricha torosa*), western toad, Pacific tree frog, common king snake (*Lampropeltis getulus*), western aquatic garter snake *(Thamnophis couchii),* and western skink.

In addition to providing high value wildlife habitat, riparian corridors provide local movement corridors between fragmented habitat patches, and necessary habitat for migrant wildlife species such as neotropical migrant songbirds. Due to the value and scarcity of riparian woodlands, on both a state and region-wide scale, they are considered a sensitive habitat type and monitored closely by the California Department of Fish and Game.

#### *Urban Habitat*

A distinguishing characteristic of urban habitats is the mixture of native and exotic plant species. Exotic plant species may provide valuable habitat elements such as cover for nesting and roosting, as well as food sources such as nuts or berries.

Native and introduced animal species that are tolerant of human activities often thrive in urban habitats. These species include western fence lizard, northern mockingbird, barn swallow, raccoon, striped skunk, European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), and opossum. Special-status species that may occur in less disturbed urban habitats include California tiger salamander, white-tailed kite, and western burrowing owl (*Athene cunicularia hypugea*).

### 4.8.A.3 Special-status Species

Special-status species include:

- plants and animals that are legally protected or proposed for protection under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- plants and animals defined as endangered or rare under the California Environmental Quality Act (CEQA);
- animals designated as species of special concern by the U.S. Fish and Wildlife Service or California Department of Fish and Game;
- animals listed as “fully protected” in the Fish and Game Code of California (Sections 3511, 4700, 5050 and 5515); and
- plants listed in the California Native Plant Society’s *Inventory of Rare and Endangered Vascular Plants of California* (electronic version 1999).

A complete list of special-status plant and animal species identified by the U.S. Fish and Wildlife Service (USFWS), California Natural Diversity Data Base (CNDDB), and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994) as occurring in the vicinity of Stanford University is provided in Appendix D. Special-status species with potential habitat in or adjacent to the project area are identifed in Tables 4.8-2 and 4.8-3. These species include steelhead (FT), California red-legged frog (FT), San Mateo thorn-mint (SE/FE), and fountain thistle (SE/FE). California tiger salamander (FC) also occurs in the project area. Those species with no recent occurrences or no suitable habitat within the project area are not presented in Tables 4.8-2 and 4.8-3. Although potentially suitable habitat is present in the project area for species listed in Tables 4.8-2 and 4.8-3, not all of these species will be affected by the project. The project area, which is defined by Stanford University's Community Plan boundary, includes lands that are planned for development as well as lands where no change in use is proposed. A discussion of the potential effects of the project on special-status species is provided later in this section under the heading "Impacts and Mitigation Measures."

## Table 4.8-2

### Special-Status Plant Species that May Occur in the Project Area

| | Status | | |
|---|---|---|---|
| **Species** | **State[1]** | **Federal[2]** | **CNPS[3]** |
| *Clarkia concinna* ssp. *automixa*<br>Santa Clara red ribbons | -- | FSC | 1B |
| *Dirca occidentalis*<br>Western leatherwood | -- | -- | 1B |
| *Eriogonum nudum* var. *decurrens*<br>Ben Lomond buckwheat | -- | -- | 1B |
| *Fritillaria liliacea*<br>Fragrant fritillary | -- | FSC | 1B |
| *Lessingia hololeuca*<br>Wolly-headed lessingia | -- | -- | 3 |
| *Monardella villosa* ssp. *globosa*<br>Robust monardella | -- | -- | 1B |
| *Perideridia gairdneri* ssp. *gairdneri*<br>Gairdner's yampah | -- | FSC | 4 |

Source: Parsons Harland Bartholomew & Associates, Inc., 2000

[1] State status data from Special Plants List, California Natural Diversity Data Base (CDFG 2000).
SE = State listed as Endangered.

ST = State listed as Threatened.
SR = State-listed as Rare.

2 Federal status data from USFWS letter dated 15 November 1999 and Special Plants List, California Natural Diversity Data Base (CDFG 2000).

FE = Federally listed as Endangered.
FT = Federally listed as Threatened.
FSC = Federal Species of Special Concern.

3 California Native Plant Society (CNPS) Listing Categories (Skinner and Pavlik 1994).

List 1A Presumed extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and elsewhere.
List 2 Plants Rare or Endangered in California; more common elsewhere.
List 3 Need more information.
List 4 Plants of limited distribution.

## Table 4.8-3

### Special-Status Animal Species that May Occur in the Project Area

| | Status | |
|---|---|---|
| **Species** | **State[1]** | **Federal[2]** |
| **INVERTEBRATES** | | |
| *Hydroporus leechi*<br>Leech's skyline diving beetle | -- | FSC |
| *Ischnura gemina*<br>San Francisco fork-tailed damselfly | -- | -- |
| *Linderiella occidentalis*<br>California linderiella | -- | -- |
| *Neonemobius eurynotus*<br>Ground cricket | -- | -- |
| **FISH** | | |
| *Oncorhynchus mykiss*<br>Steelhead – Central California Coast ESU | CSC | FT |
| **AMPHIBIANS** | | |
| *Ambystoma californiense*<br>California tiger salamander | CSC | FC |
| *Rana aurora draytonii*<br>California red-legged frog | CSC | FT |
| **REPTILES** | | |
| *Clemmys marmorata*<br>Western pond turtle | CSC | FSC |
| **BIRDS** | | |
| *Accipiter cooperi (nesting)*<br>Cooper's hawk | CSC | -- |

## Table 4.8-3

### Special-Status Animal Species that May Occur in the Project Area

| | Status | |
|---|---|---|
| **Species** | **State[1]** | **Federal[2]** |
| *Accipiter striatus (nesting)*<br>Sharp-shinned hawk | CSC | -- |
| *Agelaius tricolor (nesting colony)*<br>Tricolored blackbird | -- | FSC |
| *Aquila chrysaetos*<br>Golden eagle | CSC, CFP | -- |
| *Buteo jamaicensis*<br>Red-tailed hawk | -- | -- |
| *Buteo lineatus*<br>Red-shouldered hawk | -- | -- |
| *Buteo regalis*<br>Ferruginous hawk | CSC | FSC |
| *Bubo virginianus*<br>Great horned owl | -- | -- |
| *Circus cyanus (nesting)*<br>Northern harrier | CSC | -- |
| *Chondestes grammacus*<br>Lark sparrow | -- | FSC |
| *Elanus leucurus*<br>White-tailed kite | CFP | -- |
| *Empidonax traillii brewsteri (nesting)*<br>Willow flycatcher | SE | FSC |
| *Eremophila alpestris actia*<br>California horned lark | CSC | -- |
| *Falco columbarius*<br>Merlin | CSC | |
| *Falco peregrinus anatum*<br>American peregrine falcon | SE, CFP | FE |
| *Falco sparvarius*<br>American kestrel | -- | -- |
| *Icteria virens*<br>Yellow-breasted chat | CSC | -- |

## Table 4.8-3

### Special-Status Animal Species that May Occur in the Project Area

| | Status | |
|---|---|---|
| **Species** | **State[1]** | **Federal[2]** |
| *Lanius ludoviciannus*<br>Loggerhead shrike | CSC | FSC |
| *Pandion haliaetus*<br>Osprey | CSC | -- |
| *Thryomanes bewickii*<br>Bewick's wren | -- | FSC |
| *Toxostoma redivivum*<br>California Thrasher | -- | FSC |
| *Tyto alba*<br>Barn owl | -- | -- |
| **MAMMALS** | | |
| *Eumops perotis californicus*<br>Greater western mastiff-bat | CSC | FSC |
| *Myotis thysanodes*<br>Fringed myotis bat | -- | FSC |
| *Antrozous pallidus*<br>Pallid bat | CSC | -- |
| *Myotis yumanensis*<br>Yuma myotis bat | CSC | FSC |

Source: Parsons Harland Bartholomew & Associates, Inc., 2000

[1] State status data from California Natural Diversity Data Base (CDFG 1999).
SE = State listed as Endangered.
ST = State listed as Threatened.
CSC = State Species of Special Concern.
CFP = Listed as Fully Protected by the CDFG.

[2] Federal status data from USFWS letter dated 15 November 1999 and California Natural Diversity Data Base (CDFG 1999).
FE = Federally listed as Endangered.
FT = Federally listed as Threatened.
FC = Federal Candidate for listing as Threatened or Endangered.
FSC = Federal Species of Special Concern.

### *California Tiger Salamander*

California tiger salamander (CTS) is a state species of special concern and a federal candidate for listing as threatened or endangered. California tiger salamander is known to occur throughout much of the project area and has been studied and monitored by Stanford for several years. Based on studies conducted by the Stanford Center for Conservation Biology in 1996, the population of CTS at Stanford is estimated to be in the multiple hundreds or low thousands of individuals (Launer and Fee, 1996).

Adult California tiger salamanders inhabit rolling grassland and oak savannah. Adults spend most of the year in subterranean retreats such as rodent burrows, but may be found on the surface during migration to breeding sites. The preferred breeding sites are vernal pools and other temporary ponds. However, CTS have been know to use permanent man-made ponds if predatory fish are absent.

California tiger salamander adults begin migrating to ponds after the first heavy rains of of fall and are found in or around the breeding ponds from approximately December 1st to February 15th (Zeiner et al. 1988). In extremely dry years, California tiger salamanders may not reproduce. After mating, females lay several small clusters of eggs which contain from 1 to over 100 eggs (Stebbins 1985). The eggs are deposited on both emergent and submergent vegetation, as well as submerged detritus. A minimum of ten weeks is required to complete larval development through metamorphosis, at which time the larvae will normally weigh about 10 grams. Larvae remaining in pools for a longer time period can grow to much larger sizes. Upon metamorphosis, juvenile California tiger salamanders migrate in large masses at night from the drying breeding sites to refuge sites. Prior to this migration, the juveniles spend anywhere from a few hours to a few days near the pond margin (Zeiner et al. 1988). Current data suggest that most individuals require at least 2 years to reach sexual maturity (Jennings and Hayes 1994), at which time they migrate back to breeding sites.

Adult California tiger salamanders are largely opportunistic feeders, preying upon arthropod and annelid species that occur in burrow systems, as well as aquatic invertebrates found within seasonal pools. The larvae feed on aquatic invertebrates and insects, showing a distinct preference for larvae of the Pacific tree frog (*Pseudachris regilla*) (Anderson 1968).

The primary cause of decline in California tiger salamander populations is believed to be the loss of vernal pools and other ephemeral water bodies due to urban development and agricultural land conversions. Introduction of exotic and transplanted predatory fishes such as mosquitofish (*Gambusia affinis*) to rain pools for mosquito control has been known to eliminate entire cohorts of developing embryos or larvae (Zeiner et al. 1988). Bullfrogs (*Rana catesbeiana*), especially in pools lacking dense vegetation, may prey on California tiger salamander embryos and larvae. Due to the detrimental impacts of these predators on salamander embryos and larvae, the availability of vernal pools and temporary ponds is critical to continued reproduction by this species.

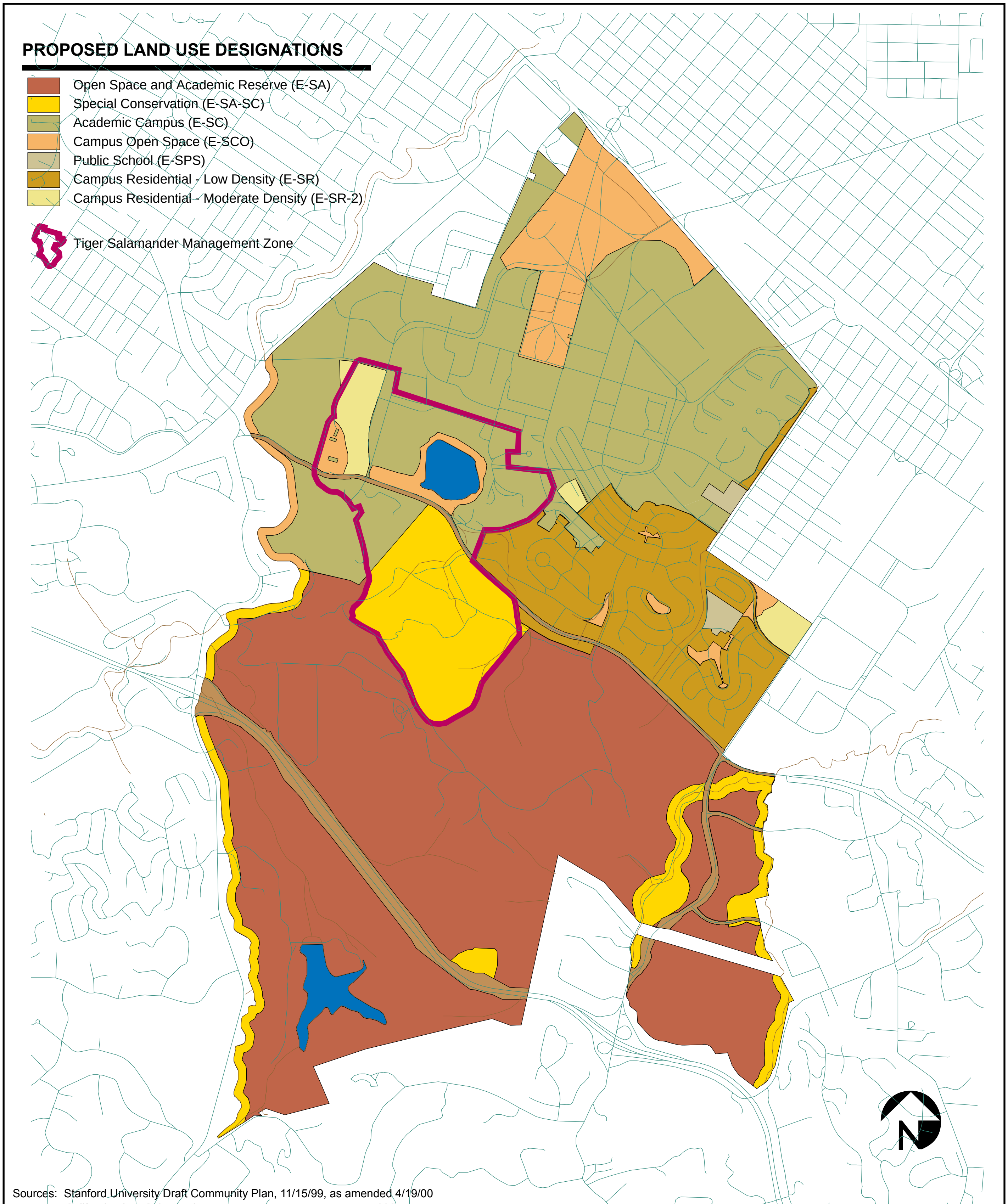
Other threats to CTS at Stanford include roads and utilities, traffic, driving range activities, landscape maintenance activities and barriers to dispersal. Numerous road-killed CTS have been documented along the roads surrounding Lake Lagunita in studies conducted by Stanford's Center for Conservation Biology. Roadways with high mortality include JSB between Gerona Road and Campus Drive West, and along Campus Drive West between JSB and Searsville Road (Launer and Fee, 1996). A total of 89 road-killed CTS were found along the roads surrounding Lake Lagunita during surveys conducted in 1998 (Launer, Fox, and Stallcup, 1998). Drift fences installed along these roads have been partially successful in reducing salamander mortality; however, salamanders were able to make their way under the drift fences, through gaps between the fence and ground, or in small mammal burrows that run beneath the fences. In addition, the fences contain gates that can be left open, allowing CTS passage (Launer, Fox, and Stallcup, 1998).

Storm drains and utility boxes are another documented source of mortality for CTS at Stanford University. In 1996, 10 to 20 salamanders were observed in several of the deeper storm drains on campus and could not be removed due to the hazard of entering these drains (Launer and Fee, 1996). Utility boxes that are older or in disrepair allow salamanders to enter but not to escape. Approximately 25 salamanders were collected from utility boxes in the areas surrounding Lake Lagunita in 1996 (Launer and Fee, 1996). Another 31 were collected in 1997, and 18 were collected in 1998 (Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

Active construction can be another source of CTS mortality. Six individuals were collected during a 1996/1997 survey conducted at the Governor's Corner construction site. Although the site was diligently checked by salamander crews and construction workers, the report indicates it is likely that individuals were trapped or buried in the construction site (Launer and Fox, 1997).

A "Management Zone" for CTS was established in June 1998 by Management Agreement, entered into by and among the County of Santa Clara, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and Stanford University (Figure 4.8-2). The Management Zone delineates an area in which salamanders are most likely to breed or estivate (experience summer periods of inactivity) and where Stanford has agreed to undertake certain management and mitigation measures for the protection of California tiger salamander. The Management Agreement specifically addresses and provides mitigation for ongoing operational and maintenance activities as well as for new development proposed within the Management Zone. New development anticipated in the Management Agreement included tennis courts, a golf course and driving range, student housing, a parking lot, a road widening, and a road realignment project.

File: 736167\graphics\PropLU Date: 6/22/2000




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00
California Tiger Salamander Management Agreement, June, 1998

Stanford University
CP/GUP Project EIR

# CALIFORNIA TIGER SALAMANDER MANAGEMENT ZONE

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 4.8-2

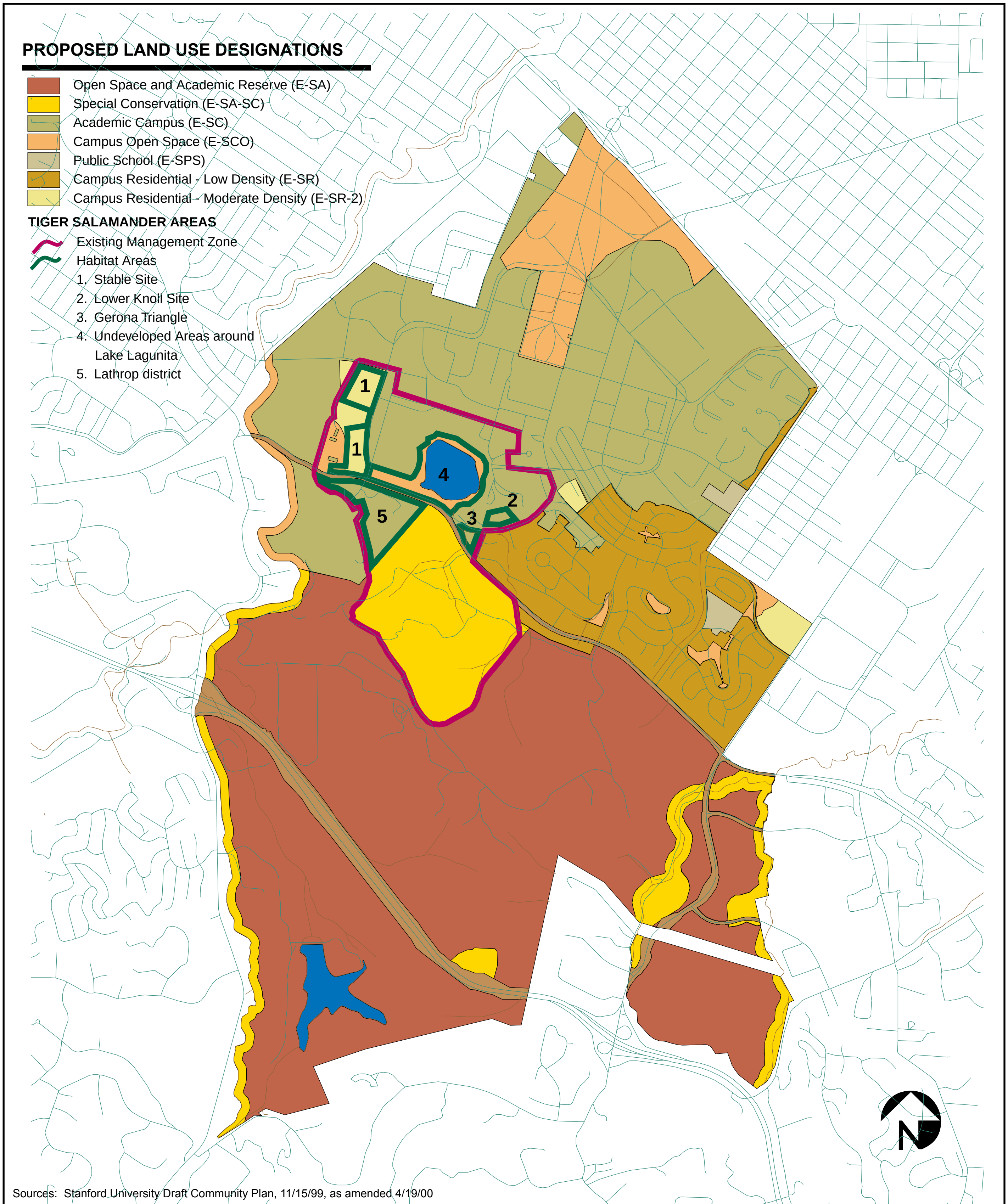
Fifteen mitigation measures are identified in the Management Agreement, including maintenance activities at Lake Lagunita, construction of two research breeding ponds south of JSB, retrofit of utility boxes and storm drains, installation of salamander friendly curbs, landscape maintenance restrictions, installation of a system of drift fences and pitfall traps to reduce traffic-related mortality at JSB, and construction of a research tunnel under JSB. The Management Agreement also specifies six measures to reduce or avoid impacts due to specified new construction in the Management Zone, including placing directional barriers on the west side of Campus Drive West, prohibiting special events at Lake Lagunita between December 15 and March 15, and implementation of a site evaluation procedure. In addition, the Management Agreement specifies four measures to monitor and enforce the CTS mitigation measures. A copy of the Management Agreement, including a complete list of the Agreement's mitigation measures, may be referenced at the Santa Clara County Planning Office or the Stanford Planning Office.

The Management Agreement states that it does not preclude future activities within the CTS Management Zone; however, for activities beyond the scope of the Agreement, additional mitigation measures may be required as appropriate during the approval process for those projects. In the event the species is listed, the Management Agreement does not provide authorization for any take of California tiger salamander under the federal Endangered Species Act.

Existing habitat for CTS within the project area includes the annual grasslands in the foothills area south of Junipero Serra Boulvard (including the Lathrop District), as well as remaining patches of annual grasslands on the main campus north of JSB. The primary habitat areas north of JSB include Lake Lagunita and the surrounding open space areas, the Lower Knoll, the Stable Site, and the Gerona Triangle (Figure 4.8-3). These areas are described in further detail below. The Driving Range site is not considered suitable habitat for California tiger salamander because it is comprised of irrigated turf that is subject to fertilizing, mowing, mechanical ball collection, night lighting, and rodent control. The remainder of the campus north of JSB is either developed or consists of modified vegetation communities that are not considered suitable for CTS.

Lake Lagunita is the primary breeding site for CTS at Stanford. Most CTS stay within approximately 500 meters of the lake; however, CTS have been observed throughout all areas of the main campus and south into the foothills beyond the boundaries of the CTS Management Zone (Launer, 2000).

File: 736167\graphics\PropLU Date: 6/22/2000




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# CALIFORNIA TIGER SALAMANDER HABITAT AREAS

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.8-3

### *Lake Lagunita*

Lake Lagunita is located in the Lagunita development district. The lake is actively managed as CTS habitat pursuant to the CTS Management Agreement. The management of water at Lake Lagunita provides optimum conditions for CTS. In typical years, water is diverted from San Francisquito Creek beginning in March and is used to maintain the lake at the 9-foot level. The 9-foot water level is usually maintained until mid-June, when water is drained to a minimum level (1 to 2 feet) and allowed to dry naturally. This water management regime coincides perfectly with the needs of breeding CTS.

The open areas around the perimeter of Lake Lagunita provide temporary habitat for juvenile CTS as well as year-round upland habitat for juveniles and adults. Underground refugia are provided by cracks in the lake bed as well as ground squirrel and gopher holes in the surrounding levees and upland edges. Numerous juvenile and adult CTS have been observed in the area surrounding Lake Lagunita since annual monitoring studies for CTS began in 1996 (Launer and Fee, 1996; Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

### *Lower Knoll*

The Lower Knoll is a hillside area located southeast of Lake Lagunita, north of JSB, in the Lagunita development district. The Lower Knoll is separated from Lake Lagunita by a small number of widely-spaced residential complexes, including parking areas, driveways, and pedestrian paths. Vegetation in the area is an open annual grassland that, at the time of the site visit on June 6, 2000, averaged approximately 3 to 6 inches in height and appeared to be mowed. Numerous ground squirrel burrows are evident in the area. The Stanford Center for Conservation Biology (Alan Launer) reports that the Lower Knoll site is known to be occupied by CTS. Observations of adult and juvenile CTS (both live and dead individuals) have been documented at the Lower Knoll site during monitoring studies conducted since 1996 (Launer and Fee, 1996; Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

### *Stable Site*

The Stable Site is located east to northeast of Lake Lagunita, on the opposite side of Campus Drive West, in the West Campus development district. The Stable Site includes an active equestrian area, heavily developed with barns, stables, and corrals, as well as one hole of the Stanford Golf Course and a group of tennis courts. The remainder of the Stable Site is characterized by open annual grassland habitat. Most of this habitat is located south of Searsville Road, with only small patches of grasslands located to the north. At the time of the site visit on June 6, 2000, the annual grasslands at the Stable Site reached an average height of approximately 18 inches, with wild radish and field mustard reaching heights of over 3 feet. Ground squirrel burrows and ground squirrel activity are evident in this area. The Stanford Center for Conservation Biology (Alan Launer) reports that the Stable Site is expected to be occupied by CTS, although Campus Drive West and adjacent residential developments and parking areas can make it difficult for CTS to access the site. Both live and dead (road-killed or trapped in utility boxes) CTS have been observed along the roads adjacent to the Stable Site during annual monitoring studies conducted since 1996 (Launer and Fee, 1996; Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

#### *Gerona Triangle*

The Gerona Triangle is located southeast of Lake Lagunita, on the opposite side of Campus Drive East, in the Lagunita development district. This area is characterized by annual grassland with scattered oaks. Vegetation in the area, at the time of the site visit on June 6, 2000, averaged approximately 3 to 6 inches in height and appeared to be mowed. Numerous ground squirrel burrows and ground squirrel activity are evident in the area. High numbers of road-killed CTS have been found on the roadways surrounding the Gerona Triangle, and live CTS have been observed in the area during annual monitoring surveys conducted since 1996 (Launer and Fee, 1996; Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

#### *Foothills*

The foothills area (often referred to as the "Dish" area), is bound on the west by Alpine Road, on the north by JSB, on the east by Page Mill Road, and on the south by I-280. This area is mostly undeveloped annual grasslands and oak woodlands. The foothills area includes the Lathrop development district of the CP/GUP. The Lathrop District, located in the northwest corner of the foothills area, is partially developed with academic and residential uses. Nine holes of the Stanford Golf Course are located in the far northwest corner of the Lathrop District.

The undeveloped annual grasslands in the foothills area provide habitat for CTS. The grasslands in this area appear not to be mowed or grazed, with vegetation reaching a height of over four feet in spots. Ground squirrel burrows are present, but due to the tall, dense vegetation, ground squirrel activity does not appear to be as high in this area as in some of the areas described above.

In 1996 and 1997, five small artificial ponds were constructed in the foothills area south of JSB. One pond was destroyed during flooding in early February 1998; the remaining ponds have been monitored annually for CTS by Stanford's Center for Conservation Biology. In 1998, a minimum of 55 CTS larvae were captured in pond 3 during five trap-nights. It is estimated based on the size of the pond and the sampling effort, that at least 100 CTS larvae, and possibly more than 200 larvae, were present (Launer, Fox, and Stallcup; 1998). No larvae were observed in the ponds in 1999 or 2000. Adult and juvenile CTS also migrate into the foothills area from Lake Lagunita, as evidenced by the numerous road-killed salamanders found along JSB during annual monitoring surveys conducted since 1996 (Launer and Fee, 1996; Launer and Fox, 1997; Launer, Fox, and Stallcup, 1998).

### 4.8.A.4 Regulatory Framework

#### *Federal Endangered Species Act*

The Federal Endangered Species Act of 1973 (Act) recognized that many species of fish, wildlife, and plants are in danger of or threatened with extinction and established a national policy that all federal agencies should work toward conservation of these species. The Secretary of the Interior and the Secretary of Commerce are designated in the Act as responsible for identifying endangered and threatened species and their critical habitats, carrying out programs for the conservation of these species, and rendering opinions regarding the impact of proposed federal actions on endangered species. The Act also outlines what constitutes unlawful taking, importation, sale, and possession of endangered species and specifies civil and criminal penalties for unlawful activities.

Biological assessments are required under Section 7(c) of the Act if listed species or critical habitat may be present in the area affected by any major construction activity conducted by, or subject to issuance of a permit from, a federal agency as defined in Part 404.02. Under Section 7(a)(3) of the Act every federal agency is required to consult with the United States Fish and Wildlife Service or National Marine Fisheries Service on a proposed action if the agency determines that its proposed action may affect an endangered or threatened species.

Section 9 of the Endangered Species Act prohibits the “take” of any fish or wildlife species listed under the ESA as endangered or threatened. Take, as defined by the ESA, means ”to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such action." However, Section 10 allows for the “incidental take” of endangered and threatened species of wildlife by non-Federal entities. Incidental take is defined by the ESA as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” Section 10(a)(2)(A) requires an applicant for an incidental take permit to submit a “conservation plan” that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. Section 10(a)(2)(B) provides statutory criteria that must be satisfied before an incidental take permit can be issued.

#### *California Environmental Quality Act*

*CEQA Guidelines - Article 5, Section 15065*

Article 5, Section 15065 of the CEQA Guidelines requires that a lead agency prepare an EIR if:

> “The Project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a

rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory."

### *CEQA Guidelines - Section 15380*

Rare or endangered species are defined in the CEQA Guidelines (Section 15380) as follows:

(a) "Species" as used in this section means a species or subspecies of animal or plant or variety of plant.

(b) A species of animal or plant is:

(1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or

(2) "Rare" when either:

(A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or

(B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

(c) A species of animal or plant shall be presumed to be rare or endangered if it is listed in:

(1) Sections 670.2 or 670.5, Title 14, California Administrative Code; or

(2) Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered.

(d) A species not included in any listing identified in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b).

### *CEQA Guidelines - Appendix G*

Appendix G of the State CEQA Guidelines lists several criteria for use in an Initial Study for determining whether impacts are significant. Impacts on biological resources are potentially significant if the project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means;

4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

### *California Endangered Species Act*

The California Endangered Species Act (Fish and Game Code Sections 2050-2098) established a State policy to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The Fish and Game Commission is charged with establishing a list of endangered and threatened species. State agencies must consult with the Department of Fish and Game to determine if a proposed Project is likely to jeopardize the continued existence of any endangered or threatened species.

Section 2081 of the Fish and Game Code allows the "take" of a species listed as threatened or endangered by the California Endangered Species Act. Take is defined as any act that involves direct mortality or other actions that may result in adverse impacts when attempting to take individuals of a listed species. Under Section 2081, the state Department of Fish and Game may issue a permit to authorize take for scientific, educational or management purposes, or take that is incidental to otherwise lawful activities

### *California Fish and Game Code Native Plant Protection Policy*

The goals of the California Native Plant Protection Policy are as follows:

> The intent of the Legislature and the purpose of this chapter is to preserve, protect, and enhance endangered or rare plants of this state (Section 1900). For purposes of this Chapter, a 'native plant' means a plant that grows in a wild uncultivated state which is normally found native to the plant life of this state (Section 1901).

The commission may adopt regulations governing the taking, possession, propagation, transportation, exportation, importation, or sale of any endangered or rare native plants. Such regulations may include, but shall not be limited to, requirements for persons who perform any of the foregoing activities to maintain written records and to obtain permits which may be issued by the department (Section 1907).

No person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or a rare native plant, except as otherwise provided in this chapter (Section 1908).

All state departments and agencies shall, in consultation with the department, utilize their authority in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered or rare native plants. Such programs include, but are not limited to, the identification, delineation, and protection of habitat critical to the continued survival of endangered or rare native plants (Section 1911).

## 4.8.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

Table 4.8-4 provides criteria for evaluation of impacts to terrestrial biological resources in the project area. The table also indicates the point of significance and justification for each criterion.

**Table 4.8-4**

Evaluation Criteria with Points of Significance - Biological Resources

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the project cause a loss of individuals or occupied habitat of an endangered, threatened, or rare wildlife or plant species? [1] | a. Number of individuals of a plant or wildlife species that would be lost | a. Population decrease greater than 0 individuals; net population decrease for species not listed under FESA or CESA, or listed species for which a take permit and/or a habitat conservation plan authorizing compensation has been adopted pursuant to FESA | CDFG Code Sections 1900-1913<br>FESA, CESA (Sections 2062 and 2067)<br>CEQA (Article 5, Section 15065)<br>Santa Clara County Environmental Evaluation Checklist Item D(a) |
| | b. Acres of occupied or designated critical habitat | b. Greater than 0 acres | |

## Table 4.8-4

### Evaluation Criteria with Points of Significance - Biological Resources

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 2. Will the project cause a net loss of individuals of CNPS List 3 or 4 plant species? | Number of plant species or populations that would experience a loss of individuals | Greater than 10 percent of known occurrences or populations on Stanford lands<br>The 10 percent significance threshold is used here to define a "substantial" impact for species that are not rare, threatened, or endangered, pursuant to CEQA Appendix G, Item IV.(a). | CDFG Code Sections 1900-1913<br>CEQA (Article 5, Section 15065)<br>Santa Clara County Environmental Evaluation Checklist Item D(a) |
| 3. Will the project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites? | Number of potential active nesting or breeding sites | Greater than 0 active sites | CEQA (Article 5, Section 15065)<br>CDFG Wildlife Habitat Relationships model - (Version 5.2)<br>Fish and Game Code - (Section 3503.5)<br>Santa Clara County Environmental Evaluation Checklist Item D(d) |
| 4. Will the project cause a permanent net loss of habitat for sensitive wildlife species? [2] | Acres of sensitive wildlife habitat lost | Greater than 10 percent of each habitat type on Stanford lands<br>The 10 percent significance threshold is used here to define a "substantial" impact for species that are not rare, threatened, or endangered, pursuant to CEQA Appendix G, Item IV.(a). | CEQA (Article 5, Section 15065)<br>CDFG Wildlife Habitat Relationships model - (Version 5.2)<br>Santa Clara County Environmental Evaluation Checklist Item D(b) |

# Table 4.8-4

## Evaluation Criteria with Points of Significance - Biological Resources

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 5. Will the project cause a permanent net loss of sensitive native plant communities? [3] | Acres of sensitive native plant community permanently lost | Greater than 0 acres | CEQA (Article 5, Section 15065)<br>CDFG (Fish and Game Code, Sections 1900-1913)<br>CDFG Interim Wildlife/Hardwood Management Guidelines (February 1, 1989)<br>CDFG (CNDDB 1994, 1995)<br>Santa Clara County Environmental Evaluation Checklist Item D(b) |
| 6. Will the project substantially block or disrupt wildlife migration or travel corridors? [4] | Number of corridors substantially blocked or disrupted | Greater than 0 corridors | CEQA (Appendix G)<br>Santa Clara County Environmental Evaluation Checklist Item D(d) |
| 7. Will the project conflict with the County's tree preservation ordinance? | Number of plans under which a conflict would result | Greater than 0 trees | CEQA (Appendix G)<br>Santa Clara County Tree Ordinance<br>Santa Clara County Environmental Evaluation Checklist Item D(f) |
| 8. Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | Plans under which a conflict would result | Any conflict | CEQA (Appendix G)<br>Santa Clara County Environmental Evaluation Checklist Item D(e) |
| 9. Will the project result in a net loss of wetlands or other waters of the U.S.? | Acreage of permanent discharge to or placement of fill in potential jurisdictional wetlands or other waters of the U.S. | Greater than 0 acre | Clean Water Act, 40 CFR 230 Section 404(b)(1), U.S. Army Corps of Engineers, U.S. EPA, and State of California no net loss policies<br>Santa Clara County Environmental Evaluation Checklist Item D(c) |

Source: Parsons, 2000

Biological Resources Notes:

CDFG California Department of Fish and Game
CEQA California Environmental Quality Act
CESA California Endangered Species Act
CNDDB California Natural Diversity Data Base
CNPS California Native Plant Society
FESA Federal Endangered Species Act
USFWS United States Fish and Wildlife Service

1. Endangered, threatened, or rare is defined here as:
   - federally listed endangered, threatened, or proposed plant or wildlife species;
   - state listed endangered, threatened, or proposed plant or wildlife species or rare plant species;
   - federal candidates for listing; and
   - CNPS List 1B and List 2 plant species.
2. Sensitive terrestrial wildlife are defined here as:
   - wildlife designated as “species of special concern” by the CDFG or USFWS;
   - wildlife listed as “fully protected” in California; or
   - wildlife species or communities that are not endangered, threatened, or rare, but which are considered to be a quality example or unique species within the County or region.
3. Sensitive native terrestrial plant community is defined here as:
   - any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS; or
   - A plant community that is considered to be a quality example characteristic of or unique to the County or region.
4. A migration corridor is defined as any habitat that experiences recurrent wildlife movement for a given species or population and that is essential to dispersal or completion of their life cycle.

## 4.8.C IMPACTS AND MITIGATION MEASURES

**Impact: BIO-1: Will the project cause a loss of individuals or occupied habitat of endangered, threatened, or rare wildlife or plant species?**

Analysis: *Significant; California Tiger Salamander*

The CP and GUP application propose to allow for new development within areas that contain existing occupied habitat for California tiger salamander (Figure 4.8-3). Once the CP and GUP are approved, Stanford will be able to develop its land in conformance with these land use instruments. Changes in the land use element of the CP would designate lands in the Lathrop, West Campus, and Lagunita development districts, each of which contains occupied CTS habitat, for future development of academic and residential uses. Table 4.8-5 identifies the acreage of existing occupied CTS habitat that would be designated for future development by the CP. Occupied CTS habitat also occurs in the foothills outside of the development districts but would not be affected by the project. Table 4.8-5 does not include these habitat areas.

The GUP proposes to develop academic facilities and specific housing projects in conformance with the land use designations of the CP. Table 4.8-5 identifies the GUP housing projects that could affect occupied CTS habitat. It should be noted that additional housing projects could be proposed in the future in campus residential areas based on the land use designations proposed in the CP. Such a proposal would be required to undergo full environmental review.

In addition to the housing projects identified above, the CP would allow for future academic development within the Lathrop and Lagunita development districts. Specific academic projects have not yet been identified; therefore, the specific acreage of occupied habitat that would be affected is not known. To represent a worst-case analysis, it is assumed that the entire acreage designated for academic uses could be subject to future development and associated habitat loss; although the GUP application presents an estimated distribution of academic space, the ultimate distribution will be defined through County conditioning of the GUP. Table 4.8-5 identifies the acreage of occupied CTS habitat within areas designated for future academic development.

## Table 4.8-5

### Occupied California Tiger Salamander Habitat within the Community Plan Development Districts

| Development District | CTS Habitat Area | Proposed Land Use Designation | Occupied CTS Habitat in Dev. District (Acres) | Total Potential Developed CTS Habitat (Based on CP Designation) (Acres) | Proposed Housing Site in CTS Habitat |
|---|---|---|---|---|---|
| Lathrop | Lathrop District | Academic Campus | 26 | 26 | No housing |
| West Campus | Stable Site | Campus Res. – Moderate | 14 | 14 | O |
| | Stable Site | Campus Res. – Moderate | 8 | 8 | O |
| Lagunita | Undeveloped Areas around Lake Lagunita | Campus Open Space | 4 | 0 | No housing |
| | Undeveloped Areas around Lake Lagunita | Campus Open Space | 18 | 0 | No housing |
| | Lower Knoll | Academic Campus | 3 | 3 | J |
| | Gerona Triangle | Academic Campus | 3 | 3 | No housing |

Source: Parsons 2000

In addition to habitat losses that would occur with new residential and academic development at Stanford, associated factors such as construction activities, the addition of new roads and utilities, increased traffic, and additional barriers to dispersal could result in a loss of CTS individuals through direct mortality or reduced reproductive success (i.e, inability of adults to reach breeding sites, inability of juveniles to disperse to upland habitat).

Barriers to CTS dispersal can significantly threaten the continued persistence of a CTS population. Barriers as small as roadside curbs represent formidable barriers to CTS dispersal (Launer and Fee, 1996). Developed areas at Stanford, including curbs, parking areas, roadways, and planting beds, present a major obstacle to dispersal of salamanders between upland habitats and breeding ponds. Continued survival and reproductive success of the CTS population at Stanford requires that suitable upland habitat is accessible to CTS dispersing from and returning to breeding ponds.

The loss of occupied CTS habitat at Stanford, and potential loss of individuals due to direct mortality or reduction in reproductive success are considered significant impacts of the project.

*No Impact; Steelhead and California Red-legged frog*

The proposed Community Plan and General Use Permit application do not propose any new development or other activities within or adjacent to any of the creeks in the project area. However, as part of the Hole #1 housing, the first seven holes of the golf course would be redesigned. Two existing golf cart bridges crossing San Francisquito Creek would retrofitted and one crossing would be removed. Retrofitting and removal of creek crossings would be done during the dry season to avoid impacts to migrating steelhead or California red-legged frogs that may occur in the creek. Removal of barriers to steelhead migration would be beneficial. Stanford has indicated that the following measures will be included as part of their project description for redesign of the golf course.

- Stanford shall obtain a 1600 series Streambed Alteration Agreement from the California Department of Fish and Game prior to the retrofitting of bridges or removal of instream structures.

- Water quality BMPs shall be implemented to avoid runoff of sediments or pollutants during retrofitting of the two golf cart bridges.

- Instream structures shall be removed during the dry season only, so as not to disturb salmonid migration or red-legged frog breeding during the rainy season.

- Cranes shall be used to remove the instream concrete and steel, rather than excavators, in order to minimize disturbance to the streambed. Blasting of underwater concrete should be avoided.

The project would result in the construction of new impervious surfaces, which would increase surface runoff from the project area. In addition, project construction activities and runoff from new developed areas have the potential to result in a degradation of surface water quality. However, the hydrology mitigation measures included in Section 4.5, Hydrology and Water Quality, would require surface water detention basins, water quality BMPs, and other stormwater management measures that would be designed to maintain surface runoff at existing levels and protect water quality. No impacts to steelhead or California red-legged frog would therefore occur.

*Potentially Significant; Rare, Threatened, and Endangered Plants*

The project area contains potentially suitable habitat for a number of rare, threatened, or endangered plant species. These species include Santa Clara red ribbons, western leatherwood, Ben Lomond buckwheat, fragrant fritillary, and robust monardella. There are no known occurrences of these species within the project area; however, it is possible that undiscovered populations could exist. New development is proposed primarily within existing developed areas north of JSB. However, the GUP application proposes limited new development within previously undisturbed areas south of JSB (in the Lathrop development district). The exact location and extent of this development is currently unknown because specific academic projects have not yet been identified. Therefore, site-specific surveys were not possible. If unknown occurrences of special-status plants occur within the future development areas, the loss of individuals or habitat of these species would be a significant impact.

*Less than Significant; American Peregrine Falcon and Willow Flycatcher*

Marginal foraging habitat for American peregrine falcon is present within the project area; however, suitable nesting habitat does not occur within or adjacent to the proposed development areas. The project would result in a minimal loss of potential foraging habitat for this species, and would not impact breeding sites. Given the large expanse of foraging habitat within and adjacent to the project area, the impact would be less than significant.

Willow flycatcher is a rare migrant in the project area. The project area is outside the breeding range of species. The project could result in a small loss of suitable wintering habitat. However, the project would not affect willow flycatcher breeding sites. The impact is therefore less than significant.

Mitigation: *California Tiger Salamander*

Implementation of the following mitigation measures would reduce or minimize the impacts of the project on CTS. Two options for mitigation are provided. Each option is followed by an analysis of the significance of the impact after mitigation.

**BIO-1(a) through (e) - Option 1: CTS Mitigation Program Proposed by Stanford.** Under this option, Stanford will continue to implement the mitigation measures outlined in the CTS Management Agreement, in addition to the following measures.

(a) In order to mitigate net loss of CTS habitat:

(1) Prior to Architectural and Site Approval of development of sites that are presently in the CTS Management Zone and which are considered poor quality upland habitat (Driving Range and Stable Site), Stanford shall add to the Management Zone an amount of land equal to the acreage of the portion of the site to be developed.

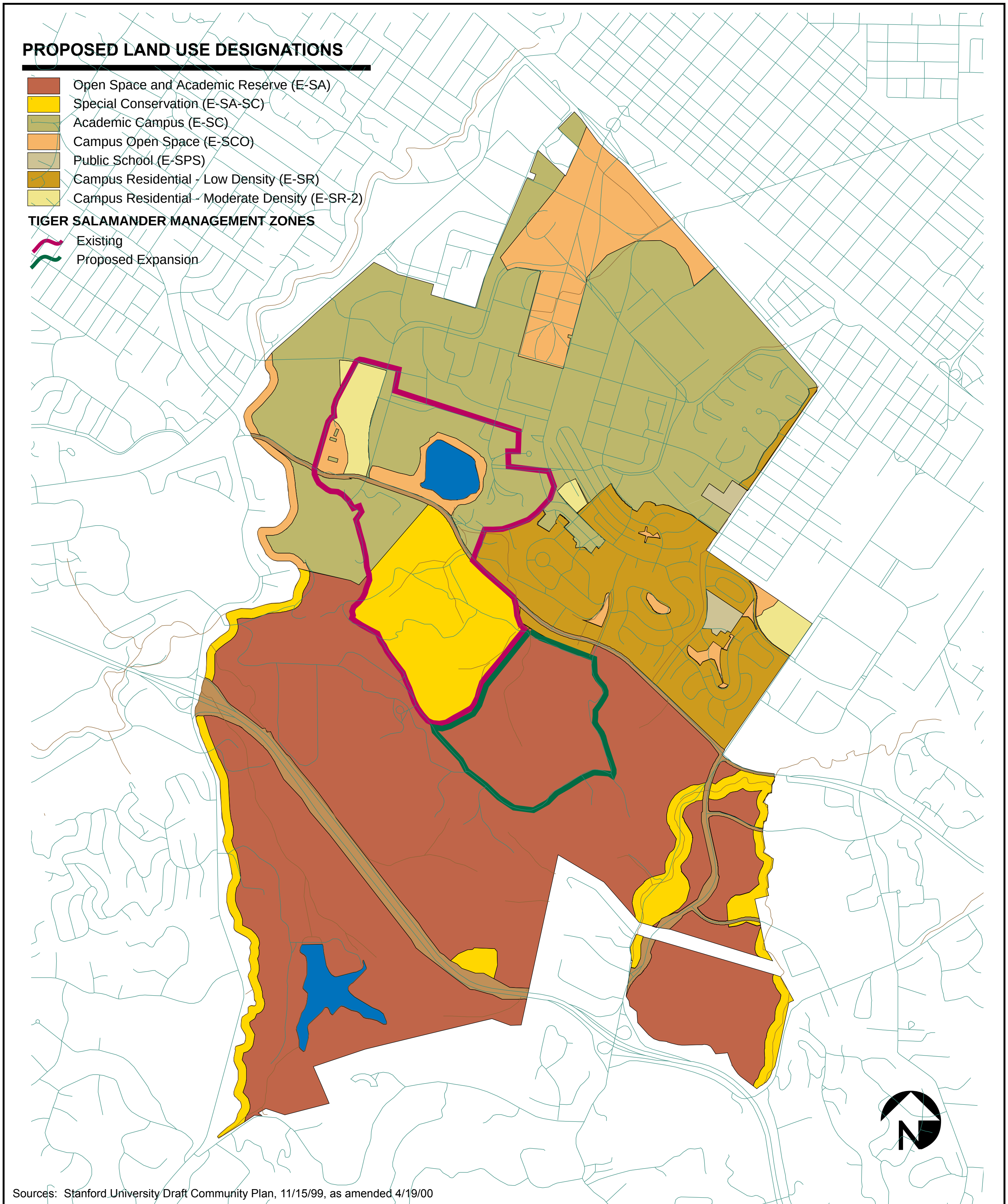
- Calculation of the portion of the site to be developed shall include building footprints, roads, paved and unpaved parking areas, and pathways.
- The location of the acreage to be added to the Management Zone shall be contiguous to the existing zone and within the area shown on Figure 4.8-4 as the area of possible future expansion.
- The acreage added to the Management Zone shall be subject to the migitation measures specified in the 1998 CTS Agreement, including site development procedures, grassland/oak woodland management (restrictions on ground squirrel control and vegetation management) to benefit ground squirrels and other rodents and to establish variable grass heights, and biocide restriction.

(2) Prior to Architectural and Site Approval of development of sites that are presently in the CTS Management Zone and which are considered excellent or good quality upland habitat (Lower Knoll, and Lathrop District), Stanford shall add to the Management Zone an amount of land equal to 3 times the acreage of the portion of the site to be developed.

- Calculation of the portion of the site to be developed shall include building footprints, roads, paved and unpaved parking areas, and pathways.
- The location of the acreage to be added to the Management Zone shall be contiguous to the existing zone and within the area shown on Figure 4.8-4 as the area of possible future expansion.
- The acreage added to the Management Zone shall be subject to the migitation measures specified in the 1998 CTS Agreement, including site development procedures, grassland/oak woodland management (restrictions on ground squirrel control and

vegetation management) to benefit ground squirrels and other rodents and to establish variable grass heights, and biocide restriction.

- In addition, prior to commencement of construction on the Lower Knoll or Lathrop sites, land within the Management Zone south of JSB shall be enhanced with three breeding ponds (two breeding ponds prior to approval of the development of the Lower Knoll and one breeding pond prior to development of any portion of the Lathrop development district). The ponds shall be 50 feet by 80 feet in size. Ponds must hold water for 4 to 6 months but must dry out completely before the onset of winter rains to ensure that non-native predators do not become established. Annual monitoring of the new breeding ponds shall occur until CTS use of the new breeding ponds is demonstrated for at least two consecutive seasons. After project completion, created ponds shall be monitored for use by amphibians for at least 5 years, and less frequently thereafter.




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# CALIFORNIA TIGER SALAMANDER MANAGEMENT ZONE EXPANSION AREA

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 4.8-4

(b) In order to minimize the potential for loss of individual CTS during project construction, the following measures shall be required for construction of projects in the CTS Management Zone.

(1) Pre-construction surveys for CTS shall be conducted during the rainy season prior to construction of any project that would affect potential CTS habitat. Surveys shall be conducted in accordance with CDFG standard procedures for pre-construction surveys. If CTS are found in the construction areas, the University shall consult with CDFG and USFWS to determine if salvage of salamanders is warranted, and if so, what method should be used. The construction area shall be calculated and identified on construction drawings, and the area of imacts shall be monitored by the contractor during construction.

(2) Construction vehicles shall be limited to a speed of 10 mph. This speed limit shall be stipulated in all construction contracts and enforced through regular monitoring of construction sites by the County. Any fuels on these sites shall be double contained and excess asphalt shall be removed from the site upon completion of construction.

(3) Drift fences (e.g., silt fences or other effective salamander barriers) shall be erected around the project site prior to November 15 to prevent CTS from wandering into areas where they could experience mortality or injury. Efforts to salvage estivating salamanders (i.e., those salamanders who spend summers in the project area) through onsite monitoring during active construction and hand excavation prior to construction, shall be made.

(c) In order to minimize the potential for loss of individual CTS during project operation, the following measures shall be required at sites within the CTS Management Zone.

(1) Utility boxes and other ground-level fixtures shall be maintained to prevent accidental trapping of salamanders. Outdoor lighting shall be minimized, since artificial light is known to affect amphibian populations. Facilities on the sites shall be kept clean from exposed garbage to avoid attracting potential salamander predators and other nuisance animals. Domestic animals shall not be allowed as regular residents of the sites. The drip-line of oak trees present on site shall be kept clear of structures. Ground squirrel control shall not be allowed. Landscaping features shall be limited to native species, to the extent feasible, that do not require the use of pesticides and fertilizers.

(2) Curbs, planters, and other landscape elements shall be designed to direct salamanders away from the building complex, access road, and parking area. Gravel-covered french drains shall be

constructed instead of typical storm drains. Utility boxes with as few openings to the surface as possible shall be selected to prevent accidental trappings of salamanders.

(d) If the CTS is listed as threatened or endangered by the federal government, an appropriate permit will be obtained from the USFWS. The mitigation measures provided herein shall be superseded by any subsequent HCP approved by the USFWS, so long as the HCP provides at least as much habitat value and protection for CTS.

(e) The mitigation measures will be binding through the Conditions of Approval for the General Use Permit.

After Mitigation: *Significant*

BIO-1(a) though (e) - Option 1 would mitigate for potential impacts to California tiger salamander by adding additional acreage to the CTS Management Zone, constructing three new breeding ponds, and implementing specific measures to avoid loss of individual CTS during project construction and operation. However, Option 1 does not provide for the long-term protection of CTS habitat because it relies on the Management Zone as mitigation, which does not preclude future development or provide long-term protection. In addition, Option 1 does not guarantee that the new ponds will be effective (i.e., suitable for CTS breeding) before new development occurs. Therefore, the impact after mitigation is considered potentially significant.

**BIO-1(a) through (e) - Option 2: Alternative CTS Mitigation Program (not proposed by project applicant)**

(a) In order to ensure that there is no net loss of CTS habitat and to provide for the long-term protection and management of CTS habitat at Stanford:

(1) Before any development activity in the CTS Management Zone, Stanford shall dedicate an easement over the entirety of Lake Lagunita to the top of the lake banks. The acreage of this easement shall count toward other existing habitat easement dedication requirements as defined below. Prior to Architectural and Site Approval of development of sites in the project area that contain occupied CTS habitat Stanford shall provide for the long-term protection and management, through easements or other equally protective mechanism, of an amount of land equal to 3 times the acreage of the occupied portion of the site to be developed. Occupied CTS habitat includes but is not limited to, the Lower Knoll, Gerona Triangle, and the open areas around Lake Lagunita. Other areas within the CTS management zone shall be surveyed by an independent qualified biologist, hired by the County at the expense of Stanford to determine if they contain occupied CTS habitat as defined through the survey. The survey shall be coneucted in accordance with the survey protocol for CTS

approved by the California Department of Fish and Game (CDFG) or the USFWS.

As an alternative to the easement at a 3:1 ratio of protected area to disturbed area described above, Stanford may restore, protect, and manage for CTS use areas within 500 meters of Lake Lagunita which do not currently serve as occupied CTS habitat. Areas which may be used for restoration include the driving range and any areas currently developed with buildings, parking areas, or roadways. The restoration area shall be equal in size to the area disturbed by a proposed building project. Restored areas shall be placed in easements subject to all terms described below.

– The total area for which mitigation shall be provided includes building footprints, roads, paved and unpaved parking areas, pathways, ornamental landscape plantings, and any other areas where CTS habitat will be lost or modified, or where CTS access to habitat will be impeded.

– The first mitigation site shall consist of preserved, created, or restored upland habitat that is located within 500 meters of breeding habitat. Breeding habitat includes Lake Lagunita or created ponds in which successful CTS reproduction has been documented for at least three consecutive seasons with near- or above-normal rainfall, excluding any intervening years with substantially below normal rainfall. The mitigation site shall be contiguous to the breeding habitat, or contiguous to other open space lands that provide migration and dispersal corridors for CTS to the breeding habitat. When all areas that meet this description have been placed in easement protection, easements may be granted on other open space lands that provide migration and dispersal corridors for CTS to breeding habitat.

– A detailed management and monitoring plan shall be created to ensure the long-term maintenance of habitat values on the mitigation lands. The plan shall be approved by the USFWS prior to the Architectural and Site Approval of any project that will affect occupied CTS habitat, and shall address requirements for fencing, vegetation control, enhancement of small mammal populations, maintenance of safe migration and dispersal corridors, and management of other potential sources of mortality (e.g., road kills, utility boxes).

– The habitat mitigation lands shall be protected through adoption of a permanent conservation easement or other long-term land control mechanism that adequately protects CTS habitat. Easements shall remain in effect until such time as protection of CTS is no longer warranted, either through removal from consideration for listing or de-listing under the state or federal Endangered Species Act or other local, state, or federal laws, ordinances and regulations related to the prtection of the species, or if the species becomes extinct. Easements may also be abandoned by the County if all buildings constructed under the General Use Permit in the CTS management zone are removed and the habitat is restored for CTS.

– In addition, prior to commencement of construction on occupied CTS habitat that is within 500 meters of Lake Lagunita, land within the foothills area south of JSB shall be enhanced with three new breeding ponds (these new ponds shall be in addition to any breeding ponds created thusfar). The design, management requirements, and success criteria for the ponds shall be established in consultation with the USFWS. The new breeding ponds shall be monitored annually until successful CTS breeding is demonstrated for at least three consecutive seasons of near- to above-normal rainfall, excluding any intervening years with substantially below normal rainfall, prior to building permit issuance. After successful breeding is demonstrated, development of sites in occupied CTS habitat may proceed with the dedication of suitable upland mitigation lands contiguous to the created ponds.

– All CTS monitoring shall be verified or conducted by an independent, qualified biologist selected and hired by the County of Santa Clara at the expense of Stanford University.

(b) In order to minimize the potential for loss of individual CTS during project construction, the following measures shall be required for construction of projects in the CTS Management Zone.

(1) Pre-construction surveys for CTS shall be conducted by an independent, qualified biologist at the beginning of the rainy season prior to construction of any project that would affect potential CTS habitat. Surveys shall be conducted in accordance with CDFG standard procedures for pre-construction surveys. If CTS are found in the construction areas, the University shall consult with CDFG and USFWS to determine if salvage of salamanders is warranted, and if so, what method should be used. The construction area shall be calculated and identified on construction drawings, and the area of impacts shall be monitored by the contractor during construction.

(2) Construction vehicles shall be limited to a speed of 10 mph. This speed limit shall be stipulated in all construction contracts and enforced through regular monitoring of construction sites by the County. Any fuels on these sites shall be double contained and excess asphalt shall be removed from the site upon completion of construction.

(3) Drift fences (e.g., silt fences or other effective salamander barriers) shall be erected around the project site prior to November 15 to prevent CTS from wandering into areas where they could experience mortality or injury.

(c) In order to minimize the potential for loss of individual CTS during project operation, the following measures shall be required at sites within the CTS Management Zone.

(1) Utility boxes and other ground-level fixtures shall be maintained to prevent accidental trapping of salamanders. Outdoor lighting shall be minimized, since artificial light is known to affect amphibian populations. Facilities on the sites shall be kept clean from exposed garbage to avoid attracting potential salamander predators and other nuisance animals. Domestic animals shall not be allowed as regular residents of the sites. The drip-line of oak trees present on site shall be kept clear of structures. Ground squirrel control shall not be allowed except as required in the Lake Lagunita dam and levee pursuant to the requirements of the State Division of Dam Safety. Landscaping features shall be limited to native species, to the extent feasible, that do not require the use of pesticides and fertilizers.

(2) Curbs, planters, and other landscape elements shall be designed to direct salamanders away from the building complex, access road, and parking area. Gravel-covered french drains shall be constructed instead of typical storm drains. Utility boxes with as few openings to the surface as possible shall be selected to prevent accidental trappings of salamanders.

(d) If the CTS is listed as threatened or endangered by the federal government, an appropriate permit will be obtained from the USFWS. The mitigation measures provided herein shall be superseded by any subsequent HCP approved by the USFWS, so long as the HCP provides at least as much habitat value and protection for CTS.

(e) Stanford and the County Planning Office shall continue to comply with all requirements and recommendations of the 1998 California Tiger Salamander Management Agreement.

(f) Within 3 years of General Use Permit approval, Stanford shall construct between one and three passageways for salamanders providing for safe passage across Junipero Serra Boulevard. The number and design of these passageways shall be determined in consultation with the United States Fish and Wildlife Service and submitted to the County Planning Office for approval. If an alternate, equally or more effective measure is approved by the County Planning Office in consultation with the USFWS, such a measure may replace these passageways.

After Mitigation: *Less than Significant*

BIO-1(a) through (e) - Option 2 would mitigate for potential impacts to California tiger salamander by permanently preserving habitat for CTS in an amount that is equal to 3 times the amount of occupied CTS habitat to be developed, constructing three new breeding ponds, and implementing specific measures to avoid loss of individual CTS during project construction and operation. Option 2 does provide for the long-term protection of CTS habitat by requiring dedication of conservation easements or other comparable land use controls over the habitat mitigation lands. In addition, Option 2 requires that successful CTS breeding be demonstrated in the created ponds before development may occur on occupied CTS habitat located within 500 m of existing breeding habitat (Lake Lagunita). These measures would offset the loss of upland habitat and ensure that replacement habitat is provided in close proximity to viable breeding habitat. The impact after mitigation is therefore considered less than significant.

**BIO-1 (a) through (e) - Option 3: Federal and State Alternative CTS Mitigation Program (proposed by the United States Fish & Wildlife Service and California Department of Fish and Game)**

(a) In order to ensure that there is no net loss of CTS habitat and to provide for the long-term protection and management of CTS habitat at Stanford:

(1) Lake Lagunita shall be preserved as a salamander breeding location, and the Lagunita "campus open space" shall be protected in perpetuity by a conservation easement or similar enforceable restriction.

(2) The existing driving range shall be restored to grassland and oak savanna, which shall be protected in perpetuity by a conservation easement or similar enforceable restriction.

(3) Existing open space areas (upland summer refuge areas) at the Lower Knoll, Gerona Triangle, Lathrop District and existing open areas that connect these districts to the Lake Lagunita salamander breeding location shall be protected in perpetuity by a conservation easement or similar enforceable restriction.

(4) Several large, recessed channels covered by open grates at road level, with barriers to guide salamanders in and to keep them off Junipero Serra Boulevard, shall be constructed to allow for CTS migration and habitat areas south of JSB.

(b) Same as described for Option 1.

(c) Same as described for Option 1.

(d) Same as described for Option 1.

(e) Same as described for Option 1.

After Mitigation: *Less than Significant*

BIO-1(a) through (e) - Option 3 would mitigate for potential impacts to California tiger salamander by permanently preserving existing habitat for CTS, restoring additional lands for habitat, and constructing facilities to reduce road kills. Under this option the ratio of habitat protected to habitat developed would be 3.25:1. Option 3 provides for the long-term protection of CTS habitat by requiring dedication of conservation easements or other comparable land use controls over the habitat. Very little occupied CTS habitat would be developed and habitat would be created and/or preserved. These measures would protect upland habitat in close proximity to viable breeding habitat in perpetuity. The impact after mitigation is therefore considered less than significant.

*Rare, Threatened, and Endangered Plants*

**BIO-1(f) through (k): Rare, Threatened, and Endangered Plant Protection Program**

(f) The County at the expense of Stanford shall retain an independent qualified biologist to conduct floristically-based surveys for special status plants following the California Department of Fish and Game's "Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities" prior to application for approval of any new development project within a riparian, disturbed riparian, oak woodland, annual grassland-oak woodland, or modified oak woodland area as identified in the Community Plan/General Use Permit Environmental Impact Report. Stanford shall notify the County of potential proposed building projects in adequate time to conduct the appropriate surveys at the appropriate time of year. The purpose of these surveys will be to located and identify any special-status plants that may occur in the proposed construction zone. The survey shall be included with Stanford's application for the necessary planning permits from the County or conducted during the analysis process as appropriate.

(g) The designated construction zone for new facilities shall be designed to provide, to the extent feasible, an exclusionary buffer from any special-status plant resources discovered (recommend a minimum 30-foot buffer, with exact size of buffer to be determined in consultation with the California Department of Fish and Game on a case-by-case basis, depending upon the species to be impacted).

(h) A mesh fence shall be installed at the boundary of exclusionary buffer zones established for special-status plant resources prior to the initiation of ground-disturbing activities.

(i) Where complete avoidance cannot be achieved, Stanford shall submit a site-specific mitigation and compensation program for the affected resources in consultation with the California Department of Fish and Game and/or the U.S. Fish and Wildlife service.

(j) All special-status plants within the construction zone shall be transplanted (after seed and cuttings have been secured and propagated for translocation) on Stanford lands in consultation with the California Department of Fish and Game and U.S. Fish and Wildlife Service. Lost special-status plant habitat shall be replaced and/or known rare plant habitat preserved at a ratio to be determined in consultation with CDFG on a case-by-case basis, depending upon the degree of rarity of the species in question.. Seed and cuttings shall be used for translocation efforts as needed to meet the minimum success criteria. Stanford shall provide for long-term protection and management of the replacement habitat, through easements or other equally protective mechanism.

(k) Stanford shall provide funding for the County to retain a qualified biologist to monitor the mitigation sites annually for five years using success criteria developed in coordination with the California Department of Fish and Game and U.S. Fish and Wildlife Service. The success of the transplantation program shall be considered to have been achieved if 80% or more of the transplanted plants have survived five years after transplantation. The translocation and monitoring shall continue until the success criteria are met.

After Mitigation: *Less than Significant*

BIO-1 (f) through (k) would provide for the replacement of lost plant habitat at a ratio of two acres of replacement habitat for each acre of special-status plant habitat lost, and for the the salvage and transplant of the affected special-status plants. A minimum 80% survival criteria would apply. These measures would reduce the impact to less than significant.

**Impact: BIO-2: Will the project cause a loss of individuals of CNPS List 3 or 4 plant species?**

Analysis: *Significant*

One CNPS List 4 plant species has potential habitat in the project area. This species, Gairdner's yampah, is not known to occur in the project area. It is possible, however, that undiscovered occurrences exist. New development is proposed primarily within existing developed areas north of JSB. However, the plan would allow for limited new development within previously undisturbed areas. If unknown occurrences of Gairdner's yampah occur within these areas, the loss of more than 10 percent of known occurrences or populations on Stanford lands would be a significant impact.

Mitigation: Mitigation proposed for the loss of rare, threatened, and endangered plant species under Measure BIO-1 (f) through (k) would also mitigate for impacts to CNPS List 3 and 4 species.

After Mitigation: *Less than Significant*

BIO-1 (f) through (k) would provide for the replacement of lost plant habitat at a ratio of two acres of replacement habitat for each acre of special-status plant habitat lost, and for the the salvage and transplant of the affected special-status plants. A minimum 80% survival criteria would apply. These measures would reduce the impact to less than significant.

**Impact:** **BIO-3: Will the project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites?**

Analysis: *Significant*

Nesting pairs of Cooper's hawk, sharp-shinned hawk, red-tailed hawk, red-shouldered hawk, white-tailed kite, American kestrel, great horned owl, and barn owl have been documented in the project area. Golden eagle has also been seen foraging in the project area, althrough there does not appear to be suitable nesting habitat. A number of migratory birds may also nest in the area. If active nest sites occur within the the project area, noise and visual disturbance associated with construction activities occurring during the nesting season may lead to nest abandonment and nest failure. Construction activities could also destroy active nest sites. These impacts would be significant.

Mitigation: **BIO-3: Active Raptor and Migratory Bird Nest Protection Program**

Pre-construction surveys for breeding raptors and migratory birds on the Stanford campus will be conducted to determine the location of active nest sites. If active nest sites are located, Stanford shall consult with a biologist under contract to Santa Clara County, or the California Department of Fish and Game to determine appropriate construction setbacks from the nest sites. No construction activities shall occur within the construction setback during the nesting season of the affected species.

After Mitigation: *Less than Significant*

Active migratory bird and raptor nest sites will be identified during pre-construction surveys, and appropriate construction setbacks will be established around active nest sites to avoid disturbance during the nesting season. This mitigation would avoid impacts to nesting migratory birds and raptors.

**Impact:** **BIO-4: Will the project cause a permanent net loss of habitat for sensitive wildlife species?**

Analysis: *Less than Significant*

Sensitive wildlife habitats are defined as habitats that provide high suitability for foraging and breeding for state or federal species of special concern and California fully protected species; and important resting, foraging, and breeding habitat for migratory birds and other native wildlife. Sensitive wildlife habitats identified within the proposed project area are annual grassland, coastal oak woodland, and valley foothill riparian. Sensitive wildlife species associated with these habitats are identified in Table 4.8-3.

The percentages of sensitive wildlife habitats in the project area that could be subject to new development are presented in Table 4.8-8. The total acreage of sensitive wildlife habitats in the project area was calculated in AutoCADD based on the vegetation map in Figure 4.8-1. The acreage of sensitive wildlife habitats within each development district were calculated by using a planimeter to measure habitat areas where future development could occur based on the land use designations in the CP.

**Table 4.8-8**

Sensitive Wildlife Habitats in Stanford Project Area (acres)

| | **Annual Grassland**[1] | **Coastal Oak Woodland/Valley Foothill Riparian**[2] |
|---|---|---|
| Total Acreage in Project Area | 1,255 | 1,085 |
| Acreage within Development Districts | 40 | 60 |
| Estimated Percentage of Existing Acreage Potentially Developable under CP/GUP | 3% | 5.5% |

Source: Parsons Harland Bartholomew & Associates, Inc. 2000

Notes:

1 The Annual Grassland habitat type includes areas mapped as "annual grassland - oak woodland" in Figure 4.8-1.

2 The Coastal Oak Woodland/Valley Foothill Riparian habitat type includes areas mapped as "oak woodland/riparian oak woodland" in Figure 4.8-1.

As shown in Table 4.8-8, less than 6 percent of the sensitive wildlife habitats in the project area could be developed as a result of the proposed project. The point of significance for this impact is 10 percent, which is considered to be the point at which the project would have a substantial adverse effect on a sensitive species that is not rare, threatened, or endangered. It should be noted that this analysis represents a worst-case scenario, since it is unlikely that 100 percent of the natural habitats would be removed as a result of future academic or residential projects within the development districts. The impact is therefore considered to be less than significant.

Mitigation: No mitigation is necessary.

**Impact: BIO-5: Will the project cause a permanent loss of sensitive native plant communities?**

Analysis: *Significant*

Vegetation mapping within the project area indicates that some development districts support sensitive plant communities. Sensitive native terrestrial plant communities identified within the development districts include oak woodland and riparian oak woodland. As shown in Table 4.8-8, approximately 5.5 percent of the total acreage of this vegetation community in the project area could be potentially developable under the proposed CP/GUP.

It should be noted that this analysis represents a worst-case scenario, since it is unlikely that 100 percent of the natural habitats would be removed as a result of future academic or residential projects within the development districts. However, because oak woodland and riparian oak woodland communities have undergone tremendous reduction in distribution and acreage over the past 100 years, they are considered sensitive by the California Department of Fish and Game. Any loss of these communities is considered a significant impact.

Mitigation: **BIO-5: Protect Oak Woodland Habitat**

Stanford will compensate for the loss of oak woodland habitat through the creation, restoration, and long-term preservation of comparable habitat. Opportunities for restoration and long-term preservation of oak woodland habitat are present within the CTS Management Zone. Restoration of oak woodland habitat shall be conducted at a ratio of 1.5:1 (1.5 acres of restored habitat: 1 acre of developed habitat).

After
Mitigation: *Less than Significant*

Measure BIO-5 requires the creation, restoration, or preservation of sensitive native plant communities at ratios established to avoid a net loss of these communities.

**Impact: BIO-6: Will the project substantially block or disrupt wildlife migration or travel corridors?**

Analysis: *Significant*

Project activities within the Lathrop development district could potentially block dispersal of the California tiger salamander between Lake Lagunita and the upland foothill habitat south of JSB, depending on the design and location of the development and access roads. This impact is potentially significant.

Mitigation: Mitigation proposed for California tiger salamander under Measure BIO-1 (Options 1, 2, and 3) would ensure that the project does not substantially block or disrupt CTS migration and dispersal.

After
Mitigation: *Less than Significant*

Mitigation measure BIO-1(a) (Option 2) requires that upland CTS habitat be preserved, created, or restored in areas located within 500 meters of breeding habitat. It also requires that the mitigation site be contiguous to the breeding habitat, or contiguous to other open space lands that provide migration and dispersal corridors for CTS to the breeding habitat. In addition, the mitigation measure requires that a detailed management and monitoring plan be created to ensure the long-term maintenance of habitat values on the mitigation lands. The plan must establish requirements for maintaining safe migration and dispersal corridors.

**Impact:** **BIO-7: Will the project conflict with the County's tree preservation ordinance?**

Analysis: *Significant*

Construction of project academic facilities and housing units could result in the need to remove trees that are protected by the Santa Clara County tree preservation ordinance. The County requires that a tree removal permit be obtained in several circumstances, including: 1) the removal of any heritage tree (as defined by the ordinance); removal of any tree that was required to be planted or retained by the conditions of approval for any Use Permit, Building Site Approval, Grading Permit, Architectural & Site Approval, Design Review, Special Permit, or Subdivision; and removal of any tree, regardless of size, within road rights-of-way and easements of the County, whether within or without the unincorporaed territory of the County. This impact is potentially significant.

Mitigation: **BIO-7: Planting of Replacement Trees**

Development projects will be sited and designed to minimize loss of trees protected by the Santa Clara tree ordinance.

If protected trees will be removed or impacted by project activities, Stanford shall implement the construction management practices and tree replacement requirements set forth in the County's tree ordinance.

After Mitigation: *Less than Significant*

Measure BIO-7 requires the planting of replacement trees protected by the Santa Clara County tree preservation ordinance at ratios established to avoid a net loss of these trees.

**Impact:** **BIO-8: Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Analysis: *Less than Significant*

The proposed CP and GUP would allow for new development and other activities within the current boundaries of the CTS Management Zone. This Management Zone was established pursuant to the "Management Agreement for California Tiger Salamander at Stanford University," entered into by Stanford, Santa Clara County, the USFWS, and CDFG. The purpose of the Management Agreement was to set forth a regional mitigation plan for possible impacts to CTS from current and future activities at Stanford. Although the CP and GUP were not contemplated at the time the Management Agreement was signed, the Agreement does allow for new development within the Management Zone, provided that appropriate mitigation is implemented. The impact of the project on the existing Management Agreement is therefore less than significant.

Mitigation: No mitigation is required.

**Impact: BIO-9: Will the project result in a net loss of wetlands or other waters of the U.S.?**

Analysis: *Significant*

Pursuant to Santa Clara County General Plan policy, all USGS blue line streams in the project area will be required to have a 150-foot setback from the top of stream bank, except as reduced in urban areas through the General Plan. Impacts to wetlands and waters of the U.S. associated with blue line streams will be minimized through compliance with this policy. The proposed CP and GUP application may result in new development or other activities within or adjacent to small, isolated wetlands or other waters of the U.S. within the project area. Potential wetlands occur at the El Camino frontage site, along Stanford Avenue, in the Frenchman's triangle (faculty housing), at the edge of the Stable Site, adjacent to the driving range, in the small parcel located in the faculty housing area (west of Frenchman's triangle and east of Gerona triangle), in the Gerona triangle, and in the Lathrop development district. In addition, new wetlands may be created over time due to the construction of drainage mitigations. Any loss of jurisdictional wetlands or waters would be considered a significant impact.

Mitigation: **BIO-9: Wetland Avoidance and Replacement**

(a) Prior to application for Architectural and Site Approval of development of sites within the CP area, Stanford shall retain a qualified biologist to conduct a delineation of potential jurisdictional wetlands and other waters of the U.S. present on the site.

(b) Development projects will be sited and designed to minimize impacts to jurisdictional wetlands or other waters of the U.S.

(c) If jurisdictional wetlands or other waters of the U.S. will be unavoidably lost as a result of project activities, Stanford shall obtain appropriate authorization from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. In coordination with the U.S. Army Corps of Engineers, any wetlands or other waters of the U.S. that are lost as a result of future development in the project area shall be replaced through the creation, preservation, or restoration of wetlands or other waters of the U.S. of equal function and value to those that are lost.

After Mitigation: *Less than Significant*

Measure BIO-9 requires the creation, preservation, or restoration of wetlands or other waters of the U.S. of equal function and value to those that are lost to avoid a net loss of these resources.

## 4.8.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

With the exception of the Carnegie Foundation project in the Lathrop Development District and the Sand Hill Road Corridor projects, the cumulative projects are located in urbanized areas and would not contribute to the loss of natural habitats or other sensitive biological resources. The Carnegie project would result in the permanent loss of approximately one and a half acres of annual non-native grassland vegetation. The Sand Hill projects would result in the permanent loss of 29.8 acres of annual grasslands and 0.28 acre of riparian woodland. Impacts of the cumulative projects are described below based on this development scenario.

**Impact: BIO-C1 through BIO-C3, BIO-C7, and BIO-C8: Will the project impact sensitive biological resources based on evaluation criteria 1 through 3, 7, and 8?**

Analysis: *Significant*

The loss of annual grassland habitat within the CP area was estimated based on 100 percent loss of all annual grasslands within the Lathrop development district. Therefore, the 1.5 acres of annual grasslands within the Carnegie project site are already included in the project impact. The cumulative impact is significant because annual grasslands in the project area provide habitat for California tiger salamander, and may provide habitat for special-status plants.

The Sand Hill Road Corridor projects would result in the loss of an additional 29.8 acres of annual grasslands. The EIR for the Sand Hill Road project identifies that grassland habitats on the project site are not suitable for California tiger salamander, sensitive plants, or other rare, threatened, or endangered species sensitive known to occur in the vicinity. Therefore, that project would not contribute to cumulative impacts of annual grassland habitat losses.

Construction of the cumulative projects could result in disturbance or loss of an active raptor or migratory bird nest, or the removal of trees protected by the Santa Clara County tree ordinance. In addition, the Carnegie project is located within the existing CTS Management Zone at Stanford. Although the Management Agreement does not preclude future development within the CTS Management Zone, the changes proposed by the CP and GUP were not contemplated at the time the Management Agreement was entered into. The impacts of new development to California tiger salamander have been determined to be significant. These impacts will be mitigated, with the environmental analysis recommending the dedication of conservation easements, if the project is approved (Santa Clara County, 2000).

Mitigation: Implementation of the following mitigation measures would mitigate the project's incremental contribution to cumulative impacts to rare, threatened, and endangered species.

- Measure Numbers BIO-1(a) through (e) - Option 2, and BIO-1(f) through (k)

- Measure Number BIO-3
- Measure Number BIO-7

After Mitigation: *Less than Significant*

BIO-1(a) through (e) - Option 2 would mitigate for potential impacts to California tiger salamander by permanently preserving habitat migitation lands for CTS in an amount that is equal to 3 times the amount of occupied CTS habitat to be developed, constructing three new breeding ponds, and implementing specific measures to avoid loss of individual CTS during project construction and operation. Option 2 provides for the long-term protection of CTS habitat by requiring dedication of conservation easements or other comparable land use controls over the habitat mitigation lands. In addition, Option 2 requires that CTS breeding be demonstrated in the created ponds for 3 consecutive seasons before development may occur on occupied CTS habitat located within 500 m of existing breeding habitat (Lake Lagunita). These measures would offset the loss of upland habitat and ensure that replacement habitat is provided in close proximity to viable breeding habitat. The impact to CTS after mitigation is therefore considered less than significant. Option 1 also provides mitigation for CTS; however, the impact is considered significant after migitation because Option 1 does not provide for the long-term protection of habitat, and also does not require demonstrated breeding in the created ponds.

BIO(f) through (k) would provide for the replacement of lost plant habitat at a ratio of two acres of replacement habitat for each acre of special-status plant habitat lost, and for the the salvage and transplant of the affected special-status plants. A minimum 80% survival criteria would apply. These measures would reduce the impact to special-status plants to less than significant.

Measure BIO-3 would require that active raptor nest sites be identified during pre-construction surveys, and appropriate construction setbacks will be established around active nest sites to avoid disturbance during the nesting season. This mitigation would avoid impacts to nesting raptors.

Measure BIO-7 requires the planting or replacement trees protected by the Santa Clara County tree preservation ordinance at ratios established to avoid a net loss of these trees.

**Impact: BIO-C4: Will the project, combined with other cumulative projects, cause a permanent loss of habitat for sensitive wildlife species?**

Analysis: *Less than Significant*

The loss of annual grassland habitat within the CP area was estimated based on 100 percent loss of all annual grasslands within the Lathrop development district. Therefore, the 1.5 acres of annual grasslands within the Carnegie project site are already included in the project impact. The Sand Hill Road Corridor projects would result in the loss of an additional 29.8 acres of annual grassland habitat. With the addition of the cumulative projects, the loss of annual grassland habitat would be approximately 5.6 percent of existing grassland habitat in the project areas. The point of significance is 10 percent. The impact is therefore less than significant.

Mitigation: No mitigation is necessary.

**Impact: BIO-C5: Will the project, combined with other cumulative projects, cause a permanent loss of sensitive native plant communities?**

Analysis: *Significant*

No oak woodland or riparian oak woodland habitat would be impacted by the Carnegie project. The Sand Hill Road Corridor projects would result in the loss of an additional 0.28 acre of riparian oak woodland. With the addition of the cumulative projects, the potential loss of riparian oak woodland would be approximately 5.5 percent of existing oak woodland and riparian oak woodland habitats in the project areas. Because any loss of this plant community is considered significant, the cumulative impact is significant.

Mitigation: Implementation of the following mitigation measures would mitigate the project's incremental contribution to cumulative impacts to sensitive native plant communities.

- Measure Number BIO-5

After Mitigation: *Less than Significant*

Measure BIO-5 requires the creation, restoration, or preservation of sensitive native plant communities at ratios established to avoid a net loss of these communities.

**Impact: BIO-C6: Will the project, combined with other cumulative projects, substantially block or disrupt wildlife migration or travel corridors?**

Analysis: *Significant*

The Carnegie project is located in the foothills area south of JSB, in habitat that is occupied by California tiger salamander. The development of this project would contribute to cumulative barriers to dispersal of CTS through habitat areas in the foothills. This impact is potentially significant; however, the impact will be mitigated as part of the project design. Habitats in the Sand Hill Road Corridor projects area is not suitable for California tiger salamander. This project would not contribute to cumulative barriers to dispersal of CTS.

Mitigation: Implementation of the following mitigation measures would mitigate the project's incremental contribution to potential impacts to CTS migration and dispersal corridors.

- Measure Number BIO-1(a) (Option 2)

After Mitigation: *Less than Significant*

Mitigation measure BIO-1(a) (Option 2) requires that upland CTS habitat be preserved, created, or restored in areas located within 500 meters of breeding habitat. It also requires that the mitigation site be contiguous to the breeding habitat, or contiguous to other open space lands that provide migration and dispersal corridors for CTS to the breeding habitat. In addition, the mitigation measure requires that a detailed management and monitoring plan be created to ensure the long-term maintenance of habitat values on the mitigation lands. The plan must establish requirements for maintaining safe migration and dispersal corridors.

**Impact: BIO-C9: Will the project, combined with other cumulative projects, result in a net loss of wetlands or other waters of the U.S.?**

Analysis: *Significant*

The cumulative projects could result in additional losses of wetlands or other waters of the U.S. This impact is potentially significant.

Mitigation: Implementation of the following mitigation measures would mitigate the project's incremental contribution to impacts to wetlands and other waters of the U.S.

- Measure Numbers BIO-9

After Mitigation: *Less than Significant*

Measure BIO-9 requires the creation, preservation, or restoration of wetlands or other waters of the U.S. of equal function and value to those that are lost to avoid a net loss of these resources.

# 4.9 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section identifies potential project impacts to historic and archaeological resources. The potential to affect paleontological resources and human remains is also evaluated. Analysis includes potential effects both to known sites and previously undiscovered resources.

## 4.9.A SETTING

### 4.9.A.1 Studies of Area

The project area falls within the San Francisco Bay archaeological region as described by Moratto (1984). The prehistory of this region is not well established. Urban sprawl and unpublished data from "salvage archaeology" activities have led to a paucity of information (Moratto 1984:218, Allen et al. 1999:29). Early San Francisco Bay area archaeological field studies focused on data retrieval in advance of construction activities. “In many cases, only large sites producing showy artifacts were so recognized…[and even] these sites for the most part escaped systematic investigation or analysis” (Allen et al. 1999:29).

N.C. Nelson conducted the first intensive survey of archaeological sites in the San Francisco Bay region between 1906 and 1908. He documented more than 425 "earth mounds and shell heaps" between the Russian River and Half Moon Bay (Moratto 1984:227). In recent years, several overviews of the archaeology of the Santa Clara Valley and Central California have been attempted. A more detailed discussion and overview of the archaeology of the Santa Clara Valley is contained in Allen et al. (1999) and the reports cited therein (Bergthold [1982], Elsasser [1986], and Hylkema [1998b])..

Beginning in the 1920s, archaeological sites located on Stanford lands have been evaluated by the faculty and students (Stanford University Community Plan 1999:74). The first systematic investigation of the 8,180-acre campus was conducted in 1986 by the Campus Archaeology program. In total, 65 prehistoric archaeological sites have been identified on Stanford Campus.

### 4.9.A.2 Prehistory and Ethnography

The project area occurs within the territory of the Tamyen, or Santa Clara Costanoan, language group (Levy 1978; Moratto 1984), one of the Ohlone-speaking groups that inhabited the area from central San Francisco Bay to Monterey Bay and east to the crest of the Coast ranges (Allen et al. 1999:48). Today, Native Americans from this region identify themselves as Ohlone and have contributed important texts to the literature on Ohlone culture and history (Hylkema 1998a and Kehl and Yamana 1995 in Allen et al. 1999:48). A detailed discussion and overview of the ethnography of the region is contained in Allen et al. (1999), Hylkema in Allen et al. (1999), Moratto (1984), and Levy (1978) for. The following brief synthesis is distilled from those reports.

Archaeological evidence at various sites indicate that the ancestral Ohlone may have inhabited the region as recently as 9000 years ago. Levy (1978:486) dates the "arrival" of the present day Ohlone at approximately 500 A.D. The total Ohlone population just prior to and at the point of European contact is unknown. Kroeber has estimated the total Ohlone population to have been about 7,000, with an average of 1,000 individuals in each language group such as the Santa Clara Costanoan (Kroeber in Allen et al. 1999:48). Levy (1978) has placed the Ohlone population at the time of Euro-contact as being closer to 10,000, with from 200 to 2,700 individuals in each language group.

In 1770 the Ohlones lived in approximately 50 separate and politically autonomous nations or tribelets (Levy 1978:485). Each tribelet had one or more permanent village sites, as well as various seasonal, temporary camps at scattered locations within their territory. Groups of individuals periodically utilized these temporary camps to fish, hunt, and collect plant foods. Each tribelet averaged 200 individuals, with ranges from 50 to 500 persons not unheard of. Milliken has estimated population densities at this time to have been an average of 2.5 persons per square mile (Milliken in Allen et al. 1999:51).

The introduction of the Mission system to the San Francisco Bay region in the 1770s initiated a rapid and devastating population decline among the Costanoans. Mission baptismal records demonstrate that the last Costanoan tribelets living an aboriginal existence had disappeared by 1810. The people experienced cataclysmic changes in almost all areas of their life as a result of introduced diseases and declining birth rates. Their population declined from 10,000 or more in 1770 to less than 2,000 in 1832. Following secularization of the Missions by the Mexican Government, most Costanoans left the Missions to find employment at local ranches as manual laborers. Costanoan languages were considered extinct by 1935, although some families continued to retain the usage of phrases and other words until recent times.

As of 1973, only an estimated 130 to 200 people of Costanoan descent remained in the San Francisco Bay area (Levy 1978:486); however, this estimate was not based on actual U.S. Census information and many more may have been present.

### 4.9.A.3 History

In 1769 Gaspar de Portolá, a Spanish explorer searching for Monterey Bay, pitched camp on the northwest bank of the San Francisquito Creek (Hoover 1990:398). Father Juan Crespí, accompanying Portolá, wrote:

> We pitched camp in a plain some six leagues long, grown with good oaks and live oaks, and with much other timber in the neighborhood. This plain has two good arroyos with a good flow of water, and at the southern end of the estuary there is a good river, with plenty of water, which passes through the plain mentioned, well wooded on its banks [Guadalupe River]. This entire port is surrounded by many and large villages of barbarous heathen who are very affable, mild, and docile, and very generous.

Hoover states that "the site of the camp under a tall redwood is generally thought to be across the creek from the lone redwood tree that still stands beside the Southern Pacific railroad tracks at Palo Alto" (1990:398). The tree, called the *Palo Alto* (tall tree) by the Spaniards, was a landmark for all: local Indians, Spanish explorers, missionaries, soldiers, and travelers along the peninsula between San Francisco and the missions of Santa Clara and San José.

During the mission period, the boundary between the pasturelands of Mission San Francisco de Asis (Mission Dolores) to the north and Mission Santa Clara to the south was defined by the San Francisquito Creek drainage (EIP 1998: 4.3-6). Following secularization of the missions, the mission lands were distributed to the "Californios" as large land grants.

The project area is partially located within the boundaries of the land grant Rancho San Francisquito, an area of 1,500 acres granted to Don Antonino Buelna by Governor Alvarado in the 1830s. The grant is bounded to the north by Rancho Rinconada del Arroyo de San Francisquito, to the west by the San Francisquito Creek, and to the south and east by the Rancho Rincón de San Francisquito. Don Antonio's adobe, which was built near the northern edge of the present day Stanford University Golf Course is no longer extant. Following the Don's death in 1853, numerous squatters laid claim to the land. By 1863, many of these claims had been bought out by George Gordon, a wealthy San Francisco businessman who had secured title to most of the original land grant (Hoover 1990:407; Winslow 1993:18). Leland Stanford, a New York native, came to California in 1852. Upon settling in Sacramento, he and his brothers built their fortune dealing in the mercantile trade during the gold rush (Hoover 1990:418). As a prominent businessman, Leland Stanford became the first Republican governor in California in 1862. Along with Charles Crocker, Mark Hopkins, and Collis P. Huntington, (the Big Four), Stanford built and co-owned the Central Pacific Railroad (later merged with the Southern Pacific Railroad) an economic entity that monopolized rail transportation on the west coast into the 20th century.

In 1876, Leland Stanford purchased 650 acres of Gordon's Rancho San Francisquito, including the country home. He later expanded his holdings by acquiring title to 8,000 acres of adjoining lands. On these lands, Stanford built a stock farm where he spent much of his time breeding and training pedigree race horses (Davis and Nilan 1989:9). The Palo Alto Stock Farm as it was known, was named for the landmark *Palo Alto* tree which still stands today.

In 1884, the Stanfords experienced a family tragedy when their beloved 15-year-old son died unexpectedly in Florence, Italy following a bout of typhoid fever. Committed to building a memorial to their son, and a gift to humanity, the Stanfords founded the Leland Stanford Junior University in his honor. The University cornerstone was laid in the center of the Stanford lands on May 14, 1887, the anniversary of Leland Jr.s' birth. Classes began in October 1891 with a student body of 559 freshman, upperclassmen transfers, graduate students and "special" students, and a faculty of 15 (Stanford University 1999).

The campus grounds encompass several tracts including Ayrshire Farm, Hoag Farm, Coon Farm (located between San Francisquito and Los Trancos creeks), and Felt Farm (Rancho de los Trancos). Ayrshire Farm was owned by Peter Coutts, better known to locals as "the Frenchman." Coutts, whose real name was Jean-Baptiste Paulin Caperon, was a wealthy and educated French banker and publisher of La Liberte, a Royalist French newspaper (Davis and Nilan 1989:44; Hoover 1990:418). As a political exile, Coutts and his family arrived in America in 1874 and settled in the vicinity of Mayfield. Ayrshire Farm soon became a showplace for his prize winning Ayrshire and Holstein-Friesian dairy cattle and his orchards. In the early 1880s, the political climate in France began to shift in his favor. Feeling safe to return to his homeland, Coutts returned to France where he remained until his death in 1890. In 1891, Coutts' home, located at 859 Escondido Road, became the residence of Dr. David Starr Jordan, President of the newly founded Stanford University. Dr. Jordan named the place *Escondite*, or "hiding place." Several other buildings and structures remain extant from the period of Coutts' ownership including the Frenchman's Tower, a two-story brick structure located on Old Page Mill Road. Coutts built the tower to house a tank for the underground water supply he vainly hoped he would find in the nearby hillsides but never did. Today the Ayrshire Farm tract and Escondite are located within Escondido Village, Stanford University, just east of Campus Drive.

### *The Campus Plan*

Frederick Law Olmsted, a prominent landscape architect in America during the late 19th and early 20th century, was hired to design the University buildings and grounds. The task of actually drawing the plans and overseeing construction however, was given to Charles Allerton Coolidge, the youngest member of the prominent Boston architectural firm of Shepley, Rutan and Coolidge. Coolidge and his Boston partners were known for their work in the style of their late mentor, H.H. Richardson, founder of the Richardsonian Romanesque building style. Initial designs for the University were submitted to the Stanfords in April 1887, barely one month before the cornerstone was laid in May of that same year.

From the beginning, Stanford maintained a controlling hand in the design of the University, resulting in a tumultuous relationship with Olmsted, who envisioned a more naturalistic plan for the buildings. Rather than constructing University buildings nestled among the foothills as was Olmsted's preference, a flat site was chosen to allow for the expansion of the university through a series of quadrangles extending laterally from the original main quadrangle. Lending to the formal arrangement of the buildings and the imposing nature of the structures on the environment, a mile long approach to the campus was designed as the major north/south axis. Palm Drive as it is known is lined with palm trees, adding to the sense of transition from the less formal to the formal. The main quadrangle is also defined with a secondary east/west axis, which was to be extended in both directions by additional quadrangles to be built as the University expanded. The architectural style of the original buildings is a combination of Romanesque and California Mission, built of local sandstone with red tile roofs, laid out in a rectilinear pattern around a central quad. The buildings are connected by long covered arcades repeating the Romanesque arch pattern along their length. The main axis/approach was designed to pass through the Memorial Arch (which collapsed in the 1906 San Francisco earthquake and has not been rebuilt), culminating at the Memorial Church, Mrs. Stanford's memorial to her late husband who died in 1893.

Building activity following the 1906 earthquake and prior to World War II included a series of buildings designed by the San Francisco architecture firm of Bakewell and Brown. These buildings, located to the east of the main quadrangle, include Green Library West, Education Building, the Art Gallery, and the Hoover Tower. Post-war architecture attempted to mimic the historical plans while taking on more modern designs and materials.

Today, the 2,300-acre central campus includes the Quad and other classroom buildings, laboratories, libraries, residence halls, golf course, athletic facilities, the Stanford Linear Accelerator Center and faculty-staff housing subdivisions.

### *Historic Sites on the Stanford Campus*

The Santa Clara County Historical Heritage Commission (HHC) is responsible for overseeing the protection of historical resources throughout the unincorporated areas of the County. The Santa Clara County Heritage Resource Inventory (County Inventory) is the official listing of historic sites and is maintained by the Commission. The County Inventory was first published in 1979 and is updated as new sites are approved by the Santa Clara County Board of Supervisors.

The County Inventory consists entirely of sites that have been listed, or determined to be eligible for listing, on the National Register of Historic Places and/or the California Register of Historical Resources. As of May 2000, the Inventory includes the following 21 resources located on Stanford lands within Santa Clara County:

1. Stanford University Main Quadrangle and Memorial Church
2. Cecil H. Green Library West
3. Cooksey (Synergy) House
4. Dunn - Bacon House
5. Durand - Kirkman House
6. Electioneer Statue
7. Encina Hall
8. Escondite Cottage/Remains of Ayrshire Farm
9. Fire Truck House
10. Frenchman’s Tower
11. Griffen-Drell House
12. Hanna House
13. Hesperides
14. Hoover Tower
15. The Knoll
16. Leland Stanford Junior Museum/Cantor Center for Visual Arts
17. Lou Henry Hoover House
18. Owen House
19. Red Barn/Palo Alto Stock Farm Horse Barn
20. Thomas Weiton Stanford Art Gallery
21. Tower House (Frenchman’s Library)/Remains of Ayrshire Farm

In addition to its responsibility for proposing additions to the County Inventory, the Santa Clara County HHC is asked by County planning staff to make recommendations to the County Planning Commission regarding proposed projects that might affect historical resources included on the County Inventory.

In 1986, Stanford created an internal planning mechanism called the Stanford University Historic Values Index (HVI) to identify historic structures and sites on Stanford lands that are of particular significance to the community at large. Using criteria that overlap somewhat with the criteria of the National Register and California Register, but also including new "themes" such as "features which relate to University lore and humor", Stanford's Historic Values Subcommittee assigns a numerical ranking to each structure and site it reviews. Recently the Subcommittee has decided that in addition to providing an HVI ranking, the Subcommittee will also complete an informational State Record Form to record each site and structure reviewed pursuant to National Register and California Register criteria.

To date, 94 buildings and campus features have been evaluated for placement on the HVI Cumulative Evaluation Index. This number represents all Campus structures which will be at least 50 years old by 2010 and many of the landscape features, e.g., Palm Drive and the Arboretum. However, many of the structures on the HVI Cumulative Evaluation Index have not been systematically evaluated for inclusion in Santa Clara County's Heritage Resources Inventory. The HVI Cumulative Evaluation Index is available for viewing at the Santa Clara County Planning Office.

All surface areas of Stanford University have been surveyed for archaeological sites. As of August 1999, 65 prehistoric archaeological sites (including isolates, lithic scatters, millingstone/petroglyphs, and occupation sites) have been identified and mapped. A comprehensive inventory of these sites is maintained by the Campus Archaeologist. The precise locations of the sites are not set forth in this EIR to avoid public disclosure that would raise the potential for vandalism of the sites.

### 4.9.A.4 Paleontology

The 1989 Santa Clara County General Use Permit for Stanford University EIR (EIP 1989:15-7) states that the Berkeley Museum has recorded four paleontological sites on or near Stanford lands. The most important of these is a site near the Stanford Linear Accelerator where a Paleoparadoxia ("sea cow") was uncovered during excavation. This is the best-preserved and most complete Paleoparadoxia skeleton found outside of China. Of the other three sites, one contained the upper leg bone of a seal, one contained an Allodemus hip bone, and one contained the remains of other marine mammals.

The United States Geological Survey (USGS) has recorded three fossil discoveries in addition to the Paleoparadoxia (EIP 1989:15-7). The first was a large mastodon tusk found in the bank of San Francisquito Creek. The second and third were fragments of petrified mastodon and/or dinosaur bone. One of these locations is near the Veterans' Administration Hospital in Palo Alto; the other is on Junipero Serra Boulevard west of Page Mill Road.

Other paleontological artifacts have been uncovered, collected, and catalogued by Stanford University (EIP 1989:15-8). Isolated fragments of fossil ribs and lower limbs, from late Pleistocene mammals, have also been discovered in various locations.

Most of the paleontological remains to be found in the Stanford area are marine fossils such as the remains of clams and snails (EIP 1989:15-11). In addition, Stanford lands contain old quarries, creek beds, cut slopes and rock outcroppings which are of geological interest and educational value. The best exposed rock formations are along Arastradero Road.

## 4.9.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

The California Environmental Quality Act (CEQA) Guidelines Section 15064.5 includes provisions for significance criteria related to archaeological and historical resources. A significant archaeological or historical resource is defined as one which meets the criteria of the California Register of Historical Resources, is included in a local register of historic resources, or is determined by the lead agency to be historically significant. A significant impact is characterized as a "substantial adverse change in the significance of a historical resource."

Public Resource Code Section 5024.1 authorizes the establishment of the California Register of Historical Resources. Any identified cultural resources must, therefore, be evaluated against the California Register criteria. In order to be determined eligible for the California Register, a property must be significant at the local, state, or national level under one or more of the following four criteria, modeled on the National Register criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States;
2. It is associated with the lives of persons important to the nation or to California’s past;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. It has yielded, or may be likely to yield, information important to the prehistory or history of the state and the nation.

In addition to meeting one of the above criteria, a significant property must exhibit a measure of integrity. Properties eligible for listing in the California Register must retain enough of their historic character or appearance to be recognizable as historic properties and to convey the reasons for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a property is thought to be eligible.

Public Resource Code Section 21083.2 governs the treatment of unique archaeological resources, defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” as meeting any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, appropriate mitigation measures shall be required to preserve the resource in-place, in an undisturbed state. Mitigation measures may include, but are not limited to 1) planning construction to avoid the site, 2) deeding conservation easements, or 3) capping the site prior to construction. If a resource is determined to be a "non-unique archaeological resource" no further consideration of the resource by the lead agency is necessary.

## Table 4.9-1

### Evaluation Criteria with Points of Significance - Historic and Archaeological Resources

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the project cause a substantial adverse change (including demolition) in the significance of an historical resource as defined in CEQA Guidelines Section 15064.5? | Number of historical resources affected by project activities | Greater than 0 resources | CEQA Guidelines § 15064.5<br>Public Resources Code § 5024.1 and § 21084.1<br>Santa Clara County General Plan, Rural Unincorporated Area Issues & Policies, Section O<br>Santa Clara County Heritage Resources Inventory<br>Santa Clara County Environmental Evaluation Checklist Item E(a) and (e) |
| 2. Will the project cause a substantial adverse change in the significance of a unique archaeological resource as defined in Public Resources Code Section 21083.2? | Number of archaeological resources affected by project activities | Greater than 0 resources | CEQA Guidelines § 15064.5<br>Public Resources Code § 5024.1, § 21083.2, and § 21084.1<br>Santa Clara County General Plan, Rural Unincorporated Area Issues & Policies, Section O<br>Santa Clara County Environmental Evaluation Checklist Item E(b) |
| 3. Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | Number of unique resources, sites, or features destroyed | Greater than 0 unique resources, sites, or features destroyed | Public Resources Code § 5097.5<br>Santa Clara County Environmental Evaluation Checklist Item E(c) |
| 4. Will the project disturb any human remains, including those interred outside of formal cemeteries? | Number of disturbances of remains | Greater than 0 disturbances | CEQA Guidelines § 15064.5(d)<br>Santa Clara County Environmental Evaluation Checklist Item E(d) |

## 4.9.C IMPACTS AND MITIGATION MEASURES

**IMPACT: HA-1: Will the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?**

Analysis: *Significant*

As described above, 21 Stanford structures and sites are currently included in the Santa Clara County Heritage Resource Inventory, and it is possible that other Stanford structures and sites will be added to that County Inventory in the future. The General Use Permit proposes 2,035,000 gross square feet of academic development and up to 3,018 housing units in specified development districts, but does not identify the precise locations within particular development districts where construction will occur. Those locations are not known at this time. If the General Use Permit is approved, it is possible that specific building projects would be proposed that would either remodel or demolish resources that are either currently included in the County Inventory or that are determined by the County to be historical resources.

Construction of an underground parking structure is proposed for the area beneath the "Oval" at the southern end of Palm Drive. The Oval is listed in the HVI Cumulative Evaluation Index as the "Palm Drive Open Space." Palm Drive, in its entirety, is considered a historical landscape feature with strong visual integrity. This area is also included in the proposed Campus Open Space designation. The Oval itself was an important defining element to the original campus plan. Access ramps, elevators, and ventilation equipment for the parking structure could alter the character of the Oval. In addition, sub-surface construction activities may encounter unknown archaeological resources, which should be addressed pursuant to Impact HA-2.

*Remodeling*

If a particular project to be developed under the General Use Permit would include remodeling an existing structure, the first inquiry would be whether the existing structure is included in the County Inventory. If the structure is included in the County Inventory, remodeling it would cause a potentially significant impact requiring mitigation.

If the structure is not on the County Inventory, the next inquiry is whether the structure is 50 or more years old. If the existing structure is not at least 50 years old, it is not generally considered by the County to be a historical resource and remodeling would cause no impact.

*Demolition*

If a particular project to be developed under the General Use Permit would require demolition of an existing structure, the first inquiry would be whether the existing structure is included in the County Inventory. This is a potentially significant impact that would require mitigation. If the structure to be demolished is not included in the County Inventory, the next question is whether the structure is 50 or more years old. If not, demolition would likely cause no impact.

Mitigation: **HA-1: Protection of Historic Resources**

(a) If a construction project to be carried out pursuant to the General Use Permit includes remodeling of, or development that could physically affect, a structure that is included in the Santa Clara County Heritage Resource Inventory, the California Register of Historical Resources, or the National Register of Historic Places, or that County planning staff determines is eligible for listing or is a potential historic resource, the following shall apply:

1. *Remodeling:* The remodeling shall be conducted following the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995).

If the structure to be remodeled is not on the County Inventory, but is 50 or more years old, Stanford will assess the structure to evaluate whether it appears eligible for inclusion in the County Inventory, and will submit its assessment to County planning staff for independent review. If County planning staff determines that the structure is potentially eligible for the Inventory, or is a potential historic resource, planning staff will submit the assessment to the Santa Clara County HHC for review. If the structure is determined to be eligible, then the mitigation described above shall be required.

*2. New Development:* New development plans shall be reviewed by the Santa Clara County HHC for appropriateness of design and siting to ensure that the historical significance of the structure is not adversely affected. If the structure is listed on the California Register or the National Register, the HHC shall request SHPO comment prior to approving the proposed project.

(b) Prior to demolishing any structure that is 50 or more years old, Stanford shall submit an assessment of the structure regarding its eligibility for listing to the County planning staff. If the planning staff determines that the structure is potentially eligible for listing, or is a potential historic resource, then a site-specific analysis of the impact and any feasible mitigation measures, including avoidance of the resource, shall be prepared as part of the environmental review of the project and the demolition will be referred to the Santa Clara County HHC for its recommendation prior to County approval of a demolition permit.

(c) Mitigation measures to protect The Oval from significant impacts during construction and operation of the proposed parking structure shall include, but not be limited to, all of the following.

- The parking structure shall be designed so that entrance ramps for both vehicular and pedestrian traffic are located far enough to the east and west sides of the Oval, or potentially outside the Oval itself (on the existing roadway or in the "ears" east and west of the Oval), as to not be noticeable by traffic approaching the main Campus on Palm Drive.
- Above ground ventilation systems, and other necessary structures shall be designed in a manner compatible with a park-like setting (i.e. installing the ventilation ducts below/as part of park benches). Structures will not exceed a ground height of two feet and will be placed to the east and west of the main view corridor so as not to detract the eye from the intended approach to the main Campus.
- During all construction activities, heavy equipment and earth-disturbing activities shall be screened from view by temporary construction fencing.
- Following completion of the proposed parking structure, the Oval will be returned to its pre-construction appearance and opened to public access.

After Mitigation: *Significant*

Implementation of Measure HA-1: Protection of Historic Resources would reduce significant impacts to historic resources by requiring that the County conduct a site specific analysis of any potential impacts to historic resources and identify any feasible mitigation measures for those impacts before approving any project with the potential to significantly impact historic resources. Although all feasible mitigation measures would be required for such projects, it is not possible at this time to determine whether the measures would reduce the impacts to less than significant levels because the evaluation of impacts to historic resources and corresponding mitigation is inherently site specific. Therefore, the impact is considered to be significant and unavoidable.

**IMPACT: HA-2: Will the project cause a substantial adverse change in the significance of an archaeological resource as defined in Public Resources Code 21083.2?**

Analysis: *Significant*

*Prehistoric Archaeological Sites*

All surface areas of Stanford University have been surveyed for archaeological sites. As of August 1999, 65 prehistoric archaeological sites (including isolates, lithic scatters, millingstone/petroglyphs, and occupation sites) have been identified and mapped. Of these, five sites are located in two Planning Districts where development is contemplated under the General Use Permit (Lathrop and West Campus). As is described under Impact HA-1 above, specific sites for development under the General Use Permit have not been identified, and it is possible that all five of the mapped prehistoric archaeological sites would be avoided. If, however, construction were proposed at one of the five mapped sites, a site-specific analysis would be required to determine whether the site constituted a “unique archaeological resource” within the meaning of Public Resources Code section 21083.2 or a historical resource within the meaning of Public Resources Code 21084.1, and if so, whether the site would be adversely affected, thus resulting in a significant impact.

In addition, it is possible that previously unknown prehistoric archaeological sites could be unearthed during excavation or earthmoving activities for a particular project. This could cause a significant impact to a unique archaeological resource or a historical resource.

*Historic Period Archaeological Sites*

Stanford University has conducted a survey of potential archaeological sites on Stanford University lands dating from the “historic” period, beginning in 1769. Using county records, insurance records, and other documents, Stanford has generated maps of possible locations of archaeological sites (e.g. remains of buildings, privies, trash pits) from the historic period. Using these maps, Stanford has monitored construction activities and excavated several archaeological sites from the historic period.

It is possible that development under the General Use Permit could adversely affect one or more of the mapped sites. If an adversely affected site were determined to constitute a “unique archaeological resource” within the meaning of Public Resources Code section 21083.2(g) or a historical resource within the meaning of Public Resources Code 21084.1, the adverse effect would be considered significant.

In addition, as for prehistoric sites, it is possible that earthmoving activities outside mapped sites could result in unanticipated discoveries of sites that could result in significant impacts to unique archaeological resources or historical resources.

Mitigation: **HA-2: Protection of Archaeological Resources**

(a) Stanford shall provide a map to the County Planning Office, to be maintained as a confidential record, that shows the location of all known prehistoric and historic archaeological resources in the unincorporated Santa Clara County portion of Stanford lands. If a project proposed pursuant to the General Use Permit were sited on a mapped prehistoric archaeological site, further site-specific analysis will be required to determine whether a significant impact would occur. Site-specific mitigation shall be identified by the County in accordance with the provisions of Section 21083.2 of the Public Resources Code.

(b) Should previously unidentified historic or prehistoric archaeological resources be discovered during construction, the contractor shall cease work in the immediate area and the County and Campus Archaeologist shall be contacted. The County may choose to retain an independent archaeologist to evaluate the site. Stanford’s archaeologist shall assess the significance of the find and make mitigation recommendations (e.g., manual excavation of the immediate area), if warranted. If performed by Stanford’s archaeologist, the assessment shall be forwarded to County planning staff for independent review. If the County deems it appropriate, the County may hire an independent archaeologist to review the finds, proposed treatment plans, and reports prepared by the Campus Archaeologist.

Construction monitoring shall be conducted at any time ground-disturbing activities (greater than 12 inches in depth) are taking place in the immediate vicinity of archaeological resources discovered as described above. This includes building foundation demolition and construction, tree or tree-root removal, landscape irrigation installation, and utility line excavation.

If data recovery does not produce evidence of significant archaeological resources within the project area, further mitigation shall be limited to construction monitoring, unless additional testing or other specific mitigation measures are determined by a qualified archaeologist (Stanford's archaeologist or an independent archaeologist retained by the County) to be necessary to ensure avoidance of damage to significant archaeological resources. A technical report of findings describing the results of all monitoring shall be prepared in accordance with professional standards. The archaeological monitoring program shall be implemented by an individual meeting the Secretary of Interior Professional Qualifications Standards in Archaeology (36 CFR 61); individual field monitors shall be qualified in the recognition of archaeological resources of both the historic and/or prehistoric periods and possess sufficient academic and field training as required to conduct the work effectively and without undue delay.

(c) In the event that human skeletal remains are encountered, the applicant is required by County Ordinance No. B6-18 to immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of section 7050.5 of the Health and Safety Code and the County Coordinator of Indian affairs. No further disturbance of the site may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts. If artifacts are found on the site the Campus Archaeologist shall be contacted along with the County Planning Office. No further disturbance of the artifacts may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts.

After Mitigation: *Less than Significant*

Implementation of Measure HA-2: Protection of Archaeological Resources, would ensure protection of archaeological resources, and appropriate data recovery if resources are affected by future construction. This measure would reduce impacts to less than significant.

**IMPACT: HA-3: Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Analysis: *Significant*

Only one fossil find has been recorded near the project area: a bison humerus recovered from a deep basement excavation at the Medical Center. However, it is possible that excavation would uncover unique paleontological resources. This impact is therefore considered significant.

Mitigation: **HA-3: Protection of Undiscovered Paleontological Materials**

In the event that fossilized or unfossilized shell or bone is uncovered during any earth-disturbing operation resulting from development under the proposed project, contractors shall stop work in the immediate area of the find and notify the Campus Archaeologist and the County Building Inspector assigned to the project. The Campus Archaeologist shall visit the site and make recommendations for treatment of the find (including consultation with a paleontologist and excavation, if warranted), which would be sent to the County Building Inspection Office and the County Planning Office. If a fossil find is confirmed, it will be recorded with the USGS and curated in an appropriate repository.

After Mitigation: *Less than Significant*

Implementation of Measure HA-3: Protection of Undiscovered Paleontological Materials, would ensure protection of paleontological resources, and appropriate data recovery if resources are affected by future construction. This measure would reduce impacts to less than significant.

**IMPACT: HA-4: Will the project disturb any human remains, including those interred outside of formal cemeteries?**

Analysis: *Significant*

Although highly unlikely, there is the possibility that human remains, including Native American burials, will be encountered during ground disturbing activities. This impact is therefore considered significant.

Mitigation: **HA-2: Protection of Archaeological Resources**

See Mitigation Measure HA-2(c) above.

After Mitigation: *Less than Significant*

Implementation of Measure HA-2(c): Protection of Archaeological Resources, would ensure that appropriate treatment of any human remains encountered during construction will be required. This measure would reduce impacts to less than significant.

## 4.9.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

Existing and probable future projects within the project vicinity include the Stanford University Medical Center, Center for Cancer Treatment and Prevention/Ambulatory Care Pavilion and Parking Structure IV, Stanford Sand Hill Road Corridor, and Carnegie Foundation Research/Office Facility. All of these projects have the potential to further affect historic and archaeological resources within Stanford owned lands.

**IMPACT: HA-C1: Will the project combined with cumulative projects have a potential to disturb historical resources?**

Analysis: *Significant*

As is described above, any impacts to historical resources will require analysis on a site-specific basis. The same is true for cumulative analysis of these impacts.

The Sand Hill Road Corridor Project EIR has identified that there are a significant number of known historical resources within that project area that may be impacted by project activities. Cumulatively, this project, together with the projects proposed as part of the Stanford GUP, could create a significant impact to the historical resources within Santa Clara County if effects to historic structures cannot be avoided.

Because it is unknown at this time whether historical resources can be adequately protected, even with future site-specific analysis, this impact is considered significant and unavoidable.

Mitigation: Implementation of the following mitigation measures would reduce the project's incremental contribution to cumulative impacts to historical resources, but it cannot be determined at this time whether feasible mitigation exists to reduce these impacts to a level that is less than significant.

**HA-1: Protection of Historic Resources**

After Mitigation: *Significant*

**Impact: HA-C2-4: Will the project combined with cumulative projects have a potential to disturb archaeological, unique geological, or paleontological resources, or human remains?**

Analysis: *Significant*

As is described above, any impacts to archaeological resources will require analysis on a site-specific basis. The same is true for cumulative analysis of these impacts.

The project's incremental contribution to cumulative impacts would be significant prior to mitigation. However, impacts to geological and paleontological resources, as well as to human remains, would be mitigated to a less-than-significant level.

Mitigation: *Archaeological Resources*: Implementation of the following mitigation measures would reduce the impacts of the project to archaeological resources.

**HA-2: Protection of Archaeological Resources**

Other projects within Stanford lands also include mitigation, which will reduce their impacts to less than significant. The Sand Hill Road Project includes extensive mitigation to avoid resources where feasible and conduct data recovery at sites where archaeological resources would be affected.

*Unique Geologic, Paleontological Resources and Human Remains*: No mitigation is necessary.

After Mitigation: *Less than Significant*

# 4.10 PUBLIC SERVICES AND UTILITIES

This section evaluates the impacts of the Project on public services, including police, fire protection, childcare, schools, solid waste, water, wastewater, and power. Existing capacities are characterized and increased demand from additional population resulting from the GUP are described.

## 4.10.A SETTING

Stanford University provides its own urban services, allowing it to remain in the unincorporated portion of the County. Stanford University maintains its own police department, under the supervision of the County of Santa Clara Sheriff's Department. Fire protection is provided by the Palo Alto Fire Department. Two childcare facilities are operated on the Stanford campus for the use of children of Stanford employees and graduate students. School-age children living on Stanford lands attend Palo Alto Unified School District (PAUSD) schools, four of which are situated on University-owned land.

The Stanford University Utilities Division operates and maintains the utility infrastructure on campus, including electric power, steam, chiller water, potable water, irrigation (lake) water, and sanitary sewer. PG&E serves several existing facilities, mainly outside the campus drive loop. PG&E owns, operates, and maintains the natural gas system on campus.

### 4.10.A.1 Police

Police protection in the unincorporated areas of the campus is provided by the Stanford Police Services Department, under the authority of the County of Santa Clara Sheriff's Department. Areas within the Palo Alto city limits (e.g., Stanford Shopping Center and Medical Center) are served by the City of Palo Alto Police Department (PAPD). According to Police Chief Harrington (personal communication, 5/12/00), the Stanford Police Department is budgeted for 31 full-time sworn officers. The Stanford Police Department is responsible for all police calls on Stanford lands within the unincorporated portion of Santa Clara County (4,017 acres). This includes providing coverage for special events that may attract anywhere from 12,000 to 100,000 people to the campus.

The Stanford Police Services Department has been unable to recruit and maintain a minimum staffing level of 31 persons for approximately five years. Primary factors are the cost and availability of housing, and a lack of qualifying applicants for the number of available positions. In order to maintain minimum staffing levels, Stanford's officers often work overtime or are assisted by sworn officers from the County Sheriff's Department. A minimum of three sworn officers are on-duty at all times. An additional 14 community service officers handle traffic and parking violations, and night-time security staffing. In addition, 5 to 7 students are employed as part of the education-oriented crime prevention unit. The students work primarily in the office but also assist with evacuation drills and similar tasks. The Department's goal for response time is, in general, two minutes for all emergency calls. The Department has been successful in meeting this goal.

The PAPD Communications Center handles dispatching for the PAPD, the Palo Alto Fire, Utilities, and Public Works departments, and the Stanford Police Services Department. The PAPD and the Communications Center are located approximately one-half mile north of the campus.

PAPD's jurisdiction extends to the incorporated city limits; however, PAPD also has mutual aid agreements with surrounding jurisdictions, including the Santa Clara County Sheriff's Department, which serves Stanford University. The PAPD maintains 97 sworn police offers and 71 non-sworn support and administration staff (EIP, 2000). The average response time for emergency calls is under a minute (EIP, 2000).

### 4.10.A.2 Fire

Fire protection and emergency services in Palo Alto and unincorporated Santa Clara County portions of Stanford are provided by the Palo Alto Fire Department (PAFD). The PAFD serves both the City and Stanford University campus, and maintains mutual aid agreements with the neighboring cities of Menlo Park, Los Altos, Mountain View and Woodside. The PAFD has a total of 111 Fire Suppression Personnel, and all these personnel have emergency medical and defibrillator training (EMT/D). The PAFD suppression personnel consist of one Fire Chief, one Deputy Chief of Operations, one Fire Marshall, one Deputy Chief of Support Services, one Chief of Emergency Medical Services, three Battalion Chiefs, 27 Captains, 30 Apparatus Operators, and 46 Firefighters (EIP 1998).

Twenty-four Firefighters are trained and serve as paramedics. The level of service provided by PAFD is 0.88 fire suppression personnel per thousand persons in the daytime service population. In addition to Fire Suppression Personnel, the department has a Fire Prevention Bureau consisting of ten positions: 3 Fire Inspectors, 1 Hazardous Material Specialist, 1 Hazardous Material Inspector, 1 Hazardous Material Investigator, 1 Environmental Coordinator, and 3 Administrative Support Personnel (EIP 1998).

The PAFD operates seven full-time fire stations, and one seasonal station during the dry season. Each of the full-time stations is equipped with a fire engine, which is staffed 24 hours a day by an engine crew consisting of a Captain, an Operator, and a firefighter. The PAFD also operates one rescue vehicle, one hazardous material vehicle, and one fire truck, each with the same staffing as a fire engine. Thirty fire suppression personnel are on duty at any given time of day, with the Battalion Chief on duty at all times. The PAFD also provides paramedic transport service to the city of Palo Alto, Stanford University, and Stanford Linear Accelerator with one "medic-van" unit staffed by two paramedics on a 24-hour basis and another medic unit with two paramedics, 12 hours a day (EIP 1998).

The PAFD employs the California Uniform Fire Code standards for hydrant spacing, 300 feet in commercial areas and 500 feet in residential areas, with the fire-flow standard of 2,000 gallons per minute for two hours. The PAFD reports the following response times within the City of Palo Alto, including Stanford University:

| | |
|---|---|
| 1st due engine | 3.4 minutes |
| 2nd due engine | 5.5 minutes |
| Paramedic Unit | 6.3 minutes |
| Rescue Unit | 6.7 minutes |
| Battalion chief | 6.7 minutes |
| Fire Truck | 7.5 minutes |

The department responds to an average of 6,000 calls citywide annually. Approximately 3,300 of these calls are for emergency medical service, of which about 2,000 require paramedic transport. The balance of the calls is for fire suppression. The Department's paramedic division operates at capacity during the daytime shift (8 a.m. to 8 p.m.). Seventy percent of emergency medical calls are made during this shift. The City's paramedic division responds to 95 percent of the paramedic calls in the city, with the remaining 5 percent handled by a private ambulance company. Private ambulance services are called on an overflow basis only when City paramedic resources are occupied with other service calls (EIP 1998).

Development-related fire issues, such as building approval and inspections, are completed by the Santa Clara County Fire Marshall's Office.

### 4.10.A.3 Childcare

For purposes of CEQA, demand for child care is not considered an environmental impact to be analyzed within an EIR (*San Franciscans for Reasonable Growth* v. *City and County of San Francisco* (1989) 209 Cal. App. 3d 1502, 258 Cal. Rptr.267). The following discussion of existing childcare facilities is included for informational purposes, since it is of interest to the community. In addition, to the extent that demand for new facilities is generated, these facilities could have environmental impacts.

There are 85 licensed childcare facilities in the City of Palo Alto. Thirty of these facilities are in homes, with a total of 265 slots available; fifty-five are in centers. Of the 55 centers, 14 offer infant/toddler care to age two, with a total licensed capacity of 535 slots; 35 offer preschool age care for ages two through five, with a total capacity of 1,236 slots; and 18 offer school age care for children over 5 years old, with a total of 1,236 slots. (Since children may attend day care facilities on a part-time basis, the term "slot" is used to indicate the capacity of facilities at any one time, and not the total number of children who attend the facility.) These facilities are operating at or near licensed capacity. The waiting list for childcare facilities is difficult to estimate since families may have their children on several waiting lists at the same time (Hertz 2000). In 1989 the City of Palo Alto signed a thirty-year lease with the Palo Alto Unified School District (PAUSD) that included a provision that the City would provide extended day care (care from the end of the school day to the end of the adult working day) for children from kindergarten to grade five at each of the twelve PAUSD elementary schools. The City of Palo Alto sublets the PAUSD school sites to childcare providers (EIP 1998).

The Stanford University Worklife office coordinates the provision of all childcare on campus for the Stanford community. Stanford University offers childcare services for children between the ages of six weeks and five years. These services are exclusively for Stanford employees and graduate students. Stanford University has two large childcare facilities--the Stanford Arboretum Children's Center and the Children's Center of the Stanford Community. The Stanford Arboretum Children's Center, established in 1988, operates at full capacity with 146 children (Sullivan 2000). The Children's Center of the Stanford Community (CCSC) dates to the early 1970s. It operates at full capacity with 144 children (Sullivan 2000). CCSC is housed in aging module structures that are expected to last for approximately five more years (EIP 1998). Stanford currently has a central waiting list of 485 (Sullivan 2000).

Two new childcare facilities are scheduled to open in Palo Alto in the next year. One facility is being built as part of the Sand Hill Road Corridor Projects. The facility will open in Fall 2000 with a capacity for 108 children full-time in the infant through pre-kindergarten age group. The Stanford University Worklife office has chosen a provider to develop and run this facility. The other facility will be located in downtown Palo Alto on a parcel vacated by the Palo Alto Medical Center and leased to the City for $1.00 per year for 35 years. The City will select a provider to develop and run a facility for infants, toddlers, and pre-school age children on the site. This facility is expected to open in January 2001.

### 4.10.A.4 Solid Waste

Solid waste disposal is governed by California State Assembly Bill 939 (AB939). AB939 is designed to increase landfill life and conserve other resources through increasing recycling. AB 939 requires counties to prepare Solid Waste Management Plans to implement the Bill's goals. Landfill diversion goals were 25 percent by the year 1995 and 50 percent by the year 2000. AB939 requires cities and counties to prepare Source Reduction and Recycling Elements as part of their General Plans. These Elements develop programs to achieve landfill diversion goals and to stimulate local recycling and the purchase of recycled products. The primary goal of the City of Palo Alto's Source Reduction and Recycling Element is to meet and exceed the state-mandated waste diversion goals of 25 to 50 percent by 1995 and 2000, respectively. By 1998, the City was diverting 57 percent of its solid waste stream by a variety of programs (Russell Reisner, 1999).

Waste is collected at Stanford by a private contractor, Peninsula Sanitary Services, Inc. (PSSI). In 1999, solid waste generation for the campus was 11,396.87 tons. In the last five years, on average about 13,000 tons of solid waste was generated per year. The generation figures in any given year vary depending on the amount of construction on campus. In 1999, Stanford diverted 48 percent or 10,620.28 tons of material, including basic recyclables, scrap metal, organics, source reduction credits, electronic scrap, concrete and dirt, and recycled mixed construction debris.

Stanford University's recycling program involves the entire campus and includes academic buildings, student housing, and construction sites. During 1997-1998, Stanford diverted 39 percent of its waste from landfill disposal. This figure includes 388 tons of glass, 275 tons of metal, 3,523 tons of paper, and 45 tons of plastics. Stanford's hauler, PSSI, operates a public drop-off center on campus and acts as a recycling information clearinghouse for the community.

As part of the diversion, Stanford recycled 1,413 tons of yard waste in the period 1997-1998. Large trees that are trimmed or cut down are ground into wood chips and used on campus. PSSI offers lower rates on debris boxes that are source separated for recycling, in order to encourage recycling during construction. Stanford recycled 1,835 tons of concrete and 872 tons of wood waste during this same period. Electronic scrap is reused or recycled on campus. Recycling information is disseminated on campus through an information board at the drop-off center, presentations in the residence halls and at staff meetings, and through mailers, newsletters and advertisements in the campus paper. In February 1999, Stanford and PSSI sponsored a one-day conference on College and University recycling (Stanford University 1999).

There are nine permitted landfills in operation in Santa Clara County. All are classified as Class III facilities, meaning they can accept only nonhazardous solid or inert wastes. Stanford's solid waste goes to BFI's Newby Island Landfill, which has an estimated life to approximately 2020 (Gil Cheso, 2000). Large bulky items are taken to the Mission Trails Transfer Station in Santa Clara. Information on hazardous waste is addressed in Section 4.7 of this EIR.

### 4.10.A.5 Water

Stanford University's water supply comes from the Hetch Hetchy system operated by the San Francisco Water Department. Stanford has three separate points of connection to Hetch Hetchy: one from El Camino Real, and two at widely separated locations slightly south of Junipero Serra Boulevard. Stanford adds fluoride to its water then distributes it via underground mains to campus facilities. The campus system operates in three pressure zones, and includes two domestic water reservoirs located in the foothills with a total combined capacity of 8 million gallons. This water is used in the event of a water emergency and as a fire protection backup supply. Stanford has three wells that can be used to provide domestic water. Each is rated at 500 gpm (Stephen G. Mischissin, 1999).

Stanford University is a member of the Bay Area Water Users Association (BAWUA), and has a 'firm' allocation of 3.033 million gallons per day (mgd) through 2009. Stanford's current average daily domestic water consumption is 2.6 mgd, with a peak summer demand of 3.4 mgd. In drought years the allocation could be reduced. Stanford operates two reservoirs for lake (irrigation) water: Felt Lake and Searsville Lake, which are both located in the foothills. Felt Lake holds about 1,100 acre feet (AF), and Searsville Lake holds about 450 AF. Water for Felt Lake is diverted by gravity from Los Trancos Creek via a concrete flume/diversion structure. From both lakes water is piped by gravity to the campus via an underground water main. Water is used for campus irrigation, athletic fields, various leasehold operations, the Stanford Golf Course and fire protection. Water collection and irrigation use is based on available stream flows and weather conditions respectively (Stephen G. Mischissin, 1999, 2000).

### 4.10.A.6 Wastewater

The City of Palo Alto's Utilities Department provides wastewater collection, with treatment services provided by the Public Works Department, for the City and its sphere of influence, including all Stanford University lands per the Stanford wastewater allocation (Miks, 2000). The Departments operate the service as an enterprise fund, which covers the full cost of providing service hook-ups, treatment, and disposal through the collection of user fees. This typically leads to conditions of project approval for development projects that require the project applicants to be financially responsible for all on-site improvements and any off-site improvements (EIP 1998).

The City owns and operates the Harold L. May (Palo Alto) Regional Wastewater Treatment Plant, which also serves Mountain View, Los Altos, East Palo Alto, Los Altos Hills, and Stanford University. The Palo Alto Regional Wastewater Treatment Plant reports that Stanford's current average daily sewer discharge is 1.6 mgd, which represents about 4.2 percent of the plant's total average dry weather flow capacity. Stanford owns capacity in the plant of up to 2.11 mgd average dry weather flow, which is 5.26 percent of the plant's capacity (Laporte, 2000). Actual sanitary sewer flows at Stanford range from approximately 1 mgd to 2.2 mgd, as flows vary based on activities, and whether students are on campus. The campus has separate sanitary sewer and stormwater systems. Therefore, flows do not vary widely from dry to wet weather days (Stephen G. Mischisson, 2000).

Stanford operates a sanitary sewer collection system on Stanford-owned lands that discharges by gravity to the City's collection system (at the intersection of Stanford Avenue and Yale) and eventually the plant. The City expanded the plant in 1988 to its present permitted capacity of 38 mgd for average dry weather flow (ADWF) and 80 mgd for peak wet-weather flow (PWWF). Because the peak capacity is approximately twice the average dry weather capacity, each contributor can approximately double its dry weather allocation at peak times. This capacity would allow Stanford to contribute up to 4.22 mgd at peak times. Existing average dry weather flows are 26.5 mgd as of 1999 (Miks, 2000). The plant discharges tertiary treated wastewater through its outfall in the San Francisco Bay. This plant includes a reclamation facility, which has the capacity to produce 4 mgd of reclaimed water (EIP 1999).

The Regional Wastewater Treatment Plant is regulated by the Regional Water Quality Control Board (RWQCB) through its National Pollution Discharge Elimination system (NPDES) permit. The treatment plan was issued a new permit in June 1998 and is in full compliance with all parameters of its NPDES permit (Bill Miks, 1999).

### 4.10.A.7 Electrical Power

The Cardinal Cogen facility, located on site at Campus Drive and Via Ortega, supplies Stanford with its electric power. This 50 megawatt cogeneration facility provides 60 kV power to the Stanford Palou substation. Stanford distributes power from the Palou substation to campus buildings via 4 kV and 12 kV buried distribution duct banks. Power generated by the Cogen facility that is in excess of the Stanford demand is sold to PG&E. In the event of a Cogen outage, PG&E supplies the Palou substation from either of its two 60 kV transmission lines serving the campus. (Stephen G. Mischissin, 1999).

The Palou substation has three transformers: two 16 million volt-ampheres (MVA), 60kV:12kV units, and one 10 MVA 60 kV:4kV unit. By December 2000, the two 16 MVA units will be replaced by two 26 MVA units, which will increase the capacity and reliability of the substation. MVA is the "apparent" power rating for equipment or electrical demand. If MVA (apparent power) is multiplied by the system power factor (P.F.), the megawatt (MW), or power used, can be obtained (Stephen G. Mischissin, 2000).

The total campus peak load is approximately 29 megawatts, or 32 MVA. This load serves about 9 million square feet of campus facilities. Stanford does not supply electricity to Stanford Hospital. The nameplate capacity of the substation will be 62 MVA by December 2000. Upgrades to the station are currently in progress (Stephen G. Mischissin, 1999).

### 4.10.A.8 Steam and Chilled Water

The Cogen facility provides 125 psi steam to the campus from its heat recovery steam generator. The 125 psi steam is piped via underground distribution lines to campus buildings for heating and cooking. The University's Central Energy Facility (CEF) houses four 80,000 pound per hour water tubes (a type of steam boiler) as back up to the Cogen steam supply. The Cogen facility can supply up to 225,000 pounds per hour of steam, which is approximately the current campus peak, including Stanford Hospital. The steam system serves over 7,500,000 square feet. If required, one CEF steam boiler can be run to augment the Cogen steam supply. Operation of this additional boiler provides a peak capacity of 305,000 pounds per hour of steam. Natural gas is piped into the Cogen facility for its gas turbine from PG&E's distribution system. The CEF boilers run on gas or diesel fuel. At 305,000 pounds per hour steam capacity, an additional 2,500,000 square feet of building heating load could be satisfied before additional boilers would be needed (Stephen G. Mischissin, 1999).

Chilled water for the central campus and Stanford University Hospital is supplied from the CEF. The CEF has five steam absorption chillers, four electrical centrifugal chillers, and three screw electrical chillers. The chillers provide chilled water to campus buildings for air conditioning and have a total nameplate capacity of 15,600 tons. During the evening and early morning hours, when electrical energy is less expensive, the three screw electrical chillers can charge a buried ice thermal storage tank that can provide a peak cooling capacity of approximately 13,000 to 16,000 tons for chilled water during peak daytime dispatch (Stephen G. Mischissin, 1999). Use of this thermal storage system allows for less reliance on the traditional chilled water systems that require high-cost electricity (noon to 6 p.m.) to operate.

In the ice "burning" mode, the CEF can provide a peak chilled water capacity of approximately 18,500 tons without electric chillers operating, leaving up to 3,000 tons of current electric centrifugal chilling capacity in reserve. Two 25-year-old centrifugal chillers will be retired soon, cutting the reserve by 2,000 tons. The current campus peak cooling load is about 15,500 tons serving over six million square feet. In the summer of year 2000, the Center for Clinical Sciences Research building will be completed, adding an estimated 1,000 tons of load (Stephen G. Mischissin, 1999).

### 4.10.A.9 Schools

Children of Stanford University residents who attend public schools are served by the Palo Alto Unified School District (PAUSD). PAUSD operates 12 elementary schools (grades K-5), two middle schools (grades 6-8), and two high schools (grades 9-12). In addition, the District operates pre kindergarten programs and programs at Children's Hospital and Middle College/Alta Vista.

The elementary school capacity was increased in 1998 by the opening of a new school (Barron Park Elementary School) in August 1998 to handle the excess of K-5 students and projected enrollment growth in this age level over the next several years. Table 4.10-1 estimates Year 2000 enrollment versus capacity for PAUSD schools.

**Table 4.10-1**

1999-2000 PAUSD Capacity and Enrollment

| Grade Level | 2000 Capacity | 2000 Enrollment | Average Per School | District-wide Surplus/Deficit |
|---|---|---|---|---|
| Elementary Schools | 4,826 | 4,575 | 381* | 251 |
| Middle Schools | 2,400 | 2,277 | 1,139 | 123 |
| High Schools | 3,600 | 3,174 | 1,587 | 505 |

*Except Greendoll school for young fives.

Source: PAUSD Web Site, 2000 and June Schiller, PAUSD, June 8, 2000.

The average enrollment per middle school exceeds the District's current policy of 600 to 900. Elementary and high school sizes are within the current policy of 300 to 450 per school (elementary) and 1,200 to 1,800 per school (high school). The District anticipates that, by 2002, high school enrollment will exceed desired school sizes and, by 2003, elementary school enrollment will exceed desired school sizes. The District considers expanding the capacity of the middle schools to be the most immediate and urgent facility need.

The District is considering a number of options to increase school capacity to handle anticipated enrollment growth. The options include the following.

- Construct a third middle school on Stanford University land.
- Reclaim a former middle school site (Terman) for the construction of a middle school and relocate existing uses on that site.
- Reopen a closed high school (Cubberley) as a new middle school.
- Modify Garland School, located next to Jordan Middle School, as an interim middle school site (and convert Garland School to a $13^{th}$ elementary school once a permanent middle school is constructed).
- Reopen Cubberley High School as a new high school instead of converting it to a middle school.

## 4.10.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

An impact is considered to be significant if it meets any of the following criteria:

**Table 4.10-2**

Evaluation Criteria with Points of Significance – Public Services and Utilities

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will the project increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained or allowable capacity is exceeded? | Ratio of service personnel or facilities to residential population or daytime users | Greater than 0 change in the ratio of services standard<br>Change in landfill lifetime<br>Exceedance of a service allocation | CEQA Guidelines, Appendix G<br>Santa Clara County Environmental Evaluation Checklist Items L (a)(i), (ii), and (v); M (c), (d), and (e) and O (b), (d), (e), (f) and (g) |
| 2. Will the project create a demand for additional school capacity that cannot be met by existing or planned capacity? | Projections of new school age children associated with additional housing and employment on campus. | Project demand exceeding capacity | Santa Clara County Environmental Evaluation Checklist Item L (a)(iii) |

## 4.10.C IMPACTS AND MITIGATION MEASURES

**IMPACT: PS-1: Will the project increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained?**

Analysis: *Significant; Police*

The average response time for the Stanford Police Services Department may be impacted during periods of construction and by the increase in population in the area. Section 4.4, Traffic and Circulation, analyzes the study area intersections that would be potentially affected by the proposed project. Approximately 15 intersections would be affected by a significantly lower level of service or increases in intersection delays during peak hours. These conditions could impact police response times to these areas.

The project would result in an increase of approximately 2,200 new faculty, staff, and students on campus. The Stanford Police Department uses the ratio of sworn police officers per thousand population as one method of determining the adequacy of the department staffing levels. Nationally one sworn officer per thousand is considered the minimum number of officers that are adequate. Many communities have two or more officers per thousand population.

The Stanford community differs from a town or city because the majority of the population is between 18 and 24 years of age, and the actual number of people on campus varies according to time of day, time of year and special events taking place. The Department uses the current adjusted daytime population of 32,965 (Stanford Annual Report #11) to determine that there is approximately one budgeted sworn officer per every thousand in population. Actual current staffing levels are lower than this. Police Chief Harrington has asked for additional staff of two per year for the next four years, and estimates the additional population (2,200 new faculty, staff and students) would create the need for two additional officers. This impact is significant.

*Significant; Fire*

Traffic generated by the proposed project could affect the response times of the PAFD. Section 4.4, Traffic and Circulation, analyzes those intersections that are likely to experience delays and a decrease in level of service during peak hour traffic. Even though PAFD vehicles responding to emergency calls are given priority in use of the roadways, the additional traffic generated by the proposed project may lengthen response times during peak hours.

The increase in population on campus would also result in an increased demand for fire protection services. The current level of service provided by PAFD is 0.88 fire suppression personnel per thousand persons in the daytime service population. At this ratio, an increase of 2,200 in the daytime population would create the need for two additional fire suppression personnel. The PAFD may also require additional equipment to maintain current levels of service. This impact is significant.

*Less than Significant; Solid Waste*

As stated above, the daytime population at Stanford is expected to increase by approximately 2,200 as a result of the proposed project. This is a seven percent increase. The residential population would increase by approximately 4,000, or a 33 percent increase. Both the new daytime users and the new residential population would generate additional solid waste.

Stanford has a comprehensive recycling program that has been successful at diverting solid waste from the landfill. Stanford's goal for recycling from September 1998 through August 1999 was 40 percent; a 43 percent diversion rate was achieved during this time period (Stanford University, Santa Clara County General Use Permit, Annual Report #11). In 1999, Stanford diverted 48 percent of materials that would otherwise be landfilled. With continued implementation of ongoing waste diversion programs, the increase in solid waste generation at

Stanford is not expected to reduce the estimated life of the Newby Island Landfill. Hazardous waste disposal is addressed in Section 4.7. The impact is therefore less than significant.

*Significant; Water*

The increase in domestic water use was estimated based on the campus resident population and, for academic and student activity, building square footage. The following assumptions were used to calculate the increase in water consumption with buildout of the proposed project:

| Line | Water Use | Assumption/Source | Result |
|---|---|---|---|
| a | Total daily average water consumption (SFPUC) | (Mischissin, 2000: Utilities Metering Data) | 2.6 mgd |
| b | Total current daily average daytime campus population | (C. Palter, 2000) | 24,600 persons |
| c | Total daily average campus resident population | (C. Palter, 2000) | 12,000 persons |
| d | Total daily average domestic water consumption by campus resident population | 100 gallons per capita times line c | 1.2 mgd |
| e | Current campus academic and academic support, and all other campus domestic average daily consumption | Line a minus line d | 1.4 mgd (includes some irrigation) |
| f | Water consumed by Cardinal Cogen use | 20 percent of line a (Mischissin, 2000) | 0.52 mgd |
| g | Amount of campus academic water consumption without Cardinal Cogen use | Line e minus line f | 0.88 mgd |
| h | To obtain the amount of water consumed per square foot for existing campus academic and other space | Line g divided by 7,970,000 square feet | 0.11 gallons per day per square foot (includes some irrigation) |

The 1999 estimated resident population at Stanford was 12,358 faculty, staff, and students (See Table 4.3-1). However, for water and wastewater estimation, 12,000 residents have been used per Stanford University data. The current GUP would accommodate approximately 4,000 additional residents, bringing the total to approximately 16,358. The current adjusted daytime population at Stanford, without the Medical Center and Stanford Linear Accelerator Center (SLAC), both of which obtain their water supply through the City of Palo Alto, is about 24,600 and is expected to increase by approximately 2,200 new faculty, staff, and students. Both the new campus population and the proposed academic buildings would generate additional demand for domestic water. In the future, Stanford will track GUP daytime population using only faculty, staff and students. This is a change from past GUP monitoring in that adjusted daytime population to also include the Medical Center, SLAC and other population such as commercial activities, general visitors, vendors, construction workers, independent centers, and non-resident conferees.

If future residential domestic water consumption is similar to the existing consumption of approximately 100 gallons per capita per day, an additional 4,000 campus residents over the next 10 years would increase residential consumption by 0.4 mgd. With the addition of 1.9 million gsf (proposed GUP square footage minus Performing Arts Center, an intermittent water user), future additional average daily academic and academic support water consumption is estimated at 0.209 mgd. This is based on the above calculation of average daily use of 0.11 gallons per day per square foot of building space. The estimated water consumption associated with the proposed Performing Arts Center is minor enough to be included in the 0.209 mgd estimated consumption (Laporte 2000). With the additional water consumption associated with the project, the total average daily domestic water use for the next ten years is estimated to be 3.21 mgd. This represents a 23 percent increase in water use. Stanford's firm allocation as a member of the Bay Area Water Users Association is 3.033 mgd. A total reserve of 8 million gallons is available for use in emergencies. The estimated new water demand therefore exceeds current water allocations. This is a significant impact.

*Significant; Wastewater*

The Palo Alto Regional Wastewater Treatment Plant bases Stanford's annual billing on an average daily flow of 1.6 mgd (4.02 percent of the plant's current total flow), while actual sanitary sewer flows range from 1.0 mgd to 2.2 mgd. The increase in sewer flows was estimated based on the increase in resident population and, for academic and student activity, building square footage. To calculate additional flows from 4,000 new residents and new academic and academic support building square footage, existing sewer discharges were determined, excluding irrigation and Cogen discharges (cooling tower and boiler blowdown). Existing academic and residential sewer discharges are 1.55 mgd. Existing sewer discharge is broken out as follows:

| Line | Wastewater Generation | Assumption/Source | Result |
|---|---|---|---|
| a | Average daily sewer flow | Palo Alto Regional Wastewater Treatment Plant | 1.6 mgd |
| b | Water consumed by Cardinal Cogen use | (Mischissin, 2000) | 0.52 mgd |
| c | Average daily sewer for Cogen facility | Line b times 10 percent (assuming 90 percent evaporation of cooling tower water consumption and 10 percent tower and boiler blowdown) | 0.052 mgd |

| Line | Wastewater Generation | Assumption/Source | Result |
|---|---|---|---|
| d | Average daily sewer flow for academic and residential uses | Line a minus line c | 1.55 mgd |
| e | Average daily sewer flow for residential uses | (Mischissin, 2000) | 0.42 mgd |
| f | Average daily sewer flow per resident | Line e divided by 12,000 residents | 35 gallons per day |
| g | Average daily sewer flow for non-residential uses | Line d minus line e | 1.13 mgd |
| h | Average daily sewer flow for non-academic uses (i.e., irrigation and fountain runoff) | 20 percent of line g | 0.23 mgd |
| i | Average daily sewer flow for academic and academic support uses | Line g minus line h | .90 mgd |
| i | Average daily sewer flow per square foot of academic uses | Line i divided by 7,970,000 square feet | 0.11 gallons per day |

With 4,000 new residents using 35 gallons of sewer flow per resident (line "f" above), sewer discharge would increase by 0.14 mgd. With the addition of 1.9 million gross square feet over the next 10 years, using 0.11 gallons per day per square foot (line "i" above), sewer discharge for new academic and academic support uses would increase by 0.21 mgd. Total new sewer flows would be 1.95 mgd. This is within Stanford's allocated capacity of 2.11 mgd at the Palo Alto Regional Wastewater Treatment Plant. Current peak flows are approximately 40 percent greater than average flows. Assuming that the ratio would remain unchanged, peak flows for the project would increase to 2.73 mgd, which is less than Stanford's maximum peak flow allocation. This impact is therefore considered to be less than significant.

Stanford's wastewater flows come into the City's collection system at Yale Street and Stanford Avenue. New pipelines would be installed to accommodate sanitary sewage disposal from all new buildings to the collection system. However, it is possible that portions of the existing collection system may not be adequate to accommodate additional flows. Therefore, this impact is considered to be significant.

*Less than Significant; Electrical Power*

With completion of the upgrades to the Palou substation in December 2000, its nameplate capacity will be almost doubled (from 32 MVA to 62 MVA). Future growth over the next 10 years can be accommodated through the upgraded substation. The impact is therefore considered to be less than significant.

Mitigation: **PS-1A: Maintain Police Services**

(a) The Stanford Police and PAPD would be informed of the construction, locations, and alternate evacuation and emergency routes to facilitate response times during construction periods.

(b) Stanford shall provide funding to maintain at least one sworn officer on staff for each 1,000 adjusted daytime population at Stanford.

**PS-1B: Maintain Fire Services**

Stanford shall inform the Palo Alto Fire Department of construction locations, and alternative evacuation and emergency routes shall be designated to maintain response times during construction periods.

Stanford shall negotiate fire protection services to maintain at least 0.88 fire suppression personnel for each 1,000 additional daytime population at Stanford and to maintain an adequate level of equipment in response to the increased population.

**PS-1C: Water Conservation and Recycling**

(a) Stanford shall embark on an aggressive program of water conservation and water recycling. The conservation program shall include measures to reduce domestic water use (e.g., retrofit existing residences with low-flow toilets and showerheads) and to reduce use of water for irrigation (e.g., require use of drought-tolerant landscaping). The recycling program shall include consideration of recycled water or gray water use for toilet flushing in new buildings. Stanford will continue to implement water conservation measures for proposed new buildings to minimize future water use. Stanford should consider the use of recycled water for turf irrigation for the golf course, athletic fields, and other landscaped areas.

To implement these recommendations, Stanford shall prepare and submit to the County Planning Office a Water Conservation and Recycling Master Plan, which will lay out the proposed measures for reducing potable water use on campus. The goal of the plan shall be to ensure that Stanford does not exceed its allocation of 3.033 mgd. The Plan shall be prepared following the adoption of the CP and approval of the GUP. Increased water withdrawals from Stanford creeks shall not be used to meet this goal. A ten percent reduction in average daily water use would keep water consumption well within Stanford's existing allocation of 3.0333 mgd, while a six percent reduction (0.18 mgd), would meet the current allocation. A ten percent reduction in average daily water use is feasible with implementation of the program described above.

(b) If conservation and recycling does not achieve at least a six percent reduction in potable water demand from Hetch Hetchy, the University would have to apply for an increase in the allocation of water from the San Francisco Water Department, and receive approval prior to exceeding the existing allocation.

Alternatively, Stanford could reduce its water consumption or seek other sources of water.

**PS-1D: Improve the Wastewater Collection System**

Mitigation described above to reduce water use would also reduce wastewater generation. If parts of the existing collection system are undersized, including the sanitary sewer lines at Yale Street and Stanford Avenue, Stanford shall replace these lines with larger diameter pipes. The improvements shall be required prior to the approval of projects that would exceed existing capacity. Information of existing capacity and expected wastewater generation for the portion of the system affected shall be provided to the County Planning Office at the time of permit application submittal for a GUP project.

After Mitigation: *Less than Significant*

With mitigation, impacts to police, fire and water and wastewater services would be less than significant. Funding for police and fire would be provided to ensure adequate staffing and equipment. Measures to reduce water use would be implemented, and additional water allocation obtained if necessary. Any necessary improvements to the wastewater collection system would be constructed.

**IMPACT: PS-2: Will the project create a demand for additional school capacity that cannot be met by existing or planned capacity?**

Analysis: *Significant*

Recent amendments to Government Code section 65996 provide that specified statutes relating to the imposition of statutory school fees constitute “the exclusive methods of considering and mitigating impacts to school facilities …”. That same statute provides that school facilities means any school-related consideration relating to a school district’s ability to accommodate enrollment. Under this statute, as well as *Goleta Union School District v. Regents of the University of California*, 37 Cal. App. 4th 1025 (1995), an EIR need not consider a project’s effects on a school district’s ability to accommodate enrollment as environmental impacts under CEQA.

The University plans to construct up to 350 rental apartment units for hospital residents, post-graduate fellows, and young faculty, and up to 668 housing units (a mixture of single-family homes, townhouses, condominiums, and apartments to be determined based on need and demand) for faculty and staff. The total number of such dwelling units is estimated to be 1,018. All of the dwelling units will be located on property owned by the University within the Palo Alto Unified School District boundaries and located in unincorporated Santa Clara County.

The construction of up to 1,018 additional dwellings that could accommodate families with children may have an adverse impact on school capacity over the ten-year period of the General Use Permit. The level of impact, if any, will depend on the timing and unit mix of housing developed as part of the GUP. Further, the level of impact will depend on the PAUSD's ability to construct an additional middle school, and one or more additional elementary schools, both of which are unknown at the present time. Therefore, this impact is considered to be significant.

The University has not determined the exact mix, number of bedrooms, and sizes of these housing units. The rental apartments could include a mix of studio/efficiency, one-bedroom, and two-bedroom apartments. The faculty/staff housing could also include a mix ranging from studio apartments to three or more bedroom single family dwellings.

Based on a 1999 study prepared for the PAUSD by Lapkoff & Gobalet Demographic Research, Inc. (September 28, 1999), the estimated yield of students depends on assumptions about unit mix and the characteristics of the occupants (graduate students, post-graduate fellows, medical school residents, faculty, or staff). The study examined the school age population residing in several existing housing developments that were considered comparable to the proposed housing included in the GUP.

The study concluded that the student yield can be expected to fall within the following ranges based on the type of household and housing units. These yields are based on actual surveys of faculty households in University housing and include housing developments with a preponderance of childless households.

| Housing Unit Type | Students per household |
|---|---|
| Medical Residents/Post Doctoral Fellows Housing | 0.09 – 0.20 students |
| Faculty/Staff Housing | 0.31 –0.77 students |

Neither the 1999 study nor the School District's Business Services Department (which handles facility planning and operations) have a more detailed breakdown of student yields by grade level (elementary, middle school, high school).

Based on these ratios, the estimated number of additional PAUSD students residing in 350 additional apartments for medical residents or post-doctoral fellows ranges from 32 to 70. The estimated number of additional PAUSD students residing in up to 668 dwelling units for faculty and staff is between 207 and 514. The total estimate of additional PAUSD students that can be expected to occupy the 1,018 new dwelling units is between 239 and 584. This projected range of additional students represents between 2.4 percent and 5.9 percent of the PAUSD 1999-2000 actual enrollment as of fall 1999. If future student yields are similar to current enrollment patterns, then approximately 46 percent of the additional PAUSD students, or 110 to 269 students, would be of elementary school age, and the remaining 129 to 315 would be of middle and high school age.

The PAUSD study also speculated that the construction of 1,900 housing units for single graduate students could indirectly increase student enrollment in the

PAUSD, because some of the off-campus housing these students will vacate may be subsequently occupied by families with children. The study estimates that between 459 and 771 graduate students currently living off-campus within the PAUSD boundaries could relocate to new graduate student housing, creating an additional yield of between 69 and 116 PAUSD students.

The indirect effect of households with children occupying dwellings vacated by graduate students cannot be verified by empirical evidence—no study measuring the actual pattern of household replacement and the resulting change in the number of children occupying dwellings has been conducted or could feasibly be conducted. In addition, state law limits mitigation of school impacts to payment of state mandated fees for new development without considering changes in existing development. For this reason, the impact analysis does not include an evaluation of the indirect effect of household replacement from single graduate students moving into new campus housing.

Projected enrollment through 2010 under the District's Medium forecast is 5,082 for elementary schools, 2,680 for middle schools, and 4,202 for high schools, or 11,985 students total. Enrollment is expected to peak between 2010 and 2011. The addition of 239 to 584 students from planned University housing will increase total enrollment by 2.4 to 4.9 percent by 2010. Enrollment projections were prepared before the University's draft CP and GUP application were released.

Because the exact schedule and unit mix for the development of proposed University housing is not known at the present time, it is not possible to exactly quantify the impact of the additional school-age children from planned GUP housing. If planned housing for those most likely to have children occurs in the early years of the University's GUP buildout, when PAUSD school enrollment continues to rise, then the addition of school-age children from new housing could create a need for additional classroom space, at least at the elementary school level. If planned housing for households with children occurs toward the end of the ten-year Community Plan period, after PAUSD enrollment is expected to peak and elementary/middle school enrollments are expected to decline, there may be sufficient capacity to handle additional school-age children from the University.

High school enrollment is presently near capacity and is expected to increase through 2010. Additional GUP housing could create a need for additional high school classroom space over the next ten years, particularly if a substantial percentage of the children who live in such housing are in the middle school and high school age brackets. However, the impact will depend on the timing of GUP housing development and the mix of new housing units. The exact impact cannot be quantified since the timing of new GUP housing development and the precise unit mix are unknown.

To accommodate additional project-related enrollment, PAUSD may construct new or remodel existing school facilities, which could cause environmental impacts. Further analysis of these potential impacts is too speculative at this time because the necessary information (e.g., location, size, type of school) is not known. PAUSD would be responsible for analyzing and mitigating any environmental impacts in accordance with CEQA prior to undertaking any such activities.

Mitigation: **PS-2: Maintain School Capacity**

By law, the only mitigation of school impacts that the County can require is payment of statutory school impacts fees. The impact will be mitigated to a less than significant level through imposition of statutory school fees.

In order to continue to address school needs, Stanford is encouraged to voluntarily provide a detailed schedule to the PAUSD as soon as feasible indicating the schedule and unit mix of planned housing so that the timing and pattern of enrollment growth (elementary school, middle school, high school) can be estimated with greater certainty by the School District.

After Mitigation: *Less than Significant*

Government Code section 65996(b) provides that imposition of statutory school fees shall be deemed to provide full and complete school facilities mitigation. Payment of statutory school fees would reduce the impacts to school capacity to less than significant . An alternate arrangement may be reached between Stanford and PAUSD.

## 4.10.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

The project has potentially significant effects on police, fire and water service and to the wastewater collection system. These public services could be further affected by cumulative developments on Stanford lands, including the proposed Stanford University Medical Center, Center for Cancer Treatment and Prevention; Carnegie Foundation Research/Office Facility; and Sand Hill Road Corridor Projects. The Cancer Center and Sand Hill Road projects receive police and water services from the City of Palo Alto. The Carnegie project is located within the CP/GUP project area, and is therefore served by the Stanford Police department and subject to the separate water allocation for Stanford. Because of their location within the City of Palo Alto, the Cancer Center and Sand Hill Road projects would not affect Stanford police service levels or Stanford's water allocation.

**IMPACT: PS-C1: Will the project, combined with other cumulative projects, increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained?**

Analysis: *Significant*

The Carnegie Foundation Research/Office Facility is the only project that would potentially add to the cumulative impacts of the proposed GUP on Stanford's police service and water allocation. The Draft EIR for the Carnegie project states that "neither project construction nor operation is expected to make significant demands on fire or police protection services." With regard to water and wastewater supply, the Draft EIR does not include a quantification of water or wastewater needs for the project. The increase in demand is assumed to be minimal based upon the project's relatively small size (20,000 square feet) and additional population (40). Using the criteria for the GUP, the Carnegie project would increase water use by approximately 2,200 gallons per day and would result in the need for 0.04 additional police officers. However, even minimal increases to the demand for water and wastewater services will contribute to the cumulative impacts on such services in the region.

Cumulative development including the three Stanford projects and other Palo Alto projects could affect the City's wastewater collection system, portions of which are approaching capacity. As identified, Stanford shall be responsible for upgrades to sewer collection within the project area and at the connection location to the City's collection system. According to the Palo Alto Comprehensive Plan EIR (Brady & Associates, 1996), other non-Stanford development would not result in impacts to available treatment plant capacity. The City's plant allocation is separate from the allocation provided for the project area.

Fire services in Palo Alto would be affected by cumulative growth including the three Stanford projects and other Palo Alto development. These projects would add approximately 1,750 additional housing units and 700,000 square feet of building space to the PAFD service area. The Palo Alto Comprehensive Plan EIR (Brady 1996) states that increased demand on the PAFD would be mitigated by fees collected by the City for all new residential and commercial development.

Solid waste from the project area is taken to the Newby Island landfill. Cumulative development located within the City of Palo Alto would not affect the life expectancy of this landfill because Palo Alto solid waste is taken to either the Palo Alto Refuse Disposal area or the Kirby Canyon landfill.

Electrical power from the project would not exceed available capacity. The Carnegie project would be the only cumulative project that would utilize electrical Stanford's electrical power system. This project will not result in significant demand and would not negatively affect the Stanford's electrical power capacity.

Mitigation: Implement Mitigation Measures PS-1A, PS-1B, PS-1C and PS-1D. No further mitigation is necessary.

After Mitigation: *Less than Significant*

Mitigation measures recommended in Section 4.4 - Traffic and Circulation to alleviate traffic congestion would reduce transportation impacts for the PAFD. Mitigation recommended previously in this section would be adequate to reduce the impacts on police services and water and wastewater facilities. With implementation of mitigation measures PS-1A and PS-1B, cumulative impacts to police and fire services would not be significant because mitigation would adequately address the increased demand for service generated by new growth under the GUP. For every 1,000 additional daytime population on campus, one additional Stanford police officer shall be budgeted.

The City installed a new sewer main as part of the Sand Hill Road projects, and the Cancer Center EIR includes upgrading of the wastewater line along Blake Wilbur Drive, if necessary. Mitigation PS-1D will ensure that the collection system is adequate for demands from development under the GP/CUP.

Conservation and recycling measures proposed under Measure PS-1C for the CP/GUP will reduce Stanford's contribution to demand for water services. Stanford is subject to water allocations from the Bay Area Water Users Association and wastewater capacity allocations from the Palo Alto Regional Wastewater Treatment Plant. Both of these allocations are provided independent of other needs of users in the region. As long as Stanford stays within their allocations, there will be no contribution to cumulative water or wastewater impacts.

Cumulative impacts to solid waste are not significant, because there are no capacity problems associated with the amount of landfill space available. No further mitigation is necessary.

**IMPACT:** **PS-C2: Will the project, together with other cumulative projects, create a demand for additional school capacity that cannot be met by existing or planned capacity?**

Analysis: *Significant*

Other known housing projects in the Stanford area would also contribute to school capacity impacts. These projects include:

- Stanford Sand Hill Road Corridor Project, consisting of 628 rental apartments, 388 senior housing units, a 70-room assisting living facility, and a 160,000 square foot shopping center.
- Various project proposals in Palo Alto that include up to 460 housing units.

Mitigation: **PS-2: Maintain School Capacity**

After Mitigation: *Less than Significant*

PS-2: Maintain School Capacity would mitigate the incremental cumulative impact of planned GUP housing, in conjunction with other planned housing in the PAUSD, to less than significant. No further mitigation is required by law. It is anticipated that all residential projects (except qualifying senior housing exempted by state law) will continue to pay school impact fees to address the need for additional school facilities.

# 4.11 AIR RESOURCES

## 4.11.A SETTING

Stanford University is located on the border of San Mateo and Santa Clara Counties, within boundaries of the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB is composed of the counties of Santa Clara, San Mateo, San Francisco, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma and the southwest portion of Solano counties, and covers an area of approximately 5,540 square miles. Air quality in the immediate project areas and surrounding regional environment of the SFBAAB could be affected by emissions resulting from implementation of any projects under the General Use Permit (GUP).

### 4.11.A.1 Regional Climate and Physiography

The summer climate of the West Coast is dominated by a semi-permanent high centered over the northeastern Pacific Ocean. This high-pressure cell (the "Pacific High") is persistent, and storms rarely affect the California coast during the summer months. As such, the summer months are dominated by a northwest airflow with negligible precipitation. Moreover, a thermal low-pressure area from the Sonoran-Mojave Desert causes air to flow onshore over the San Francisco Bay Area.

The steady northwesterly flow around the eastern edge of the Pacific high pressure cell induces upwelling of cold water from below, which produces a band of cold water approximately 80 miles wide off San Francisco. As cool air approaches the San Francisco coast, it is further cooled by this strip of cold water, producing a high incidence of fog and stratus clouds along the Northern California coast during the summer.

In the winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place between November and April. During the winter, inversions are weak, winds are moderate, and air pollution potential is very low. During winter periods when the Pacific High becomes dominant, inversions become strong, and are often surface-based; winds are light, and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area, and often include tule fog.

#### *Topographical Influences on Wind Patterns*

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys and bays. Elevations of 1500 feet are common in the higher terrain. Normal wind flow in the area can be radically distorted in the lower levels, particularly when the airmass is stable and wind velocity is low. With stronger winds and unstable airmasses moving through the area, this distortion is reduced. During the summer months, distortion is greatest due to the presence of low level inversions, with surface air flowing independently of the air above the inversion.

Stanford lies within the northwest-southeast oriented Santa Clara Valley. The Santa Clara Valley is bounded by the Santa Cruz Mountains to the west, the Diablo Range to the east, the San Francisco Bay to the north, and the convergence of the Gabilian Range and the Diablo Range to the south. Wind patterns in the Santa Clara Valley are greatly influenced by terrain, resulting in a prevailing flow roughly parallel to the Valley's northwest-southeast axis with a north-northwesterly sea breeze extending up the valley during the afternoon and early evening and a light south-southeasterly drainage flow occurring during the late evening and early morning. Wind speeds are greatest in the spring and summer, and least in the fall and winter seasons. Nighttime and early morning hours exhibit light winds, and are frequently calm in all seasons, while summer afternoon and evenings are breezy. Strong winds are rare, coming only with an occasional winter storm.

### *Temperature*

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley, as well as small-scale local gradients along the shorelines of the ocean and bays.

Temperatures in the Santa Clara Valley are warm in summer, under mostly clear skies, although a relatively large diurnal range results in cool nights. Winter temperatures are mild, except for very cool but generally frostless mornings. At the northern end of the Valley, the San Jose Airport mean maximum temperatures range from the high 70's (Fahrenheit) to the low 80's during the summer to the high 50's-low 60's during the winter, and mean minimum temperatures range from the high 50's during the summer to the low 40's during the winter. Further inland where the moderating effect of the Bay is not as strong, temperature extremes are greater.

### *Precipitation*

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in the November-April period. Between 15 June and 22 September, normal rainfall is typically less than 1/10 inch.

Annual precipitation amounts show great differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered or 'shadowed' valleys. The frequency of winter rain is more uniform, however, with 10 days per month (December through March) being typical. During rainy periods, ventilation and vertical mixing are usually high, and consequently pollution levels are low. However, there are frequent winter dry periods lasting over a week. It is during some of these periods that CO and particulate pollution episodes develop.

In the Santa Clara Valley Microclime, rainfall amounts are modest, ranging from 13 inches in the lowlands to 20 inches in the hills.

### 4.11.A.2 Regional Air Quality

Air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate federal and/or state ambient air quality standard. The standards represent the allowable atmospheric concentrations at which the public health and welfare are protected and include a reasonable margin of safety to protect the more sensitive receptors in the population. Federal standards, established by the EPA, are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS for all averaging periods other than annual are defined as the maximum acceptable concentrations that may not be exceeded more than once per year. The annual NAAQS may never be exceeded. The state standards, established by the California Air Resources Board (ARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are defined as the maximum acceptable pollutant concentrations that are not to be equaled or exceeded, depending on the specific pollutant. The NAAQS and CAAQS are presented on Tables 4.11-1 and 4.11-2.

In the Bay Area, protection and regulation of air quality is the responsibility of the Bay Area Air Quality Management District (BAAQMD). The state and federal standards have been adopted by the BAAQMD for assessing local air quality impacts. The pollutants of main concern that are considered in this analysis include ozone ($O_3$), carbon monoxide (CO), oxides of nitrogen ($NO_X$) expressed as nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and particulate matter smaller than 10 microns in diameter ($PM_{10}$).

#### *Air Pollution Potential*

The potential for the development of high pollutant concentrations in the surrounding area and at a given location depends upon the quantity of pollutants emitted in the surrounding area and the ability of the atmosphere to disperse them.

The air pollution potential of the Santa Clara Valley is high. The valley has a large population and the largest collection of mobile sources in the Bay Area, making it a major source of carbon monoxide, particulate and photochemical air pollution. In addition, photochemical precursors from San Francisco, San Mateo and Alameda counties can be carried along by the prevailing winds to the Santa Clara Valley, making it also a major ozone receptor. Geographically, the valley tends to channel pollutants to the southeast with its northwest/southeast orientation, and concentrate pollutants by its narrowing to the southeast. Meteorologically, on high-ozone low-inversion summer days, the pollutants can be recirculated by the prevailing northwesterly winds in the afternoon and the light drainage flow in the late evening and early morning, increasing the impact of emissions significantly. On high particulate and carbon monoxide days, during late fall and winter, clear, calm and cold conditions associated with a strong surface based temperature inversion prevail.

# Table 4.11-1

## Federal and State Ambient Air Quality Standards

| Pollutant | Averaging Time | California Standards | Federal Standards | |
|---|---|---|---|---|
| | | Concentration | Primary | Secondary |
| Ozone ($O_3$) | 1 Hour | 0.09 ppm (180 μg/m$^3$) | 0.12 ppm (235 μg/m$^3$) | Same as Primary Standard |
| | 8 Hour | --- | 0.08 ppm (157 μg/m$^3$) | |
| Respirable Particulate Matter ($PM_{10}$) | Annual Geometric Mean | 30 μg/m$^3$ | --- | Same as Primary Standard |
| | 24 Hour | 50 μg/m$^3$ | 150 μg/m$^3$ | |
| | Annual Arithmetic Mean | --- | 50 μg/m$^3$ | |
| Fine Particulate Matter ($PM_{2.5}$) | 24 Hour | No Separate State Standard | 65 μg/m$^3$ | Same as Primary Standard |
| | Annual Arithmetic Mean | | 15 μg/m$^3$ | |
| Carbon Monoxide (CO) | 8 Hour | 9.0 ppm (10 mg/m$^3$) | 9.0 ppm (10 mg/m$^3$) | --- |
| | 1 Hour | 20 ppm (23 mg/m$^3$) | 35 ppm (40 mg/m$^3$) | |
| | 8 Hour (Lake Tahoe) | 6 ppm (7 mg/m$^3$) | --- | |
| Nitrogen Dioxide ($NO_2$) | Annual Arithmetic Mean | --- | 0.053 ppm(100 μg/m$^3$) | Same as Primary Standard |
| | 1 Hour | 0.25 ppm (470 μg/m$^3$) | --- | |
| Lead | 30 Day Average | 1.5 μg/m$^3$ | --- | --- |
| | Calendar Quarter | --- | 1.5 μg/m$^3$ | Same as Primary Standard |
| Sulfur Dioxide ($SO_2$) | Annual Arithmetic Mean | --- | 0.030 ppm (80 μg/m$^3$) | --- |
| | 24 Hour | 0.04 ppm (105 μg/m$^3$) | 0.14 ppm (365 μg/m$^3$) | --- |
| | 3 Hour | --- | --- | 0.5 ppm (1300 μg/m$^3$) |
| | 1 Hour | 0.25 ppm (655 μg/m$^3$) | --- | --- |

Source: California Air Resources Board, 1999

ppm=parts per million
mg/m$^3$=milligrams per cubic meter
μg/m$^3$=micrograms per cubic meter

**Table 4.11-2**

State Ambient Air Quality Standards with No Federal Counterpart

| Pollutant | Averaging Time | California Standards | Federal Standards | |
|---|---|---|---|---|
| | | Concentration | Primary | Secondary |
| Sulfates | 24 Hour | 25 µg/m$^3$ | NO FEDERAL STANDARDS | |
| Hydrogen Sulfide | 1 Hour | 0.03 ppm (42 µg/m$^3$) | | |
| Visibility Reducing Particulates | 8 Hour (10 AM to 6 PM, PST) | In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. | | |

Source: California Air Resources Board, 1999

ppm=parts per million
mg/m$^3$=milligrams per cubic meter
µg/m$^3$=micrograms per cubic meter

### *Baseline Air Quality*

The EPA designates all areas of the United States as having air quality better than the NAAQS ("attainment"), worse than the NAAQS ("non-attainment"), or "unclassified" in areas where insufficient data exists. A non-attainment designation means that a primary NAAQS has been exceeded more than three discontinuous times in 3 years in a given area. Pollutants in an area are often designated as unclassified when there is a lack of data for the EPA to form a basis of attainment status. A complete listing of the attainment status by pollutant for the SFBAAB is shown on Table 4.11-3.

The United States Environmental Protection Agency (EPA) redesignated the Bay Area in attainment of the 1-hour National Ozone Standard on May 22, 1995. The agency did this because the Bay Area attained the ozone standard for five years (1990 –1994). EPA also approved an Ozone Maintenance Plan submitted by the “co-lead” agencies for federal air quality planning in the Bay Area. However, during the summers of 1995 and 1996, the Bay Area experienced hot, stagnant weather, which led to exceedances of the 1-hour standard. The "contingency measures" in the Maintenance Plan were not adequate to bring the region back into compliance with the standard. Moreover, EPA was not satisfied that the region's adopted and projected actions would be sufficient to reestablish compliance with the standard. As such, EPA published a notice that revoked the region's clean air status on July 10, 1998. In June 1999, the BAAQMD, Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG) adopted and submitted to the EPA a new Ozone Attainment Plan For The

1-Hour National Ozone Standard. This plan was in response to the EPA-imposed requirements, and outlines strategies for the SFBAAB to regain attainment status. If the Bay Area can achieve clean conditions in 1999, 2000 and 2001, or in 2000, 2001 and 2002, it will be able to attain the standard, at which point the SFBAAB can apply for reinstatement of the attainment status from the EPA (BAAQMD, 1996a).

## Table 4.11-3

San Francisco Bay Area Attainment Status by Pollutant

| Pollutant | Averaging Time | California Standards | Federal Standards[1] |
|---|---|---|---|
| Ozone (O3) | 1 Hour | Non-Attainment | Non-Attainment |
| | 8 Hour | No State Standard | Unclassified |
| Respirable Particulate Matter ($PM_{10}$) | Annual Geometric Mean | Non-Attainment | No Federal Standard |
| | 24 Hour | Non-Attainment | Unclassified |
| | Annual Arithmetic Mean | No State Standard | Attainment |
| Fine Particulate Matter ($PM_{2.5}$) | 24 Hour | No State Standard | Unclassified |
| | Annual Arithmetic Mean | | Unclassified |
| Carbon Monoxide (CO) | 8 Hour | Attainment | Attainment |
| | 1 Hour | Attainment | Attainment |
| Nitrogen Dioxide ($NO_2$) | Annual Arithmetic Mean | No State Standard | Attainment |
| | 1 Hour | Attainment | No Federal Standard |
| Lead | 30 Day Average | Attainment | No Federal Standard |
| | Calendar Quarter | No State Standard | Attainment |
| Sulfur Dioxide ($SO_2$) | Annual Arithmetic Mean | No State Standard | Attainment |
| | 24 Hour | Attainment | Attainment |
| | 1 Hour | Attainment | No Federal Standard |
| Sulfates | 24 Hour | Attainment | No Federal Standard |
| Hydrogen Sulfide | 1 Hour | Unclassified | No Federal Standard |
| Visibility Reducing Particulates | 8 Hour (10 AM to 6 PM, PST) | Unclassified | No Federal Standard |

Source: Bay Area Air Quality Management District, 1999

1. Only Primary NAAQS' are used for classification purposes. As such, no classification has been designated for the 3-hour $SO_2$ Standard.

The ARB designates areas of the state as either in attainment or non-attainment of the CAAQS. An area is in non-attainment if the CAAQS has been exceeded more than once in 3 years. Table 4.11-3 provides the current CAAQS attainment status for the SFBAAB.

## 4.11.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

The BAAQMD has established significance thresholds to assist Lead Agencies in determining whether a project or plan may have a significant air quality impact. The District's thresholds of significance are based on the State Office of Planning and Research definitions of significance.

### 4.11.B.1 Thresholds of Significance for Project Operations

Based on the State CEQA Guidelines and the BAAQMD Guidelines (BAAQMD, 1996a), a project impact is considered to be significant if conditions presented in Table 4.11-4 are met.

**Table 4.11-4**

Evaluation Criteria with Points of Significance – Air Resources

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 1. Will there be inadequate mitigation for potential construction-period emissions? | Compliance with BAAQMD requirements. | Any failure to include required mitigation | BAAQMD CEQA Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item C(d) and (e) |
| 2. Will the project produce local CO concentrations that exceed federal and state standards? | Compliance with Federal and State Ambient Air Quality Standards. | CO concentrations exceeding<br>• 35 ppm 1-hour and 9 ppm 8-hour federal standards or<br>• 20 ppm 1-hour and 9.0 ppm 8-hour state standards. | BAAQMD CEQA Guidelines |
| 3. Is the project inconsistent with emission growth factors contained in any BAAQMD air plans or does it result in an emissions increase greater than the listed significance thresholds? | Emissions of $NO_x$, CO, $PM_{10}$ that are inconsistent with:<br>• 1997 Clean Air Plan<br>• 1999 Ozone Attainment Plan<br>• 1996 CO Maint. Plan | • 80 lbs/day or 15 tons/yr of $NO_x$, VOC, or $PM_{10}$ emissions | BAAQMD CEQA Guidelines<br>Santa Clara County Environmental Evaluation Checklist Item C(a) |

**Table 4.11-4**

Evaluation Criteria with Points of Significance – Air Resources

| Evaluation Criteria | As Measured By | Point of Significance | Justification |
|---|---|---|---|
| 4. Will the project create objectionable odors? | Projection of new odor sources (e.g., waste water treatment plants, composting, etc.) | Proposed uses have record of 10 verified odor complaints in a one-year period resulting in a Notice of Violation at another location. | BAAQMD CEQA Guidelines, BAAQMD Regulation 7<br>Santa Clara County Environmental Evaluation Checklist Item C(e) |
| 5. Will the project significantly alter air movement, moisture, or temperature, or change in climate, either locally or regionally? | Projection of new sources that modify climate (e.g., large power plants, etc.) | Project sources emitting large quantities of CO2 or methane on the order of 500 tpy | BAAQMD CEQA Guidelines, Global Climate Agreements<br>Santa Clara County Environmental Evaluation Checklist Item C(a) |
| 6. Will the project expose sensitive receptors or the general public to substantial levels of toxic air contaminants? | Projection of new sources with potential to emit substantial amounts of toxic air contaminants (including past history as basis) | Sources required to have a permit from BAAQMD. These sources would then be subject to a risk screening analysis to determine if they exceed BAAQMD significance thresholds.<br>(This exempts teaching laboratories used exclusively for classroom experimentation and/or demonstration and laboratories located in buildings with lab space less than 25,000 square feet or with fewer than 50 fume hoods). | BAAQMD CEQA Guidelines BAAQMD Regulation 2, Table 2-1-316<br>Santa Clara County Environmental Evaluation Checklist Item C(a) |

### 4.11.B.2 Thresholds of Significance for Construction Operations

The BAAQMD has not identified thresholds of significance for emissions from construction activities. Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. $PM_{10}$ is the pollutant of greatest concern with respect to construction activities. Construction equipment emits CO and ozone precursors; however, these emissions are included in the emission inventory that is the basis for regional air quality plans. These pollutants are therefore not expected to impede attainment or maintenance of the ozone and CO standards in the Bay Area.

The BAAQMD has identified a set of feasible $PM_{10}$ control measures for that are mandatory for all construction activities. These control measures are listed below. If all control measures indicated below (as appropriate, depending on the size of the project area) are implemented, then air pollutant emissions from construction activities would be considered a less than significant impact. If all of the appropriate measures indicated below would not be implemented, then construction impacts would be considered to be significant (unless the lead agency provides a detailed explanation as to why a specific measure is unnecessary or not feasible).

### *Basic Control Measures*

The following controls should be implemented at all construction sites during dry conditions.

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose material *or* require all trucks to maintain at least 2 feet of freeboard (freeboard is the space between the top of the load and the top edge of the truck bed).
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

### *Enhanced* Control Measures

The following measures should be implemented at construction sites that are larger than 4 acres.

- All "Basic" control measures listed above.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

### *Optional Control Measures*

The following control measures are strongly encouraged at construction sites that cover a large area located near sensitive receptors, or which for any other reason may warrant additional emission reductions.

- Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Limit the area subject to excavation, grading and other construction activity at any one time.

## 4.11.C IMPACTS AND MITIGATION MEASURES

**IMPACT: AQ-1: Will there be inadequate mitigation for potential construction-period emissions?**

Analysis: *Significant*

As discussed previously, construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. $PM_{10}$ is the pollutant of greatest concern with respect to construction activities. According to the BAAQMD CEQA Guidelines, if all the applicable mandatory construction control measures listed in Section 4.11.B are implemented, air pollutant emissions from construction activities are considered to have a less than significant impact.

Construction equipment typically operates using diesel fuel. However, particulate matter from diesel engine exhaust has been identified by the State of California as a toxic air contaminant (TAC). Diesel emissions are a potentially significant impact during construction.

Mitigation: **AQ-1 Reduce Diesel Emissions**

Mitigation measures beyond those required by BAAQMD for all construction projects would be needed to reduce diesel emissions. Currently, there are few “clean fuel” engines in construction equipment fleets, but it is anticipated that this will change over time. Therefore, as a mitigation measure to minimize diesel engine exhaust particulate emissions, Stanford shall require all construction contractors performing work on projects under the GUP/CP to properly maintain the equipment and, where feasible, use “clean fuel” equipment and emissions control technology (e.g., CNG-fired engines, catalytic converters, particulate traps, turbocharged/intercooled engines, $4^{o}$ of retard for engine timing). Measures to reduce diesel emission would be considered feasible when they are capable of being used on equipment without interfering substantially with equipment performance.

After Mitigation: *Less than Significant*

Implementation of Measure AQ-1 would reduce diesel emissions to less than significant. BAAQMD required measures would reduce other construction emissions to less than significant.

**IMPACT: AQ-2: Will the project produce local CO concentrations that exceed federal and state standards?**

Analysis: *Less than Significant*

The Bay Area Air Quality Management District (BAAQMD) has guidelines for determining when localized carbon monoxide concentrations should be estimated for projects. Detailed CO concentration analysis (or CO Hot Spot analysis) must be performed on intersections where traffic would impact intersections or roadway links operating at a Level of Service (LOS) D, E, or F. For the GUP, the estimated worst six intersections effected by the project and having a LOS of F were selected for detailed analyses, based on the premise that these are the most likely locations for significant CO concentrations. These intersections are listed in Table 4.11-5 and were selected based on traffic data for the project with the arena built. If any of these intersections were found to contribute to carbon monoxide concentrations exceeding the State Ambient Air Quality Standard of 20 parts per million (ppm) averaged over a 1-hour period and 9 ppm for any 8-hour period, the project would be considered to have a significant impact, and analysis of additional intersections could be warranted.

For this analysis, the CAL3QHC dispersion model was used to estimate the 1-hour CO concentrations during the peak AM and PM hours at the six intersections (see Appendix E). CAL3QHC is a microprocessor-based model designed to predict CO or other inert pollutant concentrations from motor vehicles at roadway intersections. Because idle emissions account for a substantial portion of the total emissions at an intersection, the model is relatively insensitive to traffic speed, a parameter difficult to predict with a high degree of accuracy on congested urban roadways without a substantial data collection effort. CAL3QHC requires several parameters including roadway geometries, receptor locations, meteorological conditions and vehicular emission rates. In addition, signal timing data and data describing the configuration of the intersection being modeled is also required. Once the 1-hour CO concentrations are calculated, 8-hour CO concentrations can be derived by applying a persistence factor to the 1-hour results. The persistence factor is based on ambient concentration monitoring data. The "Guideline For Modeling Carbon Monoxide From Roadway Intersections" (EPA Document 454/R-92-005) recommends applying a persistence factor of 0.7 as a conservative estimate.

The CAL3QHC model was run with worst case meteorological data as specified by the "Guideline For Modeling Carbon Monoxide From Roadway Intersections". Specific data such as year 2010 peak hour vehicle volumes and speeds and projected stop sign/signal configurations and timings were provided by KORVE Engineering. The consultant also visited the existing intersection locations to collect specific roadway dimensions. The roadway characteristics for the year 2010 were based on a combination of current roadway dimensions and projected future roadway configurations. The CAL3QHC model also requires emission factors, which were calculated using California Air Resources Board's (CARB) MVEI7g emissions inventory model. Receptors representing the nearest possible human exposure to roadway generated emissions were selected. Based on the above methodology, the year 2010 1-hour and 8-hour CO concentrations were estimated and are shown in Table 4.11-5. The predicted 1- hour CO concentrations are well below the 35 ppm federal standard and 20 ppm California standard. Applying a worst case persistence factor of 0.7, the predicted 8-hour CO concentrations also fall within the federal and state 8-hour standard of 9 ppm. The six intersections analyzed were selected based on the LOS, delay time, and traffic volumes. Even using these three parameters, other intersections may potentially produce slightly higher CO concentrations. However, the level of CO concentrations would not likely exceed federal and state 1-hour and 8-hour standards considering the large margin between the predictions for these six major intersections and the air quality standards.

Mitigation: No mitigation is necessary.

## Table 4.11-5

Maximum Predicted 1-Hour and 8-Hour Carbon Monoxide Concentration for Year 2010

| Intersection | | Background Concentration (ppm)[a] | Maximum 1-Hr Concentration (ppm) | Total 1-Hr Concentration (ppm) | Total 8-Hr Concentration (ppm)[b] |
|---|---|---|---|---|---|
| Junipero Serra/ Page Mill | AM | 7.1 | 1.8 | 8.9 | 6.2 |
| | PM | 7.1 | 2.0 | 9.1 | 6.4 |
| El Camino Real/ Ravenswood | AM | 7.1 | 1.5 | 8.6 | 6.0 |
| | PM | 7.1 | 1.6 | 8.7 | 6.1 |
| Sand Hill/ Santa Cruz | AM | 7.1 | 1.9 | 9.0 | 6.3 |
| | PM | 7.1 | 2.4 | 9.5 | 6.7 |
| El Camino Real/ Page Mill | AM | 7.1 | 2.4 | 9.5 | 6.7 |
| | PM | 7.1 | 2.2 | 9.3 | 6.5 |
| El Camino Real/ Sand Hill / Alma | AM | 7.1 | 1.8 | 8.9 | 6.2 |
| | PM | 7.1 | 1.9 | 9.0 | 6.3 |
| Junipero Serra / Campus Drive West | AM | 7.1 | 0.7 | 7.8 | 5.5 |
| | PM | 7.1 | 0.7 | 7.8 | 5.5 |

Notes:

a Background based on maximum 1-hour average CO reading at a San Mateo, CA monitoring site in 1999 (EPA AIRSData).

b 8-hour CO concentration based on applying a 0.7 persistence factor to the 1-hour average as recommended by the "Guideline for Modeling Carbon Monoxide From Roadway Intersections" (EPA Document # 454/R-92-005).

**Impact:** **AQ-3: Is the project inconsistent with emission growth factors contained in any BAAQMD air plans or does it result in an emissions increase greater than the listed significance thresholds?**

Analysis: *Less than Significant*

*Consistency With Plans*

The project is consistent with all air quality plans relevant to the Bay Area. Policies contained within the CP support the applicable transportation control measures (TCMs) as referenced in the Bay Area 1997 Clean Air Plan and the San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard. Table 4.11-6 shows which TCMs the project supports. These TCMs help minimize increases in vehicle miles traveled (VMT) and result in an increase of VMT that is less than the rate of increase in population. In fact, the 1990 Census statistics show that 55% of Stanford students, faculty and staff commute alone to work compared to 78% of the workers in Santa Clara County. The CP/GUP will continue to support and improve upon this trend of reducing VMT. The project is also in compliance with the 1996 CO Maintenance Plan. The project will not interfere with the implementation of the ARB mobile source and clean fuel regulations designed to reduce CO levels. In addition, the project will comply with applicable stationary source regulations.

## Table 4.11-6

CP/GUP Compliance with Bay Area TCMs

| TCM | Description | Does CP/GUP Support Measure? |
|---|---|---|
| 1 | Support Voluntary Employer-Based Trip Reduction Programs | Yes |
| 2 | Adopt Employer-Based Trip Reduction Rule | Deleted |
| 3 | Improve Area wide Transit Service | Yes |
| 4 | Improve Regional Rail Service | Not Applicable |
| 5 | Improve Access to Rail and Ferries | Yes |
| 6 | Improve Inter-Regional Rail Service | Not Applicable |
| 7 | Improve Ferry Service | Not Applicable |
| 8 | Construct Carpool/ Express Bus Lanes On Freeways | Not Applicable |
| 9 | Improve Bicycle Access and Facilities | Yes |
| 10 | Youth Transportation | Not Applicable |
| 11 | Install Freeway / Arterial Metro Traffic Operations System (MTOS) | Not Applicable |
| 12 | Improve Arterial Traffic Management | Yes |
| 13 | Transit Use Incentives | Yes |
| 14 | Improve Rideshare/ Vanpool Services and Incentives | Yes |
| 15 | Local Clean Air Plans, Policies and Programs | Yes |
| 16 | Intermittent Control Measure / Public Education | Not Applicable |
| 17 | Conduct Demonstration Projects | Not Applicable |
| 18 | Transportation Pricing Reform | Not Applicable |
| 19 | Pedestrian Travel | Yes |
| 20 | Promote Traffic Calming Measures | Yes |

*Emission Increases Compared to Significance Thresholds*

The total VOC, NOx, and $PM_{10}$ emissions increase for the project relative to the no build was estimated using CARB's URBEMIS7g model (see Appendix E). The model estimates stationary and mobile source emissions based on land use development information including the number and type of new residences and the number of new students. For this project, the stationary emissions take into account emissions from natural gas usage, landscaping, and consumer product usage (e.g. air fresheners, household cleaners, automotive products) from the residential units and emissions from academic facilities. The mobile source emissions are calculated based on additional vehicle trips generated as a result of the project. The additional vehicle trips are estimated by the model based on the proposed increase of residential units and students. The vehicle fleet mix is also needed and is assumed to consist of 80% light duty automobiles, 10% light duty trucks, and 10% motorcycles for the Stanford area. URBEMIS7g also takes credit for programs encouraging pedestrian paths, bike usage, carpooling, and usage of public transit which reduce the number of vehicle trips.

Based on the number of new residential units and new students, the model predicts increases of VOC, NOx, and $PM_{10}$ emissions that are under the 80 lb/day and 15 tons/year significance thresholds as shown in Table 4.11-7. These worst case emissions occur during winter when lower temperatures result in higher cold start emissions from vehicles.

## Table 4.11-7

Worse Case Predicted Increase of Emissions for the Year 2010 Due to the Project

| Emissions Source | VOC | | NOx | | $PM_{10}$ | |
|---|---|---|---|---|---|---|
| | lbs/day | tons/yr | lbs/day | tons/yr | lbs/day | tons/yr |
| Stationary Source Emissions | 22.2 | 4.1 | 8.1 | 1.5 | 0.2 | 0.0 |
| Mobile Source Emissions | 53.8 | 8.9 | 25.3 | 3.8 | 21.8 | 4.0 |
| Total Emissions | 76.0 | 13.0 | 33.4 | 5.3 | 22.0 | 4.0 |

Mitigation: No mitigation is necessary.

**Impact: AQ-4: Will the project create objectionable odors?**

Analysis: *Less than Significant*

Nuisance odors are generated from traditional sources that include wastewater treatment plants, composting facilities, chemical plants, and others. Such inherently odorous sources would not be constructed as part of the project. Non-inherently odorous sources on occasion produce objectionable odors. To receive a Notice of Violation, the odor source must receive 10 or more odor complaints in a year, according to BAAQMD Regulation 7. This is highly unlikely for non-inherently odorous sources that would be constructed as part of the CP/GUP, particularly as such a level of complaints has not occurred due to Stanford's past and current operations. Therefore, this impact is considered to be less than significant.

Mitigation: No mitigation is necessary.

**Impact: AQ-5: Will the project significantly alter air movement, moisture, or temperature, or change in climate, either locally or regionally?**

Analysis: *Less than Significant*

The project would not contain any significant new sources capable of impacting local or global climate change or significantly altering air movement.

Mitigation: No mitigation is necessary.

**Impact: AQ-6: Will the project expose sensitive receptors or the general public to substantial levels of toxic air contaminants?**

Analysis: *Less than Significant*

The project is only projected to contain sources below the BAAQMD permitting threshold, and would therefore not expose receptors to substantive levels of toxic air contaminant levels. If future development includes a building with lab space greater than 25,000 square feet or with more than 50 fume hoods, a permit from BAAQMD would be required, and a risk screening analysis would have to be conducted to determine if the project would exceed BAAQMD emissions thresholds. Compliance with the BAAQMD's legally required standard permitting process would ensure that levels of toxic air contaminants are not significant.

Mitigation: No mitigation is necessary.

## 4.11.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Impact: AQ-C1: Will the project have significant cumulative air quality impacts?**

Analysis: *Less than Significant*

According to the BAAQMD CEQA Guidelines, a project that would individually have significant air quality impacts or that is not consistent with local general plan and the Clean Air Plan would be considered to have significant cumulative impacts. As shown in Section 4.11.C, the project is not expected to have significant air quality impacts except for toxic diesel emissions during construction. Toxic diesel emissions only affect a very localized area for a short time during construction and thus would not be expected to combine with other project's construction emissions to create a significant cumulative impact. Nevertheless, mitigation measure AQ-1 would reduce the project-related contribution to a level that is not cumulatively considerable. Analysis of traffic-related air quality impacts described above included traffic from cumulative development in the area. In addition, the above section demonstrates that the project is consistent with the Clean Air Plan. Therefore, the project, as mitigated, will not contribute to significant cumulative air quality impacts.

Mitigation: **AQ-1 Reduce Diesel Emissions**

After Mitigation: *Less than Significant*

# 4.12 NOISE

This section evaluates noise impacts from construction and operation of facilities included in the GUP/CP. Operational impacts include both the noise generated from new facilities and the noise impacts of traffic associated with project.

## 4.12.A SETTING

### 4.12.A.1 Noise Terminology

Noise is often defined as unwanted sound. Sound is easily measured with instruments, but the human variability in subjective and physical responses to sound complicates the understanding of its impact on people. People judge the relative magnitude of sound by subjective terms such as "loudness" or "noisiness."

Sound-pressure level ($L_p$) is measured and quantified in terms of a logarithmic scale in decibels (dB). Research on human hearing sensitivity has shown that a 3 dB increase in the sound is barely noticeable and a 10 dB increase would be perceived as twice as loud. The human hearing system; however, is not equally sensitive to sound at all frequencies. Therefore, a frequency-dependent adjustment called "A-weighting" has been devised so that sound may be measured in a manner similar to the way the human hearing system responds. The A-weighted sound level is often abbreviated "dBA" or "dB(A)." Figure 4.12-1 provides typical A-weighted sound levels of various noise sources.

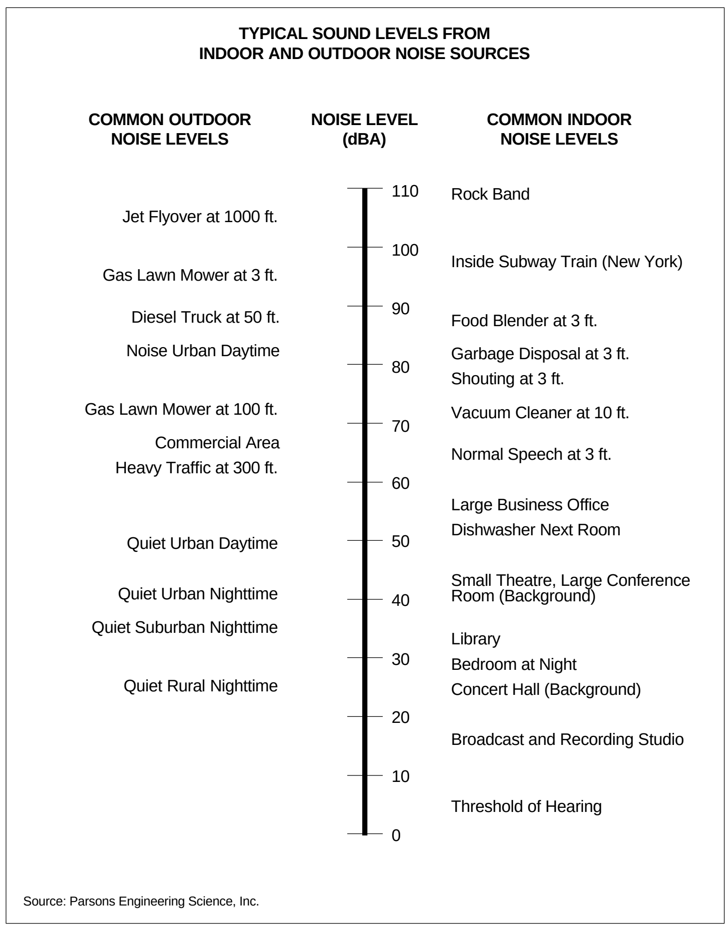



**Figure 4.12-1**
**Typical A-Weighted Noise Levels**

Community noise levels usually change continuously during the day. Community noise also exhibits a daily, weekly, and yearly pattern. Several descriptors have been developed to compare noise levels over different time periods. The most common descriptors are the energy equivalent sound level ($L_{eq}$), the maximum noise level ($L_{max}$), and day-night average sound level ($L_{dn}$). The $L_{eq}$ is the equivalent steady-state A-weighted sound level that would contain the same acoustical energy as the time varying A-weighted sound level during the same time interval. The $L_{max}$ is the highest instantaneous sound level measured during a single noise measurement interval no matter how long this sound may persist and whether the noise source is ambient or project related. The $L_{dn}$ is the averaged A-weighted sound level over a 24-hour period with a 10 dB adjustment added to the sound level between 10:00 PM and 7:00 AM. This time weighting is applied in an effort to account for the assumed increased sensitivity to noise intrusions during the nighttime hours.

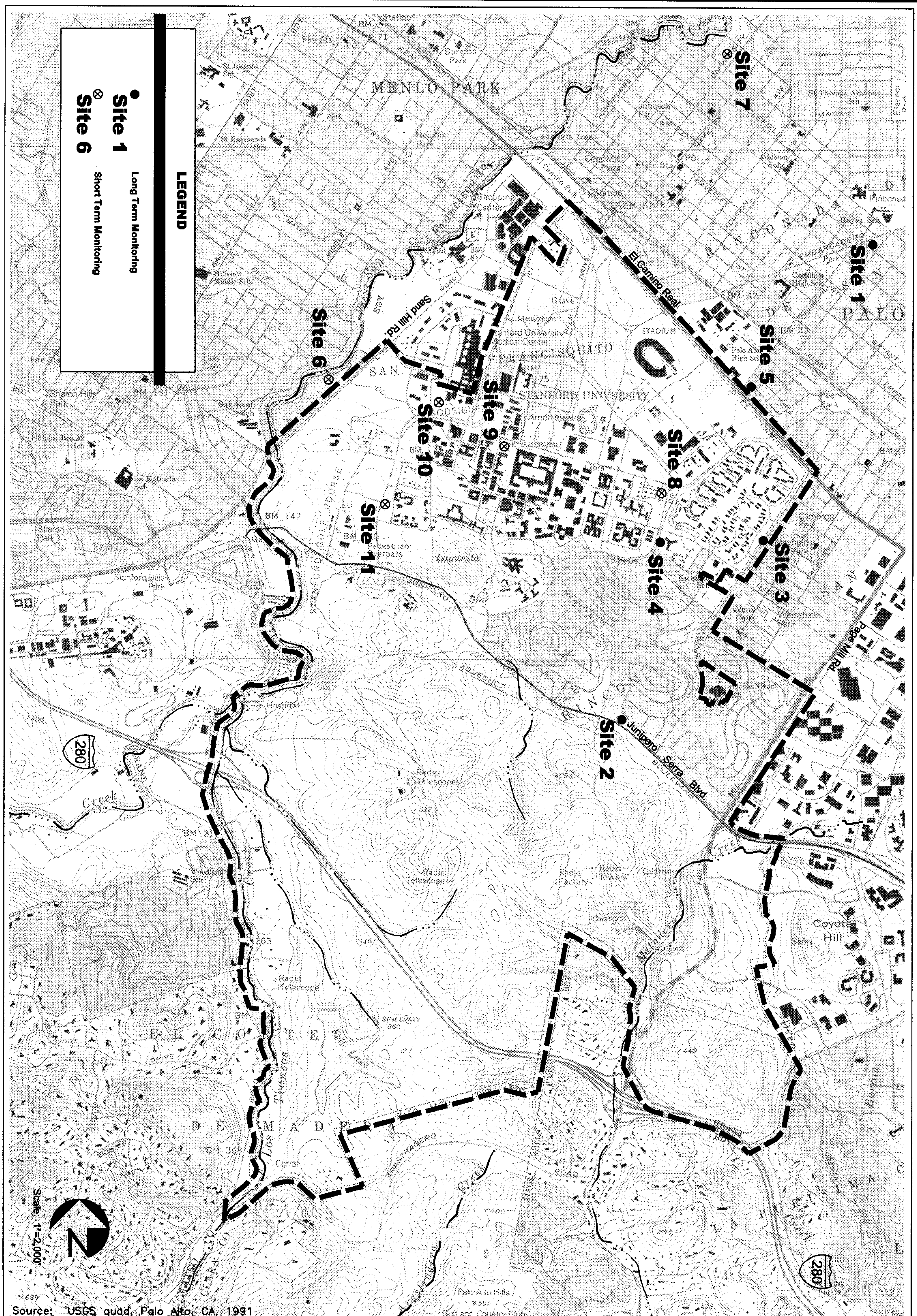
Vibration is an oscillatory motion, which can be described in terms of displacement, velocity, or acceleration. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed. The response of humans, buildings, and equipment to vibration is normally described using velocity or acceleration. Vibration amplitudes are usually expressed as the root mean square (RMS) velocity or peak particle velocity (PPV). The RMS of a signal is the average of the squared amplitude of the signal. The PPV is defined as the maximum instantaneous peak of the vibration signal. RMS is more suitable for evaluating human response, whereas PPV is more appropriate for evaluating potential building damage. The RMS of 0.01 inch/second is the perception of threshold, and the PPV of 0.2 inch/second or higher may pose risk of damage to building structures.

### 4.12.A.2 Environmental Setting

***Noise Measurement Approach:*** *The consultant conducted noise monitoring at 11 representative noise sensitive sites (six 20-minute and five 17- to 24-hour measurements). Monitoring locations are shown in Figure 4.12-2. These measurements were conducted to estimate existing noise levels at typical noise sensitive receptors that could be affected by noise associated with the Stanford GUP. The noise monitoring was conducted using Larson Davis model LD870 and Rion NL-15 precision integrating sound level meters. The instruments were calibrated and operated according to the manufacturer's specifications.*

The results of noise measurements are summarized in Table 4.12-1. Detailed results and site locations are included in Appendix F. Measured existing background noise levels were generally within the expected range. Noise monitoring events at Receptors 1, 4, and 5 were shortened due to the heavy rainfall. (Accurate noise measurements cannot be taken during heavy rain, which can significantly increase ambient noise levels.) Monitored $L_{eq}$ values of Receptors 1 and 2 exhibited unexpected abnormalities during nighttime (i.e. $L_{eq}$ of 79 dBA between 2:00 and 3:00 AM). Unusually high $L_{max}$ as short as a few seconds can disrupt $L_{eq}$ values. Therefore, these anomalies found in $L_{eq}$ values of Receptors 1 and 2 were corrected to reflect the typical noise distribution of a day.

File: 736167\Graphics\Water Date: 06/20/2000




Stanford University
CP/GUP Project EIR

**NOISE MONITORING LOCATIONS**

PARSONS

Figure 4.12-2

## Table 4.12-1

### Summary of Noise Monitoring Result

| Receptor Number | Duration | Monitoring Address | Date | Start Time | Noise Levels, dBA | | |
|---|---|---|---|---|---|---|---|
| | | | | | $L_{eq}$ | $L_{max}$ | $L_{dn}$ |
| 1 | 22 Hr | 1525 Webster Street, Palo Alto | 11/18/99 | 13:35 | 65.0[1] | 89.9[2] | 62.1 |
| 2 | 24 Hr | 950 Lathrop Drive, Stanford | 11/17/99 | 13:11 | 57.1[1] | 86.2[2] | 55.0 |
| 3 | 24 Hr | 1153 Stanford Avenue, Palo Alto | 11/17/99 | 11:54 | 59.0[1] | 85.2[2] | 59.4 |
| 4 | 23 Hr | 130 Mirrielees Apartments, Stanford | 11/18/99 | 15:42 | 58.8[1] | 81.2[2] | 60.9 |
| 5 | 17 Hr | 1525 El Camino Real, Palo Alto | 11/18/99 | 17:31 | 71.9 | 89.7 | 77.5 |
| 6 | 20 Min | Oak Creek Apartments, Palo Alto | 11/19/99<br>11/18/99 | 08:10<br>07:20 | 61.4<br>62.2 | 73.7<br>71.9 | - |
| 7 | 20 Min | 909 University Avenue, Palo Alto | 11/18/99 | 10:03 | 64.1 | 76.5 | - |
| 8 | 20 Min | Schwab Residential Center, Stanford | 11/19/99 | 08:12 | 56.1 | 67.4 | - |
| 9 | 20 Min | 466 Lomita Mall, Stanford | 11/18/99 | 10:54 | 57.6 | 64.3 | - |
| 10 | 20 Min | Stanford Medical Center, Stanford | 11/18/99 | 15:00 | 56.8 | 66.4 | - |
| 11 | 20 Min | Lyman Graduate Housing, Stanford | 11/18/99 | 10:54 | 63.0 | 82.5 | - |

Source: Parsons Engineering Science

Note:

1. Highest $L_{eq}$ from long term monitoring.
2. Highest $L_{max}$ from long term monitoring.
3. Short term measurements were conducted for Receptors 6 through 11 due to the limited availability of meters and monitoring locations.

The noise environment of Stanford University and the immediate vicinity of the campus is affected by six major local roads: Junipero Serra Boulevard, Sand Hill Road, Page Mill Road/Oregon Expressway, El Camino Real, Embarcadero Road, and University Avenue. In addition to the local roads, traffic noise from Campus Drive and Stanford Avenue also contributes significantly to ambient noise of some undergraduate and graduate housing units, as well as faculty housing units within the Academic Campus. The followings are descriptions of roads and noise sensitive areas along these roads:

- Embarcadero Road: Embarcadero Road is a frequently used access to Stanford University from the 101 Bayshore Freeway. Embarcadero Road passes through the mainly residential area of the City of Palo Alto. The residential areas along this road receive direct impacts from vehicular noise, especially during morning and afternoon hours. Walter Hays Elementary School and Bowling Green Park were also identified as noise sensitive areas. Receptor 1 in Table 4.12-1 represents single family houses and the school along this road.

- Junipero Serra Boulevard: Junipero Serra Boulevard lies between the foothills in the south and Stanford central campus in the north. There are single family houses and Stanford Golf Course alongthis road between Page Mill Road and Sand Hill Road. Receptor 2 in Table 4.12-1 represents single family houses along this road.

- El Camino Real: El Camino Real is the busiest local road in the vicinity of Stanford University. This road borders the central campus. The existing land use adjacent to El Camino Real is mainly commercial: banks, gas stations, restaurants, and parking lots. Single family houses as well as Palo Alto High School are also located immediately north of El Camino Real between Miramonte Avenue and Embarcadero Road. Receptor 5 in Table 4.12-1 represents single family houses and the school along this road.

- Sand Hill Road: This roadway provides convenient access to Junipero Serra Freeway 280 and Stanford University. Heavy volume of traffic on Sand Hill Road was observed during AM and PM peak hours. Vehicle speed between Stanford Shopping Center and Junipero Serra Boulevard during these hours was exceptionally slow during monitoring. Stanford Shopping Center, Stanford Medical Center, Oak Creek Apartments, Stanford Golf Course, open space, and single family houses are located along Sand Hill Road. Receptors 6 and 10 in Table 4.12-1 represent the noise sensitive areas along and in the vicinity of this road, respectively.

- University Avenue: There are two distinctive land uses along University Avenue. Commercial buildings are densely located toward Stanford University. Traffic is exceptionally slow in this area due to the narrow road, truck loading/unloading, and pedestrians. Toward the 101 Bayshore Freeway, there are residential areas along the road. University Avenue becomes extremely congested during weekend nights due to its local attractions along the road, and during weekday commute hours. Receptor 7 in Table 4.12-1 represents single family houses along this road.

- Page Mill Road/Oregon Expressway: This roadway is frequently used as access to Stanford from either the 101 Bayshore Freeway or 280 Junipero Serra Freeway. From 101 Bayshore freeway to El Camino Real, Page Mill Road is known as Oregon Expressway and is mainly residential. Page Mill Road from 280 Freeway passes through the foothills until it crosses Junipero Serra Boulevard. There is residential area on the north side of Page Mill Road between Junipero Serra Boulevard and Peter Coutts Road.

- Campus Drive East/West: Campus Drive is a loop through the perimeter of Academic Campus. The traffic noise generated from this loop directly influences the ambient noise levels of graduate and undergraduate houses, fraternity houses, and some academic buildings. During the AM peak hour, the Campus Drive loop becomes heavily congested. Receptors 4, 8, and 11 in Table 4.12-1 represent the noise sensitive areas along or in the vicinity of this road.

- Stanford Avenue: The land use east of Stanford Avenue (between Junipero Serra Boulevard and El Camino Real) is predominantly residential, with graduate student residences on the west side. There are also schools and parks along Stanford Avenue: Nixon School, Escondido School, Cameron Park, and Werry Park. Receptor 3 in Table 4.12-1 represents the noise sensitive areas along this road.

The measured $L_{eq}$ at Receptors 1 through 5 ranged from 57.1 to 71.9 dBA. The $L_{eq}$ values of Receptors 1 through 5 listed in Table 4.12-1 were chosen from the highest $L_{eq}$ of each long term monitoring. Receptor 5 near El Camino Real shows the highest $L_{eq}$ of 71.9 dBA. Receptor 5 also showed the highest $L_{dn}$ of 77.5 dBA. Single family houses represented by Receptor 5 are directly facing El Camino Real without a soundwall or property wall; therefore, receiving direct impacts from the heavy vehicular noise. The $L_{eq}$ values of Receptors 6 through 11 are short term monitoring results at various places; Receptors 6 and 7 are off campus, and 8 through 11 on campus. The ambient noise levels inside of campus were in the proximity of 57±1 dBA. However, Receptor 11 representing Lyman Graduate Housing showed an $L_{eq}$ of 63.0 dBA. This receptor is adjacent to Campus Drive and therefore is directly influenced by vehicular noise.

Besides traffic noise from roadways, the noise contribution from Caltrain to student housing and residential areas along Alma Street is quite noticeable. Other noise sources include air conditioning units, heaters, emission stacks, scattered construction activities, and vehicle noise from parking lots. At Stanford Hospital, intermittent helicopter operations and ambulances are also noticeable noise sources. Noise emissions from a parking lot, an emissions stack, and construction activity at Receptors 8 and 9 were also monitored. The noise level ($L_p$) of Serra Parking Lot directly facing Schwab Residential Center, Receptor 8, was 56 dBA. The noise level from an emission stack was measured at McCullough Building along Lomita Mall, Receptor 9. McCullough building is one of the newest academic facilities on the Campus, thus the future design of academic facilities may be similar to this building. An $L_p$ of 57.5 dBA was observed at 40 feet from the building. An $L_p$ of 85 dBA or higher was observed from 50 feet from the construction activity along Lomita Mall at Receptor 9. The major noise contributor of this construction activity was a pavement breaker, which is one of the most commonly used and noisiest types of construction equipment during a typical demolition phase.

### 4.12.A.3 Regulatory Context

The Stanford campus will be directly influenced by the construction activities related to the Stanford GUP as well as by operational noise. Large portions of the campus are adjacent to the City of Palo Alto. Although there are other communities such as Menlo Park adjacent to Stanford, none has as much contiguous land as does Palo Alto, particularly in close proximity to locations proposed for development. Noise sensitive areas in Palo Alto might not be directly influenced by the construction activities but might experience an elevated noise level due to the increased vehicular traffic and construction equipment transport. Santa Clara County and the City of Palo Alto have Noise Elements in their General Plans as well as Noise Ordinances in order to protect the public from potentially excessive noise. A section on vibration is included in the Santa Clara County Noise Ordinance. While the Noise Element is generally used as a planning guideline, the Noise Ordinance is legally enforceable. Stanford University is subject to the Noise Element and Noise Ordinance of the County of Santa Clara. Applicable noise ordinance sections and noise element policies are discussed below. Although the City of Menlo Park has a noise ordinance, it is generally less stringent than that of the City of Palo Alto, and is thus not presented in detail below.

### County of Santa Clara

#### *Noise and Vibration Ordinance*

***Sec. B11-192. Exterior noise limits.*** (1) Maximum permissible sound level by receiving land use.

(a) The noise standards for the various categories of land use as presented in Table 4.12-2 shall apply to all such property within a designated zoning district unless otherwise specifically indicated.

(b) No person shall operate or cause to be operated, any source of sound at any location within the unincorporated territory of the County or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measures on any other property either incorporated or unincorporated, to exceed:

(i) The noise standard for that land use as specified in Table 4.12-2 for a cumulative period of more than thirty (30) minutes in any hour; or

(ii) The noise standard plus 5 dB for a cumulative period of more than fifteen (15) minutes in any hour; or

(iii) The noise standard plus 10 dB for a cumulative period of more than five (5) minutes in any hour; or

(iv) The noise standard plus 15 dB for a cumulative period of more than one (1) minute in any hour; or

(v) The noise standard plus 20 dB or the maximum measured ambient, for any period of time.

(c) If the measured ambient level exceeds that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be increased in 5 dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(d) If the noise measurement occurs on a property adjacent to a zoning district, the noise level limit applicable to the lower noise zone plus 5 dB, shall apply.

(e) If for any reason the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least 10 dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is 5 to 10 dB, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.

## Table 4.12-2

Exterior Noise Limits
(Levels not to be exceeded more than 30 minutes in any hour)

| Receiving Land Use Category | Time Period | Noise Level (dBA) |
|---|---|---|
| One- and Two- Family Residential | 10 PM – 7 AM | 45 |
| | 7 AM – 10 PM | 55 |
| Multiple Family Dwelling | 10 PM – 7 AM | 50 |
| Residential Public Space | 7 AM – 10 PM | 55 |
| Commercial | 10 PM – 7 AM | 60 |
| | 7 AM - 10 PM | 65 |
| Light Industrial | Any Time | 70 |
| Heavy Industrial | | 75 |

Source: Santa Clara County Noise and Vibration Ordinance - Table B11-192 (Ord. No. NS-517.18, 9-22-81; Ord. No. NS-517.54, §§9, 10, 6-8-93)

***Sec. B11-194. 2.6. Construction/demolition*:** The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter. (a) Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekdays and Saturday hours of 7:00 PM and 7:00 AM, or at any time on Sunday or holidays, such that the sound therefrom creates a noise disturbance across residential or commercial real property line, except for emergency work of public service utilities or by variance. This section shall not apply to the use of domestic power tools as specified in Section B11-194 (2.11). (b) Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

(i) Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment are shown in Table 4.12-3.

(ii) Stationary Equipment. Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment are shown in Table 4.12-4.

**Table 4.12-3**

Maximum Noise Levels for Short-Term Operation of Mobile Equipment

| | **Single & Two Family Dwelling Residential Area** | **Multi-Family Dwelling Residential Area** | **Commercial Area** |
|---|---|---|---|
| Daily, except Sundays and Legal Holidays<br>7 AM – 7 PM | 75 dBA | 80 dBA | 85 dBA |
| Daily, 7 PM to 7 AM and all day Sunday and Legal Holidays | 50 dBA | 55 dBA | 60 dBA |

**Table 4.12-4**

Maximum Noise Levels for Long-Term Operation of Stationary Equipment

| | **Single & Two Family Dwelling Residential Area** | **Multi-Family Dwelling Residential Area** | **Commercial Area** |
|---|---|---|---|
| Daily, except Sundays and Legal Holidays<br>7 AM – 7 PM | 60 dBA | 65 dBA | 70 dBA |
| Daily, 7 PM to 7 AM and all day Sunday and Legal Holidays | 50 dBA | 55 dBA | 60 dBA |

***Sec. B11-194. 2.7 Vibration:*** Operating or permitting the operation of any device that creates a vibrating or quivering effect that (a) endangers or injures the safety or health of human beings or animals, or (b) annoys or disturbs a person of normal sensitivities, or (c) endanger or injures personal or real properties. (Ord. No. NS-517.18, 9-22-81) (Santa Clara, 1984)

### *Noise Element*

Santa Clara County uses $L_{dn}$ as the basis of its Noise Compatibility Standards, which indicate three levels of concern for outdoor noise impacts for different land uses: satisfactory, cautionary, and critical. Noise at the satisfactory level pose no serious threat to the given land use. Residential and commercial uses exposed to an $L_{dn}$ less than 55 dBA and 65 dBA, respectively, are in this category. Noise at the cautionary level requires that noise attenuation methods be implemented to protect the land use, while noise at the critical level normally discourages the land use unless the solutions to noise attenuation have been designed for noise reduction by a professional who is competent in sound reduction. Residential uses exposed to $L_{dn}$ between 55 and 65 dBA are considered cautionary, while 65 and 75 dBA would be considered cautionary for commercial uses. When noise is greater than 65 dBA or 75 dBA, for residential and commercial uses, respectively, the level of concern is considered critical. (Santa Clara, 1995)

## ***City of Palo Alto***

### *Noise Ordinance*

***9.10.030 Residential property noise limits.*** (a) No person shall produce, suffer or allow to be produced by any machine, animal or device, or any combination of same, on residential property, a noise level more than six dB above the local ambient at any point outside of the property plane. (b) No person shall produce, suffer or allow to be produced by any machine, animal, or device, or any combination of same, on multi-family residential property, an noise level more than six dB above the local ambient three feet from any wall, floor, or ceiling inside any dwelling unit on the same property, when the windows and doors of the dwelling unit are closed, except within the dwelling unit in which the noise source or sources may be located. (Ord, 2664 § 1(part), 1972)

***9.10.040 Commercial and industrial property noise limits.*** No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on commercial or industrial property, a noise level more than eight dB above the local ambient at any point outside of the property plane. (Ord, 2664 § 1(part), 1972)

***9.10.050 Public property noise limits.*** (a) No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on public property, a noise level more than fifteen dB above the local ambient at a distance of twenty-five feet or more, unless otherwise provided in this chapter. (b) Sound performances and special events not exceeding eighty dBA measured at a distance of fifty feet are exempt from this chapter when approval therefore has been obtained from the appropriate governmental entity, except as provided in Section 22.04.1870 of this code. (Ord, 2664 § 1(part), 1972)

***9.10.060 Special provisions.*** (b) Construction. Except for construction on residential property as described in subsection (c) of this section, construction, alteration and repair activities, which are authorized by valid city permit shall be allowed between the hours of eight a.m. and eight p.m. Monday through Friday, nine a.m. and eight p.m. on Saturday, and ten a.m. and six p.m. on Sundays and holidays, if they meet at least one of the following standards:

(1) No individual piece of equipment shall produce a noise level exceeding one hundred ten dBA at a distance of twenty five feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty five feet from the equipment as possible.

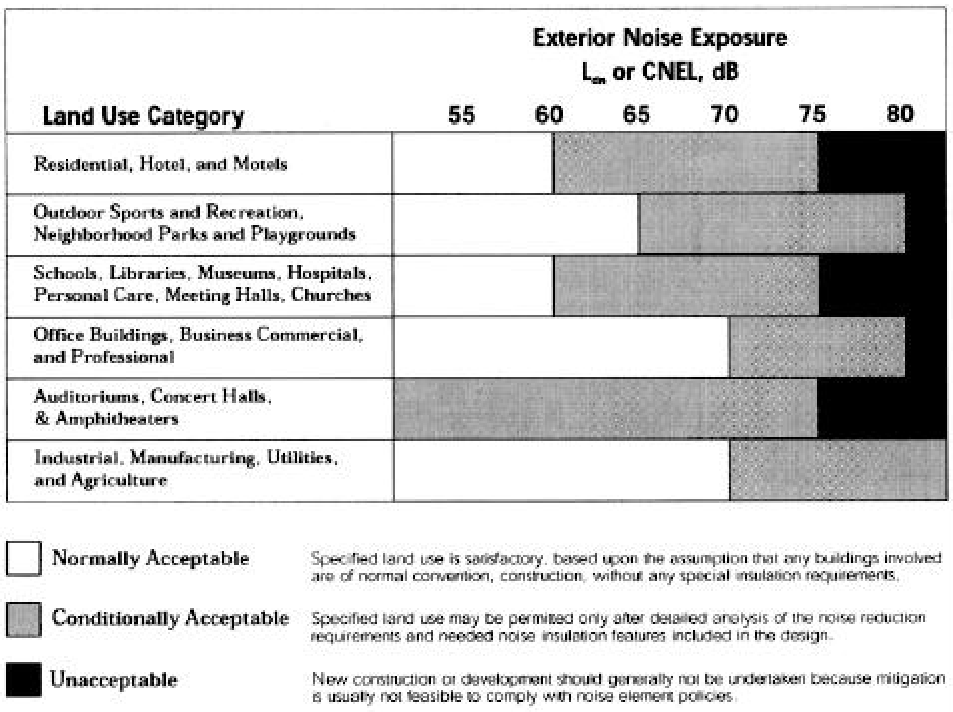
(2) The noise level at any point outside of the property plane of the project shall not exceed one hundred ten dBA. Posting notice of construction hours is required. The holder of a valid construction permit for a construction project within this city, which project if located within five hundred feet of any residential zone, shall post a sign at all entrances to the construction site upon commencement of construction, for the purpose of informing all contractors and subcontractors, their employees, agents, materialmen and all other persons at the construction site, of the basic requirements of this chapter.

(Ord. 3881 § 11, 1989: Ord. 3790 § 1, 1989: Ord. 3763 § 1, 1987: Ord. 3751 § 2, 1987: Ord. 3640 § 1, 1985: Ord. 2664 § 1 (part), 1972) (Palo Alto, 1987)

### *Noise Element*

The City of Palo Alto also uses $L_{dn}$ as the basis of its Noise Compatibility Standards which are described in Policy N-39 and Policy N-41 of the Palo Alto Comprehensive Plan. The City indicates three levels of concern for outdoor noise impacts for different land used: normally acceptable, conditionally acceptable, and unacceptable. Figure 4.2-3 shows land use compatibility for the City of Palo Alto. However, staying within the “Normally Acceptable” range may cause the project to be considered to cause a significant degradation of the noise by the following criteria:

- The project would cause the average 24-hour noise level ($L_{dn}$) to increase by 5.0 dB or more in an existing residential area, even if the $L_{dn}$ would remain below 60 dB;
- The project would cause the $L_{dn}$ to increase by 3.0 dB or more in an existing residential area, thereby causing the $L_{dn}$ in the area to exceed 60 dB;
- The project would cause an increase of 3.0 dB or more in an existing residential area where the $L_{dn}$ currently exceeds 60 dB. (Palo Alto, 1999)




Source: Palo Alto Comprehensive Plan

**Figure 4.12-3**
**Land Use Compatibility for Community Noise Environment**

### *FHWA/Caltrans Traffic Noise Criteria*

The County of Santa Clara and the cities of Palo Alto and Menlo Park do not specifically address peak hour traffic noise limits in their Noise Ordinances or Noise Elements. Therefore, FHWA/Caltrans traffic noise criteria can be used to evaluate noise impacts at noise sensitive areas adjacent to major principal roads. Peak hourly $L_{eq}$ is normally used to evaluate noise impacts from a roadway. When peak hourly noise level is reduced to an acceptable level, the hourly noise levels of other hours of the day will also be below the acceptable noise limit. Hourly $L_{eq}$ is used by the FHWA and Caltrans to conduct noise studies and design noise mitigation/abatement measures, such as soundwalls.

Noise Abatement Criteria (NAC) established by the FHWA in the “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (23 CFR Part 772, 1997) and criteria adopted by Caltrans in the Traffic Noise Analysis Protocol (Caltrans, 1998) are used to determine the peak hour noise impacts for this project. The FHWA noise abatement criteria are reproduced in Table 4.12-5.

The noise abatement criteria levels in Table 4.12-5 represent a balance between what may be desirable for the various land use activities and what may be achievable. For residential land uses, parks, schools, and hospitals, the outdoor peak hour noise ($L_{eq}$) criterion is 67 dBA and the interior noise criterion is 52 dBA

According to the noise abatement criteria adopted in the Caltrans Traffic Noise Analysis Protocol, when traffic noise impacts have been identified, noise abatement measures must be considered. Traffic noise impacts occur when one or more of the following occur: 1) a substantial noise increase; 2) predicted noise levels approach or exceed NAC. A noise increase is considered by Caltrans to be substantial when the predicted noise levels with the project exceed existing noise levels ($L_{eq}$) by 12 dBA. A traffic noise impact will also occur when predicted noise levels with project approach within 1 dBA, or exceed the Noise Abatement Criteria (Table 4.12-5).

**Table 4.12-5**

Noise Abatement Criteria

| Activity Category | Noise Abatement Criteria ( dBA) $L_{eq}$ | Description of Activity Category |
|---|---|---|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 (Exterior) | Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. |
| C | 72 (Exterior) | Developed lands, properties, or activities not included in Categories A or B above. |
| D | -- | Undeveloped lands |
| E | 52 (Exterior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums. |

Source: 23 CFR Part 772, 1997

## 4.12.B EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

Noise ordinances of the County of Santa Clara and the City of Palo Alto mandate noise limits specifically on construction noise and ambient noise level. Noise Elements of the County of Santa Clara and the City of Palo Alto provide guidance for project compliance with $L_{dn}$ limits. However, none of the Noise Ordinances or Noise Elements specifically address peak hour noise limits from roadways. FHWA/Caltrans traffic noise criteria may be used for the noise impacts from roadways during peak hours. The more stringent noise limits among these regulations are likely to govern the allowable noise emission. The following provides a brief discussion of noise standards/criteria that are applicable to construction of the proposed project. Evaluation criteria with points of significance are summarized in Table 4.12-6. The City of Menlo Park noise ordinance is also included in the Table 4.12-6.

## Table 4.12-6

Evaluation Criteria with Points of Significance - Noise

| Evaluation Criteria | As Measured by | Point of Significance | Justification |
|---|---|---|---|
| 1. Will construction of the project expose the public to high noise levels? | Projected noise levels at boundary between residential and other uses | Greater than $L_{eq}$ of 60 dBA between 7 AM and 7 PM, except Sundays and Holidays | County of Santa Clara Noise Ordinance<br>Santa Clara County Environmental Evaluation Checklist Items J(a) and (d) |
| | | Noise limit exceptions between 8 AM and 6 PM during weekdays | City of Menlo Park Noise Ordinance<br>(Menlo Park, 1999) |
| 2. Will operation of the project expose the public to high noise levels? | Projected outdoor noise levels, $L_{eq}$ or $L_p$, at noise sensitive land uses | Greater than $L_{eq}$ of 55 dBA between 7 AM and 10 PM<br>Greater than $L_{eq}$ of 45 dBA between 10 PM and 7 AM<br>Increase of 5 dB when ambient noise level exceeds permissible noise levels | County of Santa Clara Noise Ordinance<br>Santa Clara County Environmental Evaluation Checklist Items J(a) and (c) |
| | | 6 dB above the local ambient for noise in Palo Alto | City of Palo Alto Noise Ordinance |
| 3. Will operation of the project expose the public to high traffic noise levels? | Peak hour traffic noise, Leq | Greater than or equal to 66 dBA at anytime | Caltrans Noise Abatement Criteria |
| 4. Will vibration from project construction cause any disturbance? | Root mean square (RMS) velocity for human perception or Peak particle velocity (PPV) for building structures | Annoyance may occur at any point above the 0.01 inch/second perception threshold<br>Building damage criterion is 0.2 inch/second PPV | County of Santa Clara Noise Ordinance<br>Santa Clara County Environmental Evaluation Checklist Item J(b)<br>City of Menlo Park Noise Ordinance |

Source: Parsons Engineering Science

## 4.12.C IMPACTS AND MITIGATION MEASURES

**Impact: NOISE-1: Will construction of the project expose the public to high noise levels?**

Analysis: *Significant*

Construction noise and vibration varies greatly depending on the construction phases, type and condition of equipment used, and layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment. The engine, which is usually diesel, is the dominant noise source for most construction equipment. This is particularly true of engines without sufficient muffling. The noise from special activities such as utilizing a jackhammer and pavement breaker, also become dominant. Jackhammers and pavement breakers are also the main contributors of vibration during construction.

Using the typical sound emission characteristics, $L_{eq}$ from various construction activities were calculated. This calculation may deviate from the actual noise levels experienced by noise sensitive receptors close to the future construction sites. Table 4.12-7 shows outdoor noise levels likely to be experienced during construction activity at 50 feet and 150 feet from the center of the construction activities. The noise data were obtained from the consultant's experiences with other major construction projects. Even though the noise levels in the table represent typical values, there can be wide fluctuations in the noise emissions of similar equipment.

In general, construction activities are carried out in phases and each phase has its own noise characteristics based on the mix of construction equipment in use. Construction activities can be divided into four different phases: (1) Demolition, (2) Site Preparation, (3) Building Shell, and (4) Interior Improvements. The demolition and site preparation phases typically generate the most elevated noise amongst the four different phases, because the equipment used in these phases of construction (excavator, breaker, grader, jackhammer, pavement breaker, and front-end loader) are the loudest. Construction noise also depends on the duration of the noise, which requires the average utilization factors or duty cycles (i.e. the percentage of time during operating hours that the equipment operates under full power during each phase). Using the typical sound emission characteristics, as given in Table 4.12-7, it is then possible to estimate $L_{eq}$ at various distances from the construction site. The estimated value of $L_{eq}$ at 50 feet from the geometric center of construction activity during the demolition phase was estimated to be approximately 84 dBA, which is similar to the noise monitoring result, 85 dBA, for actual pavement breaking at the Stanford campus center. Table 4.12-7 does not assume any noise mitigation measures or any noise limits for the contractor.

## Table 4.12-7

### Estimated Construction Noise Levels

| Construction Equipment | No. | Lp at 50 ft (dBA) | Usage Factor | Effective Usage Factor* | Leq (dBA) | |
|---|---|---|---|---|---|---|
| | | | | | 50 Ft | 150 Ft |
| Demolition | | | | | | |
| Front-end loader | 2 | 82 | 0.5 | 0.3 | 77 | 67 |
| Excavator | 2 | 82 | 0.5 | 0.3 | 77 | 67 |
| Water Truck | 2 | 76 | 0.4 | 0.24 | 70 | 60 |
| Street Sweeper | 1 | 80 | 0.3 | 0.09 | 70 | 60 |
| Pavement Breaker | 1 | 90 | 0.5 | 0.15 | 82 | 72 |
| Jackhammer | 2 | 89 | 0.3 | 0.18 | 82 | 72 |
| | | | | Overall $L_{eq}$ for This Construction Phase = | **84** | **75** |
| Site Preparation | | | | | | |
| Grader | 1 | 85 | 0.4 | 0.11 | 75 | 66 |
| Backhoe | 2 | 78 | 0.4 | 0.21 | 51 | 62 |
| Excavator | 2 | 82 | 0.5 | 0.30 | 77 | 67 |
| Paver | 1 | 79 | 0.3 | 0.09 | 69 | 59 |
| Water Mixer | 1 | 79 | 0.3 | 0.09 | 69 | 59 |
| Water Tank | 1 | 76 | 0.4 | 0.12 | 67 | 57 |
| | | | | Overall $L_{eq}$ for This Construction Phase = | **81** | **71** |
| Building Shell | | | | | | |
| Crane | 1 | 75 | 0.5 | 0.15 | 67 | 57 |
| Compressors | 2 | 67 | 0.25 | 0.08 | 56 | 46 |
| Concrete Mixer/Finisher | 1 | 79 | 0.3 | 0.09 | 69 | 59 |
| Grader | 1 | 85 | 0.2 | 0.06 | 73 | 63 |
| | | | | Overall $L_{eq}$ for This Construction Phase = | **75** | **65** |
| Interior Improvement | | | | | | |
| Equipment Truck | 1 | 76 | 0.13 | 0.04 | 62 | 52 |
| Various Hand Tool | 1 | 67 | 0.13 | 0.04 | 53 | 43 |
| | | | | Overall $L_{eq}$ for This Construction Phase = | **62** | **53** |

Source: Parsons Engineering Science

- Assuming that the equipment are operating at, or near, their maximum sound levels of 30 percent of the time during operation.

As predicted in Table 4.12-7, noise sensitive areas within and outside of the Stanford campus center would be exposed to high noise levels especially during demolition and site preparation. However, because the County's noise ordinance only controls noise levels at the property line, noise impacts would only be considered significant if they affected off-campus receptors.

Construction of an additional 2,035,000 gross square feet of academic uses as outlined in the GUP would impact short term noise levels at the existing student housing units as well as the residential areas along Stanford Avenue and El Camino Real. The construction of academic and support facilities would also influence academic or cultural activities within the Stanford campus center, which rely on a quiet environment. The proposed academic or support facilities such as the prospective performing arts facility, libraries, and research buildings would be located in the campus center. Therefore, academic facilities adjacent to the prospective construction sites in the campus center (e.g. Graduate School of Business and Main Quad) would be impacted by short term construction noise.

Impacts to receptors within the campus are not considered significant. Due to the potential exceedance of the County's noise regulations at residential locations outside the campus (e.g. residences on Stanford Avenue), this impact is considered to be significant.

Mitigation: **NOISE-1: Reduce Construction Noise**

The following measures shall be used to reduce construction-related noise.

- Comply with all the provisions of the County of Santa Clara and the City of Palo Alto Noise Ordinances, including, but not limited to the restrictions on hours of construction and mechanical equipment noise levels.
- Use of a noise-attenuating jacket around the jackhammer.
- Schedule the construction such that the absolute minimum number of equipment would be operating at the same time.
- Use of the latest technology to mitigate construction equipment noise, i.e., engine enclosures, intake and exhaust silencers, etc.
- Construct 8 to 10 foot high temporary walls along the property lines of the project site adjacent to residential areas, where possible, at the beginning of construction to reduce noise impacts on nearby residents.
- Coordinate classroom relocations with school faculties before demolition or site preparation.
- Maintain good relations with the community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections to unavoidable noise. Communities should be notified in advance of the construction and the expected temporary noise impacts during the construction period.
- Stanford shall post at least one sign no smaller than 1,296 square inches at all active construction sites. The sign shall contain the name and telephone number or e-mail address of the appropriate Stanford person the public may contact to report alleged violations of this Condition R.1 or to register a

complaint about construction noise associated with building projects under this GUP. Stanford shall keep a written record of all such complaints and shall provided copies of these records to the County Planning Office as part of the annual report process. One sign may be used to meet the requirements

After Mitigation: *Significant*

Although the mitigation measures described above will reduce construction noise, it may not always be possible to reduce noise levels to at or below an Leq of 60 dBA, which is the County's standard for noise (see Table 4.12-6). Construction of housing directly across the street from existing off-campus residences on Stanford Avenue has the potential to violate noise standards. Construction periods will exceed the 10-day period that is allowable for short-term operation of mobile equipment, and is thus subject to the more stringent standards for long-term operation of stationary equipment. Construction-period noise would thus be a significant unavoidable impact.

**Impact: NOISE-2: Will operation of the project expose the public to high noise levels?**

Analysis: *Significant*

Noise effects from the implementation of the Stanford CP/GUP include traffic-related noise, and noise from the operation of academic facilities. Noise sensitive areas outside of campus will be more susceptible to traffic related noise, while academic facilities or on campus residential areas will be more susceptible to building-related mechanical noise or parking structure noise. As discussed under NOISE-3, the project would not cause any change in traffic-related noise. Therefore, the impact from this noise source is not significant.

Noise sources from new academic facilities or housing developments include air conditioning units, fans, stacks, trash pick-ups, heaters, and parking lots. The magnitude of noise generation from these types of sources varies noticeably, depending on time of day or season. The noise emission sources are also ubiquitous. Individual noise measurements were conducted at 50 feet from a stack on the McCullough Building (located west of the Main Quad on the Lomita Mall), and 100 feet from the Serra Parking Lot in order to quantify noise levels from each source. The measured noise $L_{eq}$ of the stack and the parking lot at 8:00 AM were 56 and 55 dBA, respectively.

Other operationally related noise sources include the following:

- Mechanical equipment – Mechanical equipment such as air conditioning units, fans, blowers, heaters, and related equipment often generate noise that would exceed the noise standards when the noise levels are measured within 50 feet of the source. These types of operational noise would affect the noise environment primarily within the campus center where student housing is located next to academic facilities. However, it is anticipated that academic facilities and student housing units would be located more than 50 feet apart. Therefore, noise generation from these types of sources would not exceed impact significance levels or affect students in residences.

- Truck movements and trash pick-up – The noise produced by deliveries and trash pick-up at the project site are a potential source of annoyance. The Leq within 50 feet of a delivery and trash truck would be approximately 86 dBA during the heaviest periods of activity. However, at such close range, these types of activities are not anticipated to affect the noise sensitive land uses that are primarily located outside of the campus center.
- Parking Structure Activity – The prospective locations of new parking structures would be the DAPER/Administrative District and Quarry District. Since the main land use of the DAPER/Administrative District is athletics, no noise impacts are anticipated. The Quarry District includes housing for hospital resident/postgraduate fellows. However the exact location and configuration is unknown. Depending on the distance between this development and the proposed parking structure, the $L_{eq}$ during AM and PM peak hours may exceed 55 dBA at the location of the nearest residence. This impact is potentially significant.

Mitigation: **NOISE-2: Reduce Operational Noise**

- Mechanical equipment should be acoustically engineered, with the final engineering design of facilities with such equipment reviewed by a qualified acoustical engineer. Design shall incorporate mufflers, enclosures, and parapets so that the noise generated by these operations would not exceed the noise standard at noise sensitive receptor locations.
- All operational noise sources shall comply with the County Noise Ordinance.
- The project should incorporate design measures to locate noise sources such as loading zones, trash bins, and mechanical equipment as far away from the noise sensitive receptor locations as possible.
- Separate residential uses from parking structures by at least 150 feet.

After Mitigation: *Less than Significant*

Implementation of the design and operational measures described above is expected to be effective in reducing operational noise impacts.

**Impact:** **NOISE-3: Will operation of the project expose the public to high traffic noise levels?**

Analysis: *Less than Significant*

The 2010 traffic noise levels were predicted using 2010 horizon year traffic data prepared for Section 4.4 - Traffic and Circulation (KORVE 2000). Traffic modeling included cumulative development in the project area, and analysis of traffic noise impacts was based on this cumulative development scenario. Increases to vehicular volumes from the implementation of Stanford CP/GUP would be minor in comparison to the cumulative increases in background traffic.

A comparison between the existing traffic noise levels, and the year 2010 levels with/without the implementation of the Stanford CP/GUP is provided in Table 4.12-8. Locations of receptors listed in the table are shown in Figure 4.12-2, and are described in greater detail in Table 4-12-1.

## Table 4.12-8

Year 2010 Predicted Traffic Noise Levels

| Receptor Number | Existing Noise, dBA | | Future No Build | | Future Build, dBA | |
|---|---|---|---|---|---|---|
| | $L_{eq}$ | $L_{dn}$ | $L_{eq}$ | $L_{dn}$ | $L_{eq}$ | $L_{dn}$ |
| 1 | 65 | 62 | 65 | 65 | 65 | 65 |
| 2 | 57 | 55 | 65 | 65 | 65 | 65 |
| 3 | 59 | 59 | 65 | 65 | 65 | 65 |
| 4 | 59 | 61 | 58 | 58 | 58 | 58 |
| 5 | 72 | 78 | 76 | 77 | 76 | 77 |
| 6 | 62 | - | 68/66[3] | 68/66[3] | 68/66[3] | 68/66[3] |
| 7 | 64 | - | 69 | 71 | 69 | 71 |
| 8 | 56 | - | 59 | 59 | 59 | 59 |
| 9 | 58 | - | 58[1] | - | 58[1] | - |
| 10 | 57 | - | 57[2] | - | 57[2] | - |
| 11 | 63 | - | 68 | 69 | 68 | 69 |

Source: Parsons Engineering Science

Notes:

1. This building is away from major arterials, thus the traffic would not affect the noise levels at this location.
2. The dominant noise sources at the hospital are water fountain, ambulance, and parking structure. Roadway noise near the hospital would not affect its noise environment.
3. Peak hour $L_{eq}$ and $L_{dn}$ with the proposed new road alternative.

The peak hour $L_{eq}$ and $L_{dn}$ in Table 4.12-8 indicate that the future noise levels between No Build and Build would be virtually identical. This comparison demonstrates that traffic increases due to the surrounding community growth are the main cause of the increase in future traffic noise.

The peak hour $L_{eq}$ and $L_{dn}$ at Receptors 1 through 4 and 8 would be below the 66 dBA Caltrans criteria. Noise levels at Receptors 1 and 3 were predicted using the speed limit posted of 25 mph on Embarcadero Road and Stanford Avenue, assuming that future traffic calming on Embarcadero will bring speeds closer to posted limits. Noise levels at Receptors 2, 4, and 8 are also below 66 dBA due to their distance from the roadways.

Areas near Receptors 5, 6, 7, and 11 would exceed the $L_{eq}$ of 66 dBA at year 2010. With the exception of Receptor 5, the $L_{eq}$ would increase by 5 dBA or higher between the Future No Build/Future Build and the Existing noise conditions. However, the existing peak hour $L_{eq}$ and $L_{dn}$ at Receptor 5 currently exceeds the 66 dBA criteria. Although these changes are considered significant, they are not attributable to the project.

Noise levels at the campus center and Stanford Hospital, represented by Receptors 9 and 10, respectively, would not be affected by traffic noise due to their distance from the main arterials. Noise sources at Receptor 9 include mechanical noise or academic activities, while at Receptor 10 the major noise sources are from the water fountain, ambulance, and intermittent helicopter operation. Assuming the major noise sources remain the same, it is expected that the current noise levels will not change at these locations.

Mitigation: No mitigation is necessary because the project does not result in any changes in predicted future noise levels. Mitigation for traffic impacts is incorporated in the project to reduce traffic levels. However, because there is no perceptible difference in noise levels between the no project and project condition, reductions in project traffic would not be expected to reduce the noise level.

**Impact: NOISE-4: Will vibration from project construction cause any disturbance?**

Analysis: *Less than Significant.*

Vibration impact is most noticeable during demolition and site preparation. However, vibration generated by jackhammer or pavement breaker during these phases of construction is not likely to cause any structural damage. The magnitude of vibration caused by these types of equipment would be approximately 0.09 inch/second as peak particle velocity (PPV) at 25 feet from the geometric center of the activity. This magnitude is lower than the building damage criteria of 0.2 inch/second as PPV. Considering 0.01 inch/second as root mean square velocity (RMS) for a perception threshold, residents or students within 100 feet of the construction activities may perceive vibration during these activities. Given the low levels of vibration, and the short-term nature of activities, construction-related vibration is not expected to annoy a person of normal sensitivities. The vibration would be perceived excessive by academic activities at certain facilities which rely on a “free of vibration” environment, such as engineering research, mechanical laboratories, and medical laboratories. However, Santa Clara County’s noise and vibration ordinance only pertains to impacts at the campus property line, so vibration impacts within the campus would not be considered significant.

Mitigation: No mitigation is necessary.

## 4.12.D CUMULATIVE IMPACTS AND MITIGATION MEASURES

Traffic noise impacts were determined above for the cumulative scenario, which includes all project traffic increases as described in Section 4.4, Traffic and Circulation. Construction and operation noise will be site-specific and time-specific. Future construction projects off-campus are not expected to be close enough to the campus center construction sites to cause cumulative impacts. Cumulative effects would thus be limited to projects within Stanford lands: the proposed Stanford University Medical Center, Center for Cancer Treatment and Prevention; Carnegie Foundation Research/Office Facility; and Sand Hill Road Corridor Projects.

**Impact: NOISE-C1: Will construction of the project combined with other nosie sources expose the public to high cumulative noise levels?**

Analysis: *Significant*

Although project impacts are significant, the effects will be limited to the construction period. Significant impacts will also be confined to the immediate area around the construction zone. City of Palo Alto construction projects outside of Stanford lands are expected to be too far from project construction areas to result in cumulative effects. Other construction projects within Stanford lands could result in cumulative noise effects if construction takes place simultaneously. The effects would primarily be associated with the perceived “noisiness” of the environment. The more construction that is taking place on campus simultaneously, the more noisy the environment will be perceived to be.

Mitigation: Feasible mitigation for construction impacts would be required for each construction project. No further mitigation is possible. .

After Mitigation: *Significant*

Construction impacts to off-campus receptors are likely to be significant even with mitigation. Although construction is temporary, it will contribute to the general increase in the noise level in the local environment in a significant fashion.

**Impact: NOISE-C2: Will operation of the project expose the public to high cumulative noise levels?**

Analysis: *Less than Significant*

As discussed under impact NOISE-2, the project would have a significant impact before mitigation, After mitigation, design of project facilities would incorporate noise control features and maintain an acceptable noise environment within the project site and environs. Therefore, operational noise levels associated with the Sand Hill Road Corridor Projects, Carnegie Foundation Research/Office Facility, and Cancer Center would not combine with the project to create additional noise impacts.

Mitigation: See NOISE-2.

After Mitigation: *Less than Significant*

The project's contribution to noise impacts would not be cumulatively considerable.

**Impact: NOISE-C3: Will operation of the project expose the public to high cumulative traffic noise levels?**

Analysis: *Less than Significant*

Cumulative growth in the project area would result in traffic noise levels that would exceed standards (Table 4.12-8). However, the project's contribution to this noise source is de minimis and thus, not cumulatively considerable.

Mitigation: No project-related mitigation is necessary because the project's incremental impacts will be de minimis.

After Mitigation: *Less than Significant*

The minimal noise generated by Stanford traffic will not make a noticeable contribution to overall traffic noise levels.

**Impact: NOISE-C4: Will vibration from project construction plus cumulative projects cause any disturbance?**

Analysis: *Less than Significant*

The project has the potential for generating noticeable vibration during construction. Other construction projects within Stanford lands could result in cumulative vibration effects if construction takes place simultaneously Given the low levels of vibration, the short distance over which vibration effects can be detected, and the short-term nature of activities, construction-related vibration is not expected to be cumulatively significant.

Mitigation: No mitigation is needed.

# 5 GROWTH INDUCING IMPACTS OF THE PROPOSED PROJECT

## 5.1 BACKGROUND

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "…the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways, including through the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion below concentrates on the balance between employment and housing at Stanford University and the additional, indirect employment that might be induced by the proposed project. This latter effect is called the "multiplier effect" because a project involving economic activity will typically stimulate other economic activity in the vicinity due to the addition of employees to the local economy and the added demand for business services.

### 5.1.A Employment

Stanford University is located in an area with one of the highest ratios of jobs to population in the country. According to the Association of Bay Area Governments (*Projections 2000),* Santa Clara County is projected to have over one million jobs in the year 2000, or approximately 0.61 jobs per county resident. Palo Alto is anticipated to have over 1.6 jobs for every resident in 2000. The statewide average (January 2000) is 0.49 jobs per resident (California Employment Development Department; California Department of Finance). The Employment Development Department reports that unemployment in the communities surrounding Stanford has consistently been at two percent or less of the labor force. Combined with the extraordinary high labor participation rates (percent of the population in the labor force) of area residents, virtually any significant job growth would have to be filled by individuals from outside the region.

Countywide, population growth is expected to be 23 percent between the year 2000 and 2020, whereas job growth is expected to exceed 21 percent (Association of Bay Area Governments, *Projections 2000)*. Many of these new residents, such as children and retirees, will not participate in the labor movement, creating an imbalance between new jobs and new population. Labor participation is also expected to increase faster than population growth, further reducing the proportion of area residents who will be available to fill jobs anticipated to be created in Santa Clara County over the next 20 years.

In Palo Alto, job growth is expected to be less than one-third (six percent) the countywide rate over the next twenty years, and the proportion of employed residents is expected to increase by 12 percent. Even this modest rate of increase will lead to further tightening of the local labor market, forcing employers to recruit more workers from outside the local area.

According to the California Employment Development Department, nearly 70% of residents in Santa Clara County are employed in service producing industries such as transportation, trade, finance, and government. However, the single largest employment industries were in the manufacturing sector including computer, communication, and other electronic equipment—about 141,000 jobs, or 14% of all jobs held by county residents. This is consistent with the reputation of Santa Clara County as "Silicon Valley," the high-technology center of computer, electronic, communications, and information companies. Thousands of additional individuals are employed by firms that provide goods and services to these "high tech" firms.

Not surprisingly, many of the jobs associated with these technology companies—computer technology specialists and research scientists—are projected to have the highest rates of job growth over the next several years.

### 5.1.B Employment – Housing Balance

While the availability and cost of housing in relation to employment are important to understanding the effects of the proposed CP and growth associated with the GUP, there is a difference between socio-economic effects and physical environmental effects. Changes to the demographics of an area from the implementation of the Plan (such as increased population or employment) are not, in and of themselves, physical environmental impacts. Thus, these changes are not appropriately considered significant impacts. However, population and employment changes may cause environmental impacts. This EIR considers the environmental effects of the additional people associated with the proposed project in terms of increased traffic, traffic-generated air quality and noise, increased demands on public services and utilities, and growth inducement. Section 15131 of the CEQA Guidelines states economic or social information may be included in an EIR or may be presented in whatever form the agency desires.

In 1998-99, there were approximately 12,000 employees (faculty and staff) at Stanford University general campus and 5,500 at Stanford University Medical Center (SUMC). Another 25,000 individuals are employed on Stanford-owned land in Palo Alto (primarily in the Stanford Research Park). SUMC and Stanford University are two of the 12 major employers in Palo Alto. It is estimated that approximately 12,000 persons reside on the Stanford campus. Depending on whether the employment – housing ratio includes SUMC employees, there are between 1.0 and 1.48 jobs per resident, far above the countywide average but just below the Palo Alto average. An unusual aspect of this ratio is the presence of employer-provided housing (primarily through ground leases) on Stanford lands in the unincorporated County. All housing in the County portion of the campus must serve an "academic support" function and be made available only to Stanford students, faculty, and staff.

Table 5-1 compares population and housing growth between 1990 and 2000.

## Table 5-1

Population and Housing Growth at Stanford and Nearby Jurisdictions (1990-2000)

| Jurisdiction | 1990 Population | 1990 Housing Units | 2000 Population | 1999 Housing Units*** |
|---|---|---|---|---|
| Stanford CDP* | 18,097 | 956 faculty/staff units<br>8,564 students housed | 12,358** | 989 faculty/staff units<br>9,354 students housed |
| Palo Alto | 55,900 | 25,188 | 61,500 | 25,952 |
| Menlo Park | 28,403 | 12,428 | 31,800 | 12,723 |
| Santa Clara County | 1,497,577 | 540,240 | 1,736,700 | 581,532 |

Sources: U.S. Census Bureau, 1990 Census; California Department of Finance, Stanford University web site

* The Stanford Census Designated Place (CDP), a U. S. Census Bureau geographical designation that includes lands within the City of Palo Alto, thus the population number for 1990 is higher than the actual population of the campus.

** Estimate of the 2000 Stanford campus resident population (See Table 4.3-1). This is not the same geographic area as the Stanford CDP defined in the 1990 Census. Year 2000 Census data for the Stanford CDP was not available as of June 2000.

*** 2000 housing unit information not available from the Department of Finance as of June 2000.

According to the Santa Clara County General Plan, a demand for one dwelling unit will be assumed for each 1.56 jobs created. Using this ratio, general campus and SUMC employment would generate demand for approximately 11,200 dwelling units, which is greater than the 989 faculty and staff dwelling units available in 1999. This estimate assumes that some employees are spouses or domestic partners of other employees. The University plans to construct up to 668 additional faculty and staff dwelling units between 2000 and 2010, which, if built, should help improve the availability of housing for University employees, even with projected employment growth. However, this growth is estimated to generate demand for 640 units (see Chapter 4.3). In addition, Stanford University has received approval from the City of Palo Alto, and initiated construction on a 628-unit rental apartment housing project at Stanford West, with priority eligibility for faculty and staff, and a senior housing project consisting of 388 living units. Project approval would require that 152 of the 628 rental units be below-market-rate units, with priority assigned to Stanford faculty and staff. Stanford also has various programs of financial assistance for affordable housing for its faculty and eligible staff, including a second mortgage loan program, a down payment assistance loan program, a housing allowance program, a limited equity mortgage loan, and a graduated payment mortgage loan.

Even with the additional dwelling units and financial assistance, based on existing patterns, Stanford has projected that 80 percent or more of University employees will continue to find housing in the communities surrounding the campus, outside the local area, or even outside the region. Many will do so by choice, for varying personal reasons, but most will likely do so because of the deficit of nearby housing affordable to low- and moderate-income employees. The magnitude of this deficit is difficult to quantify without specific information on the incomes of University workers, which was not available from the University. Even with income information, it is difficult to predict the latent demand among University employees for housing within the vicinity of the University. Current residence patterns are not necessarily relevant because they reflect, in large part, the current shortage of housing affordable to most University employees. This shortage should not be used as a justification for estimating a low percentage of future housing demand that can be expected in the local area from the project. Without a detailed and statistically valid preference survey of University employees, it is impossible to know what percentage of faculty and staff would live on or near the Stanford campus if they could.

### 5.1.C Employment Multiplier Effect

According the Association of Bay Area Government's 1987 *Input-Output and Economic Multipliers for the San Francisco Bay Region*, a project involving education and education-related research and development can be expected to generate a multiplier of between 1.08 and 2.05. This means that each job created by the Stanford project can be expected to stimulate between 0.08 and 1.05 additional jobs from other economic activity stimulated by implementation of the project, such as business and personal services geared to the additional campus residents and employees. It is unlikely that the maximum theoretical impact will be achieved. In fact, ABAG, in its explanation of the model and use of the multipliers cautions that the mid-point between the high and low impact should generally be used in the absence of specific, credible information that suggests the maximum or minimum multiplier will be achieved. Using the mid-point of the range in ABAG's model, each job created by the University in education and research could be expected to create, on the average, 0.57 additional jobs. The possible range of impact, however, is between 0.08 and 1.05 secondary jobs for each new Stanford job.

## 5.2 EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

**Table 5-2**

Evaluation Criteria with Point of Significance – Growth Inducing Impacts

| Evaluation Criteria | As Measured by | Points of Significance | Justification |
|---|---|---|---|
| 1. Will the project induce growth or concentration of population thereby leading to indirect impacts on the physical environment? | Number of additional residents and jobs projected by Community Plan in relation to additional housing demand and projected supply | a. Any increase in housing demand that cannot be met by current supply .<br>b. Any increase in lands designated for development | Santa Clara County Environmental Evaluation Checklist Item O-1 |

**Table 5-2**

Evaluation Criteria with Point of Significance – Growth Inducing Impacts

| Evaluation Criteria | As Measured by | Points of Significance | Justification |
|---|---|---|---|
| 2. Will the provision of infrastructure improvements associated with the project stimulate population and housing growth beyond that projected in the Palo Alto Comprehensive Plan or the Santa Clara County General Plan? | Capacity of infrastructure to accommodate more population and housing growth than anticipated in the University Community Plan or the Santa Clara County general plan | Any such excess | City, and County plans<br>Santa Clara County Environmental Evaluation Checklist Item |

## 5.3 IMPACTS AND MITIGATION MEASURES

**IMPACT: GI-1: Will the project induce growth or concentration of population thereby leading to indirect impacts on the physical environment?**

Analysis: *Significant*

According to ABAG's *Projections 2000*, the number of employed residents in the Palo Alto subregion, including the Stanford University campus is projected to increase from 44,300 in 2000 to 45,800 in 2010 (3.4 percent) not including growth from the GUP. The total number of jobs in the subregion is projected to increase from 106,690 to 109,803 (2.0 percent), slightly less than the increase in employed residents. Nevertheless, the number of local jobs will continue to exceed the number of local residents who work by a margin of over two-to-one (109,803 jobs versus 45,800 employed residents). Of these increased jobs, approximately 1,000 are anticipated to result from increased University faculty and staff employment to be added under the proposed GUP. In addition, there will be over 1,200 additional graduate students and post-graduate fellows, many of whom will be employed by the University at least part-time as well as reside on campus.

The multiplier effect of an additional 1,000 University jobs is anticipated to result in 1,570 total new jobs, although under an extreme scenario, the total number of new jobs could be as high as 2,050. Although, by itself, the employment growth represents only one to two percent of total projected employment in the Palo Alto subregion, its effect on housing demand and population growth is potentially significant due to the existing shortage of housing, particularly for low- and moderate-income households (See Section 4.3, Population and Housing).

Neither the Palo Alto Comprehensive Plan nor the Santa Clara County General Plan anticipated the specific housing and non-residential facilities proposed in the GUP as these general plans were prepared before the University released its draft CP/GUP. The Santa Clara County General Plan anticipated a population increase of more than 340,000 persons between 1990 and 2010, to over 1.8 million. This figure is close to the 1.9 million currently projected for 2010 in ABAG's Projections 2000. Not all of the likely growth-induced development will occur within the City of Palo Alto or in Santa Clara County outside of current University-owned lands. Both the Stanford Research Park and Shopping Center can accommodate additional development, and may be the recipient of indirect growth-induced development.

The Palo Alto Comprehensive Plan (Housing Technical Document, Chapter 5) anticipated that the City would need 1,244 additional housing units between 1996 and 2003 based on population and employment growth. Although the demand for housing is not anticipated to be in excess of that already projected in the Santa Clara and Palo Alto general plans, both plans acknowledge the current and ongoing severe shortage of housing in relation to the number of jobs in the region, and particularly affordable housing for low- and moderate-income households.

According to the Santa Clara County General Plan, the County needed 12,200 more housing units than the number available in 1990. The Palo Alto Comprehensive Plan acknowledges that affordable rental housing, in particular, is in such short supply that all existing rental housing units should be preserved if possible.

In addition to potential growth-inducing employment, population and housing, traffic, public services and utilities, and other environmental issues discussed in this EIR may also be affected by the added growth stimulated by the project.

The Stanford proposed CP, Santa Clara County General Plan, and Palo Alto Comprehensive Plan include growth management policies whose purposes are to address cumulative and growth-inducing impacts from planned development in the region.

The Santa Clara County General Plan (Part 2, Chapter B) contains three strategies for managing growth: 1) promoting compact urban development, 2) achieving balanced growth, and 3) improving coordinated, countywide planning. The County has adopted a number of policies to implement these strategies that address:

- Development within urban service areas and growth boundaries (C-GD 1-3, 19-22);
- Promoting infill development to reduce growth impacts (implementation recommendation C-GD [i]3);
- Compact development that enhance the cost-effectiveness and maximize the use of transportation and other urban investments (C-GD 29-36); and

- Ensuring a balance between, and efficient distribution and density of, employment and housing (C-GD 37-42).

The Stanford CP contains five relevant strategies (Chapter 2: Growth and Development). The strategies include:

1. Accommodate Planned Growth;
2. Mitigate and Monitor the Impacts of Growth;
3. Meet Urban Service Needs;
4. Facilitate Local Planning Coordination; and
5. Promote Compact Urban Development Patterns.

Growth Management Policies in the Stanford CP include:

- SCP-GD1, regarding consistency of Stanford land uses with plans, permits, and agreements of Santa Clara County and Palo Alto;
- SCP-GD 3 & 4, regarding mitigation of significant environmental impacts and environmental analysis of any proposed changes to CP/GUP;
- SCP-GD 5, regarding meeting urban service needs from the CP/GUP; and
- SCP-GD 13, regarding promotion of compact urban development patterns.

The Palo Alto Comprehensive Plan also contains several growth management policies that address limiting urban development within the current, developed, urban services area, coordinating development and land use policies and projects with Santa Clara County and Stanford, and monitoring development at Stanford and requesting mitigation measures, as appropriate, under its 1985 Land Use Policies Agreement (Chapter 2, Policies L-1 and L-2).

Mitigation: **GI-1: Identify Additional Housing Sites and Implement Traffic and Service Mitigation Measures**

The University shall work with the City of Palo Alto, City of Menlo Park, and Santa Clara County to identify additional sites on- and off-campus that would be suitable for housing development to meet the needs of additional workers who will be attracted to the area as a result of the project. Part of this effort shall be the identification of University, city, county, private, state, and federal funding that could be used to assist in the development of housing affordable to low- and moderate-income households and to develop regulatory mechanisms that create incentives for Stanford to participate in off-campus housing initiatives. Provision of additional low- and moderate-income housing would help mitigate the traffic and other impacts of projected employment growth by reducing commute distances and increasing the potential for use of non-auto transportation.

The University shall work with Santa Clara County and the City of Palo Alto to develop and implement appropriate traffic, public services/utilities, and other related mitigation measures to address growth-inducing impacts of the Stanford CP/GUP (refer to Sections 4.4 – Traffic and Circulation, and 4.10 – Public Services and Utilities for measures recommended to mitigate project impacts).

After Mitigation: *Significant*

The implementation of the GUP may result in the creation of approximately 500-1,000 new jobs over and above those created at Stanford University. Many of these jobs will be in the service industry where pay scales would place the employees in the low- to moderate-income housing market. Based upon current inadequacies of low- and moderate-income housing supply, any increase in demand would exacerbate the existing supply problem. At this point, housing prices are so high that many higher income employees also find it difficult to find affordable housing. Implementation of the growth management policies in the Santa Clara County General Plan and proposed CP would help alleviate many of the related environmental effects associated with the growth inducement. The proposed mitigation measures will require Stanford to participate with the County and local cities in the identification of offsite housing sites and funding. However, because indirect employment generation will increase population and therefore, traffic and public services impacts, this impact is considered to be significant and unavoidable.

**IMPACT: GI-2: Will the provision of infrastructure improvements associated with the project stimulate population and housing growth beyond that projected in the Palo Alto Comprehensive Plan or the Santa Clara County General Plan?**

Analysis: *Less than Significant*

The primary infrastructure that will serve new CP/GUP development are existing water, wastewater, road, and electrical systems. Water and wastewater treatment needs are at or near current capacities. Projected growth could cause water demand to exceed the University's current allocation without the imposition of additional conservation measures or the acquisition of additional water sources. Projected growth will cause wastewater treatment needs to nearly equal current capacity. However, because no excess capacity (beyond that needed to serve planned development) is planned for either water or wastewater systems, these systems will not create growth inducing impacts.

Roads and other transportation infrastructure will only be expanded to maintain acceptable operating levels of service and will not create excess capacity that could stimulate further development. A heavy reliance has been placed on transportation demand measures to reduce the effects of Stanford's expansion on transportation infrastructure as indicated in Section 4.4.

Completion of upgrades to the University's electrical substation capacity by December 2000 will nearly double the output. This output will create excess electrical substation capacity beyond the minimum capacity necessary to serve development anticipated under the GUP. However, by itself, excess electrical generating capacity is not growth inducing, nor are these upgrades part of the proposed project.

Mitigation: No mitigation is necessary.

## 5.4 CUMULATIVE GROWTH INDUCING IMPACTS

**IMPACT: GI-C1: Will the project, along with other projects in the vicinity, create cumulative growth inducing impacts?**

Analysis: *Significant*

Planned housing development associated with the CP/GUP will address an existing shortage of housing in the region, particularly affordable housing for low- and moderate-income students, faculty, and staff provided this housing is constructed. Therefore, the housing portion of the GUP will have no growth-inducing impacts. The planned expansion of academic and support facilities by over two million square feet (about 16 percent) could create cumulative growth inducing impacts if such growth stimulates the development of retail and service businesses to meet the needs of the additional daytime population. Based on ABAG's economic model, employment growth of about 1,000 could generate 1,570 total jobs on the average, but as many as 2,050 total jobs under a worst-case scenario. Given the current and projected housing shortage in the region, any increase in employment can be expected to further decrease the supply of housing relative to demand, especially for low- and moderate-income households.

The potential direct and indirect impacts of the Stanford CP/GUP must be considered in light of other known and potential projects in the region (see Section 4.3.D) that would add nearly 1.3 million square feet of office, retail space, and other commercial space and about 800 non-senior housing units. The existing housing shortfall for area workers will not decline, and may actually increase, when the cumulative effects of these other past, present and future projects are considered. Cumulative traffic, public service and utilities, and other impacts may also result from this additional development when considered in conjunction with the Stanford CP/GUP.

Additional growth-inducing impacts could result from the change in land use designation for a portion of the Lathrop development district from Open Space and Academic Reserve to Academic Campus. This land use change would occur concurrently with a change in the academic growth boundary to include the additional area within the Lathrop district. The immediate consequence of these changes will be to permit the University to construct up to 20,000 square feet of academic and student athletic facilities as proposed in the Community Plan/GUP. The potential long-term impact is that the proposed changes will open the entire Lathrop district to potential academic and related development. The Lathrop district is currently bordered on two sides by open space and special conservation areas that could be affected by this land use change.

Mitigation: No feasible mitigation is available beyond those measures discussed in mitigation measure GI-1. For a discussion of project alternatives that may reduce or eliminate the project's incremental contribution to cumulative growth-inducing impacts, please see Chapter 7.

After Mitigation *Significant and Unavoidable*

Mitigation measures recommended in the other impact sections will help to address the project's incremental contribution to potential cumulative growth-inducing impacts from the increase in the daytime user population and employment. However, based upon the imbalance of jobs to housing for low- and moderate-income groups, this impact would remain significant and unavoidable.

# 6 OTHER CEQA TOPICS

## 6.1 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL EFFECTS

Section 2100(b)(2)(A) of CEQA requires that an EIR identify any significant environmental effects that cannot be avoided if the project were implemented. Significant unavoidable impacts are identified in Section 4 of this EIR, Environmental Analysis, as those impacts that remain significant after implementation of mitigation. Although the project has the potential to result in a number of significant environmental impacts, most of these can be avoided through the adoption of appropriate mitigation measures that will reduce those effects to a less than significant level. Significant unavoidable impacts of the project are the following:

- Loss of recognized open space (Impact OS-2);
- Traffic impacts at project area intersections (Impact TR-5);
- Potential effects to historic resources (Impact HA-1);
- Construction-related noise impacts (Impact NOISE-1); and
- Growth inducement (Impact GI-1).

Significant cumulative impacts are also identified for the following issues:

- Open space;
- Traffic and circulation;
- Historic resources;
- Construction noise; and
- Growth inducement.

## 6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant irreversible changes that would result from project implementation. Section 15126.2(c) of CEQA provides guidance as to what sorts of changes might be considered irreversible. Such changes include use of nonrenewable resources, commitment of future generations to similar uses, and environmental accidents that could occur as a result of the project.

The proposed project would involve construction activities that commit non-renewable resources including fuels, construction materials and land. Once constructed, project facilities would continue to use energy. The precise acreage of land that would be used by the project cannot be determined as building sites and sizes have not been determined. Much of the development associated with the GUP would be infill on developed areas of the campus that have already been committed to academic or academic support uses, and further development would not be considered a significant change. Change in land use in the Lathrop District from Academic Reserve and Open Space to Academic Campus could, however, lead to significant irreversible environmental changes. Although the change in land use designation is not irreversible, it may allow future development in the area, which would irretrievably commit undeveloped lands to academic uses. Once buildings are constructed in the area, the reversion to open space is very unlikely.

CEQA notes that environmental accidents can cause irreversible damage, and the project will result in the expansion of academic facilities that may use hazardous materials, and may generate hazardous waste. However, a review of campus health and safety procedures has shown that adequate procedures are in place to guard against accidental releases of hazardous materials or hazardous waste. Measures to protect against these hazards are detailed in Section 4.7, Hazardous Materials.

## 6.3 CUMULATIVE IMPACTS

Cumulative impacts are defined as “two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Section 15130 of the CEQA Guidelines states that an EIR must discuss cumulative impacts when they are significant. In the case of the proposed project, cumulative impacts could result from the project impacts in combination with those from growth at Stanford University (non-county lands) and in the neighboring areas. The analysis of cumulative impacts of the project and surrounding local and subregional development are presented in Chapter 4, Environmental Analysis, under each issue area. If significant cumulative impacts are identified, mitigation measures have been recommended.

The Stanford University Draft CP and GUP application “Summary and Explanation” document includes a list of potential housing sites located outside of unincorporated Santa Clara County (page 28). These sites include:

- Palo Alto – Pasteur Drive site (hospital resident housing);
- Palo Alto – DC Powers site (faculty and staff housing);
- Menlo Park/San Mateo county – Rural Lane site, adjacent to the golf course near Alpine Road (faculty and staff housing);
- San Mateo County – On the corner of the buck Estate adjacent to the Stanford Hills residential neighborhood (faculty and staff housing); and
- Portola Valley – The Stanford Wedge site (faculty and staff housing).

While the Summary and Explanation document identifies these sites, no specific projects have been proposed at this time. Therefore, these sites will not be considered in the cumulative impacts analysis. The following projects have been included in the cumulative impacts analysis:

### 6.3.A Stanford Sand Hill Road Corridor Project

A series of projects currently are being constructed along the Sand Hill Road Corridor, which is located about 1.5 miles northwest of the project site. The projects are located in the City of Palo Alto on the campus lands of Stanford University adjacent to San Francisquito Creek and the City of Menlo Park. The project includes four individual components: 1) Stanford West Apartments,

2) Stanford West Senior Housing, 3) Stanford Shopping Center Expansion, and 4) Sand Hill Road Extension and Related Roadway Improvements. The EIR for these projects was completed in 1993. The project was approved in 1999.

The Stanford West Apartments is located on a 47.8-acre site and includes 628 rental apartments arranged on a grid block pattern in building clusters of four to 20 units per cluster. There is a common open space, a community center for use of apartment residents, and internal roadways, parking areas, and infrastructure included in the project. The project requires extension of utilities and infrastructure to serve the future development on the site including water and wastewater lines, storm drains, electrical service, and gas mains.

The Stanford West Senior Housing is located on a 22.3-acre site and includes a total of 388 independent living/condominium units, and a Health Care Center that will include a 70-room assisted living facility. The 388 independent will be contained in three major structures, each four stories high. The three-story Health Care Center will be constructed near the living units. Construction of the Stanford West Senior Housing project requires reconstruction of all utilities and infrastructure serving the site.

The Stanford Shopping Center is located at the northeast corner of the Stanford University campus. The expansion involves construction of 80,000 square feet. It also includes an increase of 616 parking spaces over the existing condition and two new parking structures. Limited improvements to the infrastructure are included in the project.

The Sand Hill Road Extension and Related Roadway Improvements are located along Sand Hill Road and other roadways in the general area. Sand Hill Road will be extended from Arboretum Road to El Camino Real and it includes a new intersection at El Camino Real. Additional roadway improvements include road widening, addition of two-lane entry/exit lanes, realignment and extension of roads and bridges in the area, and construction of new roads where necessary.

### 6.3.B Stanford University Medical Center, Center for Cancer Treatment and Prevention/Ambulatory Care Pavilion and Parking Structure

The Stanford Cancer Center is a proposed 218,000 square foot facility in the Stanford Medical Center along Blake Wilbur Drive, within the City of Palo Alto. The proposed project also includes an underground parking facility with a capacity for 1,000 vehicles. The Stanford Cancer Center would house services and functions that currently exist in other facilities within the Stanford Medical Center. Construction of the project is slated to begin in 2001; the facility would be operative in 2003. The Draft EIR for the project was released for public review in March 2000.

A medical office building and two surface parking lots currently occupy the proposed Stanford Cancer Center site. The building and parking lots would be removed to make way for the Cancer Center with relocation of the current tenants to other campus facilities. The proposed parking structure will be constructed in an undeveloped site.

The project includes changes to the traffic circulation patterns in Cancer Center and parking structure areas. The project is intended to integrate automobiles, transit vehicles, pedestrians, and bicycles. It includes conversion of the north end of Blake Wilbur Drive to a mixed-use, passenger-oriented zone with passenger drop-off zones, transit stops, bicycle circulation, and pedestrian crosswalks.

### 6.3.C Carnegie Foundation Research/Office Facility

The Carnegie Foundation Research/Office is a proposed 21,000 square foot two-story wooden building located on undeveloped land in the Stanford foothills near the Center for Advanced Study in the Behavioral Sciences (Stanford CP proposed Lathrop Development District). The project includes a Subdivision application for the creation of a 20-acre parcel of Stanford University land that could be leased from the University. The proposed project also includes construction of 54 parking spaces, the addition of about 200 trees and other appropriate landscaping materials, construction of pedestrian walkways, access road widening and paving, and necessary infrastructure improvements. The facility is designed for an average of 40 daily users. The Draft EIR for the project was released for public review in May 2000.

Access and circulation improvements include the improvement and paving of a 20-foot wide Vista Lane access road to allow for traffic circulation to the facility. The facility would be designed to maintain the natural vegetation on site and lighting would be designed to provide for safety and security, while minimizing the amount of escaped light into the adjoining lands.

### 6.3.D City of Palo Alto Projects

The following projects were identified within the Palo Alto city limits near the Stanford Community Plan boundary.

- South of Forest Area is a 160 housing unit project in the area generally bounded by Forest, High, Channing, and Waverly Streets. This development is located 0.1 mile north of the Community Plan boundary on the northern side of El Camino Real.
- Hyatt Rickeys housing: 300 apartment units, located at the corner of El Camino Real and Charleston (approximately 1.5 miles southeast of the Community Plan boundary, but within the PAUSD).
- Hillview II is a new 284,000 square foot office building with tenant improvements. It is located 0.5 miles east of the Community Plan Boundary.
- 3251 Hillview is a new two-story 106,000 office complex in the preliminary planning stages. It is located 0.5 miles east of the Community Plan Boundary.

### 6.3.E City of Menlo Park Projects

The following large-scale projects were identified within the Menlo Park city limits near the Stanford Community Plan boundary.

- Beltramo Mixed-Use – 1460 El Camino Real is a 50,453 sq. ft. office/residential building located 1.5 miles northwest of the Community Plan boundary.
- SRI International Master Plan – 333 Ravenswood is a 225,000 sq. ft. office/R&D building located 1 mile northwest of the Community Plan boundary.

- Oak Grove & Merrill Associates LLC – 1001, 1045 Merrill & 563-565 & 511 Oak Grove is a 42,000 sq. ft. office/retail/residential development located 1 mile northwest of the Community Plan boundary.
- 2498 Sand Hill Road (Quadrus 8) is a 8,600 sq. ft. office building located 0.7 mile west of the Community Plan boundary.

There are other large-scale projects that are not in close proximity to the project area, and nearby small-scale projects located within the Menlo Park city limits. These projects are located along the El Camino Real or Highway 101 corridors, and are summarized as follows:

#### *6.3.E.1 El Camino Real Corridor*

- Approximately 27,000 square feet of office space;
- Approximately 5,000 square feet of retail space;
- Approximately 5,800 square feet of residential space (four dwelling units); and
- Approximately 6,000 square feet of adult day support center space.

#### *6.3.E.2 Highway 101 Corridor*

- Approximately 168,000 square feet of office space;
- Approximately 9,900 square feet of warehouse space;
- Approximately 82,000 square feet of self-storage space; and
- Approximately 7,300 square feet of day care space.

### 6.3.F San Mateo County Projects

The following large-scale projects were identified within the San Mateo County limits near the Stanford Community Plan boundary.

- Hewlett Foundation Headquarters office building at the Southwest corner of Sand Hill Road and Santa Cruz Avenue is a 48,000 square-foot office building located on a 6-acre site immediately west of the Community Plan boundary. The San Mateo Planning Commission recently approved a use permit for this project and the County expects construction to proceed within approximately six months.
- Chargin office project at the Northwest corner of Sand Hill Road and Santa Cruz Avenue includes remodeling of an existing 2,500-square foot house and construction of 1,400 square feet office of new commercial space located immediately west of the Community Plan boundary. The County recently circulated a Negative Declaration for this project. Hearings will be held before both the San Mateo Planning Commission and Board of Supervisors for this project.

# 7 ALTERNATIVES TO THE PROPOSED PROJECT

## 7.1 INTRODUCTION

The California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) (CEQA) and the State CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq.) require that an EIR "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6(a)). If a project alternative would substantially lessen the significant environmental effects of a proposed project, the decision maker should not approve the proposed project unless it determines that specific technological, economic, social, or other considerations make the project alternatives infeasible (PRC Section 21002, CEQA Guidelines Section 15091 (a)(3)). The EIR must also identify alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and should briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines Section 15126.6(c)).

One of the alternatives analyzed must be the "No Project" alternative. The "No Project" analysis must discuss the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved and development continued to occur in accordance with existing plans and consistent with available infrastructure and community services (CEQA Guidelines Section 15126.6(e)(2)).

A description of the proposed Stanford University Community Plan and General Use Permit application (Project) and Stanford's project objectives are provided in Chapter 2. This Chapter provides a description and analysis of the three project-level alternatives and numerous alternative components that have been developed by Santa Clara County. The alternative components were analyzed because the complexity of the project application makes full analysis of alternative approaches at the project level more difficult and less effective than analysis of different approaches to specific aspects of the project. Alternative components were selected in response to issues raised in EIR scoping and initial public discussions of the proposed project. This Chapter also provides a summary of the alternatives/components, and identifies the environmentally superior alternative.

The three project-level alternatives include:

- No Project (No Additional Permits);
- No Project (Additional Permits); and
- Reduced Project.

This EIR evaluates two no-project alternatives. This is done because it is not known (and cannot be known) to what extent additional development within the CP boundary would occur if the CP were not adopted and GUP were not approved. As explained in detail in the Land Use section, the County's existing General Plan and zoning policies allow academic and associated development in the central campus area with use permits, and would allow single-family housing to be built as a right. If the County does not adopt a CP and if it does not approve a revised GUP, Stanford may apply to construct additional academic, athletic, cultural and housing facilities pursuant to individual use permit and/or subdivision applications for each project. Because it is not known how much additional development the County would approve if a CP were not adopted and a revised GUP were not approved, the no project alternatives evaluated in this EIR bracket the reasonably foreseeable possibilities.

The first no project alternative studied in the EIR (the no additional permits alternative) assumes that if a CP were not adopted and a revised GUP were not approved, the County would not grant any applications for individual use permits or subdivision of land. Stanford could continue to build the additional square footage authorized by the 1989 GUP, and would be able to construct approximately seven single family housing units on existing lots. If all applicable conditions of the 1989 GUP were met, Stanford also would be able to remodel the interior of existing campus facilities and build new facilities by demolishing a commensurate amount of existing facilities. In this case, the campus population and the net square footage of academic and associated facilities would not exceed the threshold identified in the 1989 GUP. All conditions of the 1989 GUP would remain in place, including the no net new commute trips goal. This is the least amount of activity expected to occur if the CP is not adopted and the GUP is not approved.

At the other end of the reasonably foreseeable spectrum, Stanford would submit individual use permit and subdivision applications for construction of all of the academic and housing projects that Stanford has requested by way of its current GUP application. Because Stanford has already assessed its needs for the next 10 years through the CP/GUP process, it is reasonable to conclude that Stanford would pursue the same amount of development if it proceeds by individual use permit applications and subdivision applications as it would if it proceeds by a GUP application.

The EIR therefore evaluates a second no-project alternative (the "additional permits" alternative) that represents the high end of the reasonably foreseeable development expected to occur if the project is not approved and development continued to occur in accordance with the existing General Plan. However, the process of proceeding by individual use permit applications would be more cumbersome than the General Use Permit. Thus, it is expected that even if the County were to grant approvals for the same amount of development as Stanford currently requests, it would take longer to receive those approvals and build out the requested square footage and housing units than the currently anticipated 10-year period. In addition, Stanford's own assessment of its priorities and abilities may change, and the University may choose not to pursue approvals for some of the projects anticipated in the GUP application. It also should be noted that if individual use permits are analyzed rather than a comprehensive GUP, the totality of the foreseeable environmental impacts may not be addressed and comprehensive mitigation measures such as the "no net new commute trips" mitigation measure, may not be feasible.

As a practical matter, if the CP is not adopted and the GUP is not approved, it is likely (but not certain) that some amount of additional campus development would be approved by way of individual use permits and/or subdivision approvals. The amount of development may be less than the amount proposed by the GUP application, but more than the amount allowed under the "no additional permits" no project alternative. There is no means, however, to estimate how much additional development would be approved under such a scenario. By bracketing the ends of the range of foreseeable conditions that would be expected to occur if the CP were not adopted and the GUP were not approved, this EIR discloses the range of potential environmental effects that could occur if both components of the project were not approved. Furthermore, by identifying the least amount of foreseeable development, the EIR informs the decisionmakers and the public about the extent that impacts could be reduced or avoided if no additional permits were granted.

Finally, the analysis of the reduced project alternative, which comprises half of the academic facilities and half of the housing facilities proposed by the GUP application, also discloses the impacts that could be avoided or reduced if substantially less development were approved, either by way of a reduced GUP or by individual use permits and subdivision approvals allowing less development than is currently proposed.

Table 7-1 provides a summary of the project-level alternatives, and alternative components by project element. A detailed description of the project-level alternatives and alternative components is provided in Sections 7.2 and 7.4.

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Academic Growth Boundary (AGB)** | Includes Lathrop Development District and 20,000 square feet of proposed development within the AGB south of JSB | No AGB | No AGB | Includes Lathrop Development District and 10,000 square feet of proposed development | **AGB-A** – AGB would parallel existing development (would allow 20,000 square feet proposed for Lathrop to be developed next to existing development south of JSB)<br>**AGB-B** – AGB would parallel JSB (would allow 20,000 square feet proposed for Lathrop to be relocated north of JSB) |
| **Development Levels** | | | | | |
| **Academic Uses** | Includes 2,035,000 additional gross square feet of academic uses | Would allow an increase of 148,367 square feet for a total of 12,439,061 square feet of academic uses | Additional academic uses would be proposed under individual use permits that are expected to equal the square footage totals proposed in the CP/GUP | Includes 1,017,500 additional gross square feet of academic uses | No change from project |
| **Housing Units** | Includes up to 3,018 additional housing units including up to 668 faculty and staff, 2,000 student, and 350 hospital resident and postgraduate fellow units | Would allow an increase of up to 7 units in addition to the existing 10,646 faculty, staff, student and graduate housing units | Additional housing units would be proposed under individual use permits that are expected to equal the housing totals proposed in the CP/GUP | Includes 1,510 additional housing units including 335 faculty and staff, 1,000 student, and 175 hospital resident and postgraduate fellow units | No change from project in total number of units; includes alternative housing sites (see Housing below). |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Increased Population** | Projected to increase population by up to 2,201 new students, faculty, and staff | Would allow an increase of 940 students, faculty, and staff under the existing 1989 GUP population threshold | Additional population associated with academic and housing use permits are expected to equal the population increases proposed in the CP/GUP | Projected to increase population by up to 1,280 new students, faculty, and staff | No change from project |
| **Land Use Designations** | | | | | |
| **Golf Course** | Academic Campus (E-SC) | Academic Reserve and Open Space | Academic Reserve and Open Space | Academic Campus (E-SC) | **LU-A -** Change from E-SC to Campus Open Space (E-SCO)<br>**LU-B -** Change from E-SC (north of JSB) to Campus Residential and from E-SC (south of JSB) to E-SCO or Open Space and Field Research |
| **Stanford Foothills** | Open Space/Academic Reserve | Academic Reserve and Open Space | Academic Reserve and Open Space | Open Space/Academic Reserve | **LU-C** – Change from E-SA to Open Space and Field Research (E-SFR) |
| **Arboretum Corner** | Academic Campus | Academic Reserve and Open Space | Academic Reserve and Open Space | Academic Campus | **LU-D** – Change from Academic Campus (E-SC) to Campus Open Space (E-SCO) |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Special Conservation Areas** | Includes E-SA-SC along San Francisquito, Los Trancos, Matadero and Deer Creeks and lands immediately south of portions of JSB | No Special Conservation Areas currently exist | No Special Conservation Areas currently exist | Includes E-SA-SC along San Francisquito, Los Trancos, Matadero and Deer Creeks and lands immediately south of portions of JSB | **LU-E** – Designate additional or alternative campus areas as E-SA-SC as necessary to mitigate potential environmental effects |
| **Transportation** | | | | | |
| **No Net New Commute Trips** | Standard not included in the proposed CP/GUP | The "No Net New Commute Trips" standard is required under the existing GUP and would continue to be required. | With the implementation of individual use permits, this standard would be difficult to implement | Standard not included in the Reduced Project | **TRAN-A** – Include "No Net New Commute Trips" as a performance standard and list implementation strategies that may be used to meet the standard |
| **Alpine Rd/Sand Hill Rd Intersection/ Roadways** | No new roadways are proposed in the CP/GUP | No new roadways are proposed in the No Project | No new roadways are proposed in the No Project | No new roadways are proposed in the Reduced Project | **TRAN-B -** Construct a new roadway on Stanford lands to connect Sand Hill Road north of JSB to Alpine Road near the I-280 interchange |
| **Trails** | Trail corridors would remain unchanged | Trail corridors would remain unchanged | Trail corridors would remain unchanged | Trail corridors would remain unchanged | **TRAN-C -** Dedicate easements for trail corridors (as identified in the CP) consistent with direction in the County Trails MP and dedication policies |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Parking** | CP/GUP proposed parking includes 2,873 new spaces (1,850 spaces for housing and 1,023 spaces for academic development) | Existing parking supply could be increased up to allowable 1989 GUP levels (19,351 spaces), an increase of approximately 400 spaces. | Additional parking spaces would be proposed under individual use permits that are expected to equal the parking totals proposed in the CP/GUP | Reduced Project proposed parking includes 1,436 new spaces (925 spaces for housing and 511 spaces for academic development) | **TRAN-D -** Maintain development proposed in CP/GUP and reduce parking supply by 50 percent for academic uses (1,850 spaces for housing and 511 spaces for academic development) |
| **Housing** | | | | | |
| **Linkage Between Housing and Academic Development** | No linkage between housing and academic development would be provided | No linkage between housing and academic development would be provided | No linkage between housing and academic development would be provided | No linkage between housing and academic development would be provided | **HOUS-A -** Require 1,510 housing units to be planned and constructed prior to the first 1 million square feet of academic development. Require the remaining academic development to be tied to housing as follows: Seventy-five percent prior to exceeding 1.5 million square feet and 100 percent prior to exceeding 2 million square feet (refer to Section 7.4, Table 7-3 for a detailed description of this component). |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Golf Course Housing** | No housing is proposed on the Golf Course Site | No housing could occur on the Golf Course Site | Existing land use designation would allow low-intensity uses including faculty, staff and student housing with a use permit and/or subdivision of land | No housing is proposed on the Golf Course Site | **HOUS-B -** Change Golf Course site north of JSB from E-SC to E-SR-2 (Note: the site would not be used to increase the total number of housing units provided for in the CP/GUP). The purpose of this alternate site is to address the loss of housing potential that would result if other sites were found infeasible for housing. |
| **Campus Edges -** | | | | | |
| **Stanford Ave. Frontage (CP Site E)** | CP/GUP proposes up to 75 town home units along Stanford Avenue frontage | No residential units could be constructed without subdivision of the land | Up to 75 residential units could be constructed under existing zoning (e.g., 5,000 square foot lot size) with subdivision of land | Reduced Project proposes up to 40 town home units along Stanford Avenue frontage | **HOUS-C -** No build |
| **El Camino Ave. Frontage (CP Site D)** | CP/GUP proposes 250 Graduate Student housing units along El Camino Real frontage | No residential units could be constructed without subdivision of land. | Up to 34 residential units (at 8 units per acre) could be constructed under existing land use with subdivision of land | Reduced Project proposes 125 Graduate Student housing units along El Camino Real frontage | **HOUS-D -** No build<br>**HOUS-E -** Relocate the proposed 250 Graduate Student housing units to the existing Escondido Village area |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Quarry and El Camino Real (CP Site I)** | CP/GUP proposes 150 postgraduate housing units at the Quarry site | No residential units could be constructed without subdivision of land. | Up to 50 residential units (at 8 units per acre) could be constructed under existing land use with subdivision of land | Reduced Project proposes 75 postgraduate housing units at the Quarry site | **HOUS-F -** Provide set-back from El Camino as requested by City of Palo Alto and reduce number of postgraduate housing units by 75<br>**HOUS-G -** Provide set-back from El Camino as requested by City of Palo Alto and reduce number of onsite housing units by 75. Relocate remaining postgraduate housing units (75) to the Quarry & Arboretum site (at greater density) |
| **Infill Housing (CP Sites K, L, and N)** | CP/GUP proposes up to 39 units | 7 individual parcels exist in these locations that would allow up to 7 residential units to be constructed under existing zoning | Up to 35 residential units at 8 units/acre could be constructed under existing land use with subdivision of land | Reduced Project proposes up to 20 residential units | **HOUS-H -** No build<br>**HOUS-I -** Reduce number of new units from up to 8 per acre to no more than 4 per acre |

# Table 7-1

## Alternatives and Alternative Components Summary

| Project Element | Stanford CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project | Alternative Component(s) |
|---|---|---|---|---|---|
| **Remaining CP/GUP Housing Sites (A, B, C, F, G, H, J, and O)** | CP/GUP proposes residential units by location as follows:<br>Site # of Units<br>A. 100 undergrad<br>B. 125 under/grad<br>C. 725 grad<br>F. 350 grad<br>G. 250 grad (-13 single family units)<br>H. 200 postgrad/ hospital residents<br>J. 200 under/grad<br>O. up to 567 faculty/staff | No additional housing units could be constructed:<br>Site # of Units<br>A. No housing<br>B. No housing<br>C. No housing<br>F. No housing<br>G. Maintain existing single family units (13)<br>H. No housing<br>J. No housing<br>O. No housing | Additional housing units could be constructed with individual use permits:<br>Site # of Units<br>A. 100 undergrad<br>B. 125 under/grad<br>C. 725 grad<br>F. 350 grad<br>G. 250 grad (-13 single family units)<br>H. 200 postgrad/ hospital residents<br>J. 200 under/grad<br>O. up to 567 faculty/staff | Reduced Project would reduce CP/GUP units by half as follows:<br>Site # of Units<br>A. 50 undergrad<br>B. 62 under/grad<br>C. 362 grad<br>F. 175 grad<br>G. 125 grad (-13 single family units)<br>H. 100 postgrad/ hospital residents<br>J. 100 under/grad<br>O. up to 288 faculty/staff | No change from project |
| **Schools** | | | | | |
| **Palo Alto Middle School Site** | CP/GUP does not propose any sites for a middle school | There is no identified middle school site in existing plans | There is no identified middle school site in existing plans | Reduced Project does not propose any sites for a middle school | **SCHOOL** – Designate middle school site near the intersection of Page Mill and Deer Creek Roads |

## 7.2 DESCRIPTION OF PROJECT-LEVEL ALTERNATIVES

This EIR analyzes three alternatives to the overall amount and policy framework for development in the proposed CP/GUP.

### 7.2.A No Project (No Additional Permits)

A low-end No Project –No Additional Permits alternative would include only the development of academic uses and housing that could presently be constructed without a CP or GUP update. No projects that require additional discretionary approval have been included (Note: under this alternative, Stanford could replace or relocate existing facilities without increasing building area or total number of units). The No Project - No Additional Permits alternative differs from the CP/GUP as follows:

- No academic growth boundary would be included;
- Buildout of the 148,367 square feet of academic uses remaining in the 1989 GUP (alternatively, the square footage could be used for approximately 130 student housing units and up to 7 faculty/staff housing units) rather than the 2,035,000 square feet and 3,018 housing units included in the CP/GUP;
- Population could increase by up to 940 students, faculty, and staff (allowed by current 1989 GUP) instead of 2,201 under the CP/GUP;
- The golf course and Arboretum Corner are designated Academic Reserve and Open Space land use rather than the Academic Campus designation in the CP/GUP;
- No Special Conservation or Campus Open Space areas would be designated;
- An additional 411 parking spaces could be built (per the 1989 GUP), rather than the 2,873 spaces in the CP/GUP;
- Existing land use designations (Academic Campus and Academic Reserve and Open Space), General Plan policies, and General Use Permit conditions would remain in place; and
- No residential units could be constructed along Stanford Ave., El Camino Real, and Quarry/El Camino Real frontages without subdivision of the land, whereas the CP/GUP proposes up to 475 units of housing in these locations.

### 7.2.B No Project (Additional Permits)

A high-end No Project – Additional Permits alternative would include all of the development proposed in the CP/GUP. This alternative is included in the analysis to satisfy the CEQA requirement for a No Project alternative that discusses existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved and development continued in accordance with existing plans (CEQA Guidelines Section 15126.6(e)(2)). Under this alternative, each individual building project would require an individual use permit from the County. It is anticipated that this alternative would be implemented over a longer time period than the CP/GUP (greater than 10 years) because the application and decision process would be more cumbersome. Therefore, although less development would be likely to occur than under the CP/GUP, the same amount of development was analyzed to represent a reasonable worst-case scenario. Current General Plan policies would apply and existing general use permit special condition areas would remain in effect. It should be noted that existing General Plan development policies for the foothills are less restrictive than policies included in the proposed CP/GUP, and could therefore allow more development under this alternative. Program-level mitigation concepts, such as “No new net commute trips,” may not be implemented due to the lack of an overall program-level analysis on this alternative. The No Project - Additional Permits alternative differs from the CP/GUP as follows:

- No academic growth boundary would be included;
- The golf course and Arboretum Corner are designated Academic Reserve and Open Space land use rather than the Academic Campus designation in the CP/GUP;
- No Special Conservation or Campus Open Space areas would be designated;
- Faculty and staff housing could be permitted on the Golf Course site with a use permit, whereas academic development could be permitted in this location in the proposed CP; and
- Only 159 residential units could be constructed along Stanford Ave., El Camino Real, and Quarry/El Camino Real frontages under densities allowed in existing zoning, whereas the CP/GUP proposes up to 475 units of housing.

### 7.2.C Reduced Project

The Reduced Project alternative would maintain the policy and land use direction proposed in the CP, but would reduce the development proposed by the GUP by approximately one-half. The Reduced Project alternative differs from the CP/GUP as follows:

- The academic growth boundary includes 10,000 square feet of proposed development in the Lathrop Development District instead of 20,000 square feet in the CP/GUP;
- An increase of 1,017,500 square feet of academic uses and 1,510 housing units rather than the 2,035,000 square feet and 3,018 housing units included in the CP/GUP;
- Eliminates the proposed performing arts center and basketball arena (a total of 285,000 square feet)
- Population would increase by up to 1,280 students, faculty, and staff instead of 2,201 under the CP/GUP. This population is more than half of the population increase from the proposed GUP because a portion of the building area reduction in this alternative is from elimination of the proposed basketball arena and performing arts center, which would have negligible impacts on the population of faculty, staff and students;
- An additional 1,436 parking spaces could be built, rather than the 2,873 spaces in the CP/GUP; and
- Up to 240 residential units could be constructed along Stanford Ave., El Camino Ave., and Quarry/El Camino Real frontages, whereas the CP/GUP proposes up to 475 units of housing.

## 7.3 ALTERNATIVES IMPACT COMPARISON

Table 7-2 provides a comparison of the benefits and impacts associated with the project-level alternatives to the Stanford Community Plan/General Use Permit according to the Evaluation Criteria defined in Chapter 4. The project-level alternatives include No Project – No Additional Permits, No Project – Additional Permits, and Reduced Project. Alternative components are described and analyzed in Section 7.4.

**Table 7-2**

Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **1. Land Use** | | | | |
| **LU-1. Will the project increase potential for conflict as a result of incompatible land uses?** | Less than significant. The proposed development would not result in significant conflicts with existing or adjacent land uses. | No impact. Remaining development allowed under the 1989 GUP would be consistent with existing on-site and adjacent land uses. | Significant. Some of the development proposed in the CP/GUP could be inconsistent with existing land use designations. These facilities include student housing along El Camino Real and academic development proposed for the Lathrop development district. These components would have to be relocated to Academic Campus lands under this alternative. | Less than significant. The reduced project would propose less development and would therefore reduce the potential for land use conflicts. |
| **2. Open Space and Visual Resources** | | | | |
| **OS-1. Will the project be inconsistent with the Santa Clara County General Plan regarding Scenic Routes, Scenic Approaches, or Scenic Highways?** | Significant. State Scenic Routes, County-designated scenic roads, and scenic views exist or are proposed for portions of the project area. Proposed development | No impact. Remaining development allowed under the 1989 GUP would be located in the central campus and away from scenic resources. | Less than significant. The CP/GUP components that may affect scenic quality would occur along JSB. Under this alternative, this location would be more | Significant. The reduced project would likely maintain many of the sites proposed for development in the CP/GUP, but at a reduced level of |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | projects along JSB may significantly alter these visual resources. Less than significant after mitigation. | | difficult to develop because of its existing land use designation of Academic Reserve and Open Space. | development. Therefore, as with the CP/GUP, proposed facilities and residential units would be consistent with County policies as long as standard mitigation measures are implemented, reducing impacts to less than significant. |
| **OS-2. Will the project result in loss of recognized open space?** | Significant. The CP proposes that several areas currently designated in the County General Plan as Academic Reserve and Open Space should be redesignated as Academic Campus, thus allowing for the potential of future development. Significant after mitigation. | No impact. No Project would reduce impacts by not allowing development on recognized open space sites proposed for faculty/staff housing in the CP/GUP. | Less than significant. Under this alternative, the proposed changes to lands currently designated as Academic Reserve and Open Space would not occur. These lands include the Arboretum Corner, portions of the golf course north of JSB and the entire Lathrop Development District. | Significant. The reduced project would likely maintain many of the sites proposed for development in the CP/GUP, but at a reduced level of development. Therefore, as with the CP/GUP, the change in land use designation in the CP would remain significant. |
| **OS-3. Will the project adversely affect recreational opportunities for existing or new campus residents and facility users?** | Significant. Stanford proposes development of housing at a number of sites that are now used for recreation. The CP redesignates a portion of the foothills as Special Conservation; designation of resource conservation areas | No impact. No Project would reduce impacts by not allowing development on recreational sites proposed for faculty/staff housing in the CP/GUP. | Significant. Recreational sites proposed for development are mostly in the existing Campus land use designation. Under this designation, Stanford could apply for permits to develop housing included in the CP/GUP. Further, this | Significant. It is likely that housing would still be developed at existing recreation sites. Mitigation would also reduce this impact to less than significant. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | in the foothills will also potentially restrict access. Less than significant after mitigation. | | alternative would not include the proposed Campus Open Space and Special Conservation land use designations that are proposed in the CP, and thus does not include mitigation to reduce impacts to less than significant. | |
| **OS-4. Will the project cause an adverse effect on foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas?** | Significant. Housing development at the campus edges could cause an adverse effect on foreground views depending on the design and density of the proposed housing. Less than significant after mitigation. | No impact. No Project would reduce impacts by not allowing development on El Camino Real and JSB sites proposed for housing in the CP/GUP. | Less than significant. The CP/GUP components that may affect scenic quality would include housing along El Camino Real and academic development along JSB. Under this alternative, these locations would be more difficult to develop because of their existing land use designation of Academic Reserve and Open Space | Significant. The reduced project would maintain many of the sites proposed for development in the CP/GUP, but at a reduced level of development. As a result, it is anticipated that development along El Camino Real could be set back substantially from the roadway. Less than significant after mitigation. |
| **OS-5. Will the project cause an adverse effect on foreground views from one or more private residences or significantly alter public views?** | Less than significant. Proposed housing developments are consistent with the existing neighborhood character of the three identified sites, including Stanford Avenue and sites along JSB. | No impact. No Project would reduce impacts by not allowing development on El Camino Real and JSB sites proposed for housing in the CP/GUP. | Less than significant. Proposed developments would have to be consistent with the existing neighborhood character of adjacent neighborhoods. Permits would be required, as well as Architecture and Site Approval (ASA). | Less than significant. The reduced project would likely lower proposed densities at housing sites. As a result, it is antici-pated that development along Stanford Avenue would alter views from the College Terrace |

## Table 7-2

### Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | | | | neighborhood to an even lesser extent that the CP/GUP. |
| **OS-6. Will the project create a high intensity light source or glare affecting private residences, passing pedestrians, or motorists?** | Significant. Proposed CP/GUP development could create a light source of high intensity or glare affecting residences, pedestrians, or motorists. Less than significant after mitigation. | No impact. No Project would reduce impacts by not allowing development greater than that allowed by the 1989 GUP. | Significant. Proposed development under this alternative could create a light source of high intensity or glare affecting residences, pedestrians, or motorists. Less than significant after mitigation. | Significant. The reduced project would include similar types of potential light and glare effects as the CP/GUP. Less than significant after mitigation. |
| **3. Population and Housing** | | | | |
| **PH-1. Will the project result in a net loss, through conversion or demolition, of homes occupied by low- or moderate-income households?** | No Impact. No dwelling units will be demolished or converted to construct the planned academic and support facilities. Some existing housing would be demolished to allow for construction of housing at higher densities, but there would be no net loss. | No Impact. No project would not demolish or convert any dwelling units. | No Impact. No dwelling units would be expected to be demolished or converted. | No Impact. The reduced project would not result in the conversion or demolition of homes occupied by low- or moderate-income households. |
| **PH-2. Will the project result in a net loss, through conversion or demolition, of multifamily rental housing?** | No Impact. No dwelling units will be demolished or converted to construct the planned academic and support facilities. Some existing housing would be demolished to allow for construction of housing at | No Impact. No project would not demolish or convert any multifamily rental housing. | No Impact. No multifamily housing would be expected to be demolished or converted | No Impact. The reduced project would not result in the conversion or demolition of multifamily rental housing. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | higher densities, but there would be no net loss. | | | |
| **PH-3. Will the project increase the demand for housing thereby causing indirect environmental impacts?** | Significant. Increased enrollment and employment at Stanford will generate significant housing demand. Mitigation would include linking academic development to housing. Less than significant after mitigation | Significant. Although there would be no new demand for housing elsewhere beyond what is currently allowed, Stanford would not be required to build additional housing units that would be needed to meet the needs of the additional campus population that could be added under this alternative. | Significant. Increased enrollment and employment at Stanford would still increase demand for housing in the area. The linkage of academic development to housing would not be possible with individual project applications. Significant after mitigation | Significant, although reduced as compared to the project, increased enrollment and employment at Stanford would still increase demand for housing in the area. Less than significant after mitigation |
| **4. Traffic and Circulation** | | | | |
| **TRAF-1. Will the project adversely affect public transit service levels or accessibility to public transit service?** | Less than Significant. The increase in trips generated by the project both with and without the arena and theater would add very little increase in transit usage (an estimated 11 AM and 21 PM peak hour trips.) | Less than Significant. The increased demand on transit would be less than the CP/GUP. | Less than Significant. The increased demand on transit would be comparable to the CP/GUP. | Less than Significant. The increased demand on transit would be less than the CP/GUP. |
| **TRAF-2. Will the project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?** | Less than Significant. At the current level of project definition, there would not be any closures to existing paths and access would not be reduced. | Less than Significant. The construction remaining under the 1989 GUP would be limited in area and would not interfere with bicycle or pedestrian facilities. | Less than Significant. Individual projects would be comparable to CP/GUP implementation. | Less than Significant. There would be even fewer potential conflicts to bicycle or pedestrian facilities than with the proposed project. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **TRAF-3. Will the project create adverse impacts to existing parking or access to existing parking?** | Less than Significant. The supply of parking spaces available would exceed the current ratio of parking to population on the campus. | Potentially Significant. Population increases (up to 940) allowed under the 1989 GUP could exceed the available parking supply that could be built (approximately 400 spaces), thereby reducing parking availability. | Less than Significant. Individual projects would be required to provide adequate parking as a condition of approval. | Less than Significant. There would be less development with a corresponding reduction in parking supply. Ratios would be similar to the CP/GUP. |
| **TRAF-4. Will the project create adverse vehicular impacts on the freeway?** | Less than Significant. The residential component of the CP/GUP improves the jobs/housing balance on the campus and would therefore reduce freeway trips. | Less than Significant. Population increases (up to 940) allowed under the 1989 GUP would result in increased commuting, as no corresponding increase in on campus housing may occur. However, the no net new commute trips policy would remain in effect. Therefore, current travel levels would occur and no freeways would be impacted. | Potentially Significant. Population increases from new academic development may or may not be offset by increased housing. In addition, program-level mitigation measures such as TDM may not be implemented on a project by project basis. | Less than Significant. There would be less development of both academic and housing supply, thereby maintaining or slightly improving the existing jobs/housing balance. |
| **TRAF-5a. Will the project create adverse vehicular impacts for intersections in the City of Palo Alto?** | Significant. The project will exceed LOS and/or delay criteria at four Palo Alto intersections. Significant after mitigation. | Less than Significant. Population increases (up to 940) allowed under the 1989 GUP would result in increased commuting, as there may be no corresponding increase in on campus housing. However, the no net new commute trips | Significant. Population increases from new academic development may or may not be offset by increased housing. In addition, program-level mitigation measures such as TDM may not be implemented on a project by | Significant. The reduction in academic development would also include a corresponding reduction in housing. However, intersection impacts may be reduced at one or two intersections because in several cases, |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | | policy would remain in effect. Therefore, current travel levels from Stanford would remain and no Palo Alto intersections would be significantly impacted. | project basis. Significant after mitigation. | the CP/GUP only marginally exceeds evaluation criteria. The intersection of El Camino Real and Churchill Avenue would no longer be significantly impacted without the arena and performing arts center, which are not included in this alternative (see Table 4.4-23). Significant after mitigation. |
| **TRAF-5b. Will the project create adverse vehicular impacts for intersections in the City of Palo Alto specifically included in the Santa Clara County Congestion Management Plan (CMP)?** | Significant. The project will exceed LOS and/or delay criteria at two Palo Alto CMP intersections. Significant after mitigation. | Less than Significant. Population increases (up to 940) allowed under the 1989 GUP would result in increased commuting, as there may be no corresponding increase in on campus housing. However, the no net new commute trips policy would remain in effect. Therefore, current travel levels from Stanford would remain and no Palo Alto CMP intersections would be significantly impacted. | Significant. Population increases from new academic development may or may not be offset by increased housing. In addition, program-level mitigation measures such as TDM may not be implemented on a project by project basis. Significant after mitigation. | Significant. The reduction in academic development would also include a corresponding reduction in housing. Therefore, intersection impacts would likely remain significant at both intersections. Significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **TRAF-5c. Will the project create vehicular impacts for intersections within the unincorporated area of Santa Clara County and not under the control of the City of Palo Alto?** | Significant. The project will exceed LOS and/or delay criteria at three intersections. Significant after mitigation. | Less than Significant. Population increases (up to 940) allowed under the 1989 GUP would result in increased commuting, as there may be no corresponding increase in on campus housing. However, the no net new commute trips policy would remain in effect. Therefore, current travel levels from Stanford would remain and no Santa Clara County intersections would be impacted. | Significant. Population increases from new academic development may or may not be offset by increased housing. In addition, program-level mitigation measures such as TDM may not be implemented on a project by project basis. Significant after mitigation. | Significant. The reduction in academic development would also include a corresponding reduction in housing. Therefore, intersection impacts would likely remain significant at all three intersections. Significant after mitigation. |
| **TRAF-5d. Will the project create vehicular impacts for intersections in the City of Menlo Park?** | Significant. The project will exceed LOS and/or delay criteria at eight intersections. Significant after mitigation. | Less than Significant. Population increases (up to 940) allowed under the 1989 GUP would result in increased commuting, as there may be no corresponding increase in on campus housing. However, the no net new commute trips policy would remain in effect. Therefore, current travel levels from Stanford would remain and no Menlo Park intersections would be impacted. | Significant. Population increases from new academic development may or may not be offset by increased housing. In addition, program-level mitigation measures such as TDM may not be implemented on a project by project basis. Significant after mitigation. | Significant. The reduction in academic development would also include a corresponding reduction in housing. However, Menlo Park significance criteria are set at such a strict a level that intersection impacts would remain significant at all eight intersections. Significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **TRAF-6. Will the project result in traffic impacts to surrounding residential neighborhoods?** | Significant. If the "no net new commute trips" standard is not achieved, impacts may occur to residential streets by either direct Stanford traffic or by non-Stanford traffic that is displaced by increased Stanford traffic. Residential units along Stanford Avenue could result in vehicular conflicts with pedestrians and bicycles. Less than significant after mitigation. | Less than Significant. Limited development would occur under this alternative, substantially reducing the potential for congestion and vehicular conflicts in residential neighborhoods. | Significant. Without "no net new commute trips" standard, the traffic effects of CP/GUP type development would include increased intersection delay and greater chances of cut-through traffic on residential neighborhood streets. Less than significant after mitigation. The same mitigation measures proposed for the CP/GUP could be imposed for specific project applications. | Significant. While impacts may be reduced by a reduction in academic development, the potential would still exist for the increased traffic on residential streets as a result of intersection LOS degradation. Less than significant after mitigation. |
| **TRAF-7. Will the project create additional construction traffic causing a substantial reduction in access to land uses or a reduction in mobility?** | Significant. Construction associated with the GUP could result in reduction of on-street parking, reduction in pedestrian, bicycle and public transit access, additional peak-hour traffic, use of non-truck routes by construction traffic, damage to roadways, and interference with special events. Less than significant after mitigation. | Less than Significant. Limited construction would occur under this alternative, substantially reducing the potential for construction-related impacts. | Significant. Construction impacts from individually permitted projects would be the same as the CP/GUP. Less than significant after mitigation. | Significant. The total number and rate of construction impacts would be lessened with a reduction in the development levels. However, each project would result in the same types of impacts as the CP/GUP. Less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **5. Hydrology and Water Quality** | | | | |
| **HWQ-1. Will the project cause increased runoff due to the creation of impervious surfaces?** | Significant. Development of the CP/GUP would require grading and creation of additional impervious surfaces. Less than significant after mitigation. | Significant. Development would still require grading and creation of additional impervious surfaces. Less than significant after mitigation. | Significant. Development would still require grading and creation of additional impervious surfaces. Less than significant after mitigation, however it could be more difficult to develop detention ponds on a project by project basis. | Significant. The reduced project would also increase peak 100-year runoff flows with the addition of new impervious surfaces. However, the total amount of runoff could be less than the project, and the required volume of detention facilities would be smaller. Less than significant after mitigation. |
| **HWQ-2. Will the project reduce groundwater quantity?** | Significant. It is possible that a portion of the proposed development could occur over the unconfined zone of the Central Campus, leading to a total of approximately 60 acres of new impervious surfaces. Therefore, available groundwater recharge areas could be significantly reduced in the Central Campus. Less than significant after mitigation. | Significant. Development could still occur over the unconfined zone. Less than significant after mitigation. | Significant. Development could still occur over the unconfined zone. Less than significant after mitigation. | Significant. The reduced project would also reduce groundwater recharge area with the addition of new impervious surfaces in the unconfined zone. However, the total amount of lost recharge would be less, and the required volume of recharge facilities would be smaller. The ability to avoid the unconfined zone would be greater. Less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **HWQ-3. Will the project degrade groundwater quality?** | Significant. It is unknown whether all wells located on Stanford lands have been identified and been properly abandoned. Project development within the boundaries of the unconfined zone may result in land uses that could pose a threat to the underlying groundwater quality. Less than significant after mitigation. | Significant. Project development could still include land uses that threaten groundwater quality. Less than significant after mitigation. | Significant. Project development could still include land uses that threaten groundwater quality. Less than significant after mitigation. | Significant. Although to a lesser extent, the reduced project would also have the potential to degrade groundwater quality if Stanford does not take effective steps to prevent groundwater pollution caused by construction activities. Less than significant after mitigation. |
| **HWQ-4. Will the project result in a degradation of surface runoff quality?** | Significant. Project construction and post-construction activities could result in water quality impacts including erosion and sedimentation of nearby surface water bodies. Less than significant after mitigation. | Significant. Construction and post-construction activities could still result in water quality impacts including erosion and sedimentation of nearby surface water bodies. Less than significant after mitigation. | Significant. Construction and post-construction activities could still result in water quality impacts including erosion and sedimentation of nearby surface water bodies. Less than significant after mitigation. | Significant. Although to a lesser extent, the reduced project would also have the potential to degrade surface water quality if Stanford does not take effective steps to prevent stormwater pollution caused by construction activities. Less than significant after mitigation. |
| **6. Geology and Seismicity** | | | | |
| **G&S-1. Will project facilities be damaged by ground surface rupture?** | Less than significant. No active or potentially active faults have been mapped in the immediate project area. | Less than significant. The project area would be the same, and no active faults have been mapped. | Less than significant. Same as CP/GUP. | Less than significant. Same as CP/GUP. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **G&S-2. Will earthquake-induced strong ground shaking damage project facilities?** | Less than significant. Planning, design, and construction of all new structures and support facilities are carried out according to California and Santa Clara County seismic design standards to prevent building collapse, limit property damage, and minimize risk to human life and health. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would still have to comply with existing California and Santa Clara County standards. | Less than significant. Based on compliance with existing California and Santa Clara County standards. | Less than significant. Based on compliance with existing California and Santa Clara County standards. |
| **G&S-3. Will project facilities be damaged by co-seismic ground deformation?** | Less than Significant. Project plans and designs for new facilities are subject to special study and review by an independent Engineering Geologist, the Santa Clara County Building Department, and the County Geologist. In addition, buildings will be designed to tolerate co-seismic ground deformation. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would still have to comply with existing Santa Clara County standards. | Less than significant impact based on compliance with existing Santa Clara County standards. | Less than significant impact based on compliance with existing Santa Clara County standards. |
| **G&S-4. Will project facilities be damaged by liquefaction or settlement during an earthquake?** | Less than significant. Engineering designs required by the County Geologist and/or the County Building Inspection Office will include foundation design measures to prevent | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would still have to comply with existing Santa Clara County | Less than significant impact based on compliance with existing Santa Clara County standards. | Less than significant impact based on compliance with existing Santa Clara County standards. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | or compensate for deformations that could occur due to liquefaction or earthquake-induced settlement. | standards. | | |
| **G&S-5. Will project facilities be damaged by unstable slope conditions?** | Less than significant. Engineering designs will include foundation design measures to prevent or compensate for deformations that could occur due to slope instability. Site-specific geotechnical recommendations for engineering designs will be developed. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would still have to comply with existing Santa Clara County standards. | Less than significant impact based on compliance with existing Santa Clara County standards. | Less than significant impact based on compliance with existing Santa Clara County standards. |
| **G&S-6. Will project facilities be exposed to damage due to expansive soils or soils with moderate to high erosion potential?** | Less than significant. Engineering designs will include foundation design measures to prevent or compensate for deformations that could occur due to expansive soils or high erosion potential. Site-specific geotechnical recommendations for engineering designs will be developed. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would still have to comply with existing Santa Clara County standards.<br>However, the No Project alternative would not include the Special Conservation designation along the creek channels and the area immediately south of JSB. | Less than significant impact based on compliance with existing Santa Clara County standards.<br>However, this alternative would not include the Special Conservation designation along the creek channels and the area immediately south of JSB. Creeks and creek margins are generally sites of potential increased soil erosion, slumping, and | Less than significant impact based on compliance with existing Santa Clara County standards. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | | Creeks and creek margins are generally sites of potential increased soil erosion, slumping, and lateral spreading due to seismic induced liquefaction. The E-SA-SC land use designation would somewhat reduce the potential for damage from the above hazards by preventing/restricting development. | lateral spreading due to seismic induced liquefaction. The E-SA-SC land use designation would somewhat reduce the potential for damage from the above hazards by preventing/restricting development. | |
| **7. Hazardous Materials** | | | | |
| **HAZ-1. Will the project provide safeguards to protect the public from exposure to hazardous materials at concentrations detrimental to human health?** | Significant. Hazardous materials would be stored in the same general areas of campus (e.g., research labs and maintenance facilities) as are currently used to store hazardous materials. However, it is possible that new facilities could be developed under the GUP that would have the potential to expose the public to releases of harmful quantities of hazardous materials. Less than significant with mitigation. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would have to comply with the University's Hazardous Materials Safety System. | Significant. Same as CP/GUP. Compliance with the University's Hazardous Materials Safety System would ensure impacts are less than significant after mitigation. | Significant. Same as CP/GUP. Compliance with the University's Hazardous Materials Safety System would ensure impacts are less than significant after mitigation. |

## Table 7-2

### Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **HAZ-2. Will the project provide safeguards to protect the public from exposure to hazardous waste at concentrations detrimental to human health?** | Less than Significant. Any new or expanded facilities constructed under the GUP would be subject to the requirements of the University's Hazardous Waste Program, which is subject to ongoing review by the County in various forms. The Hazardous Waste Program's requirements would be adequate to ensure compliance with all current and future regulations and laws governing the management of hazardous wastes, low-level radioactive wastes and medical-biological wastes. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would have to comply with the University's Hazardous Materials Safety System. | Less than Significant. Same as CP/GUP. Compliance with the University's Hazardous Materials Safety System and mitigation measures would ensure impacts are less than significant. | Less than Significant. Same as CP/GUP. Compliance with the University's Hazardous Materials Safety System and mitigation measures would ensure impacts are less than significant. |
| **8. Biological Resources** | | | | |
| **BIO-1. Will the project cause a loss of individuals or occupied habitat of endangered, threatened, or rare wildlife or plant species?** | Significant, California tiger salamander. The CP and GUP application propose to allow for new development within areas that contain existing occupied habitat for California tiger salamander.<br><br>No Impact, Steelhead or California red-legged frog. | Significant; California tiger salamander. Existing permits would allow development of new academic and housing uses within areas that contain occupied CTS habitat.<br><br>Significant, steelhead and California red-legged frog. Projects could also affect | Significant; California tiger salamander. The existing land use designations and zoning for lands north of JSB allow for development of residential, academic, and other uses. This alternative would allow for development within areas that contain occupied CTS | Significant; California tiger salamander. Although less square footage of development would occur under this alternative, the Reduced Project would affect occupied habitat for CTS. However, the reduced amount of development |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | The proposed Community Plan and General Use Permit application do not propose any new development or other activities within or adjacent to any of the creeks in the project area.<br>Significant; Rare, Threatened, and Endangered Plants. Development is proposed on undeveloped lands that have not been surveyed.<br>Less than Significant, American peregrine falcon. Marginal foraging habitat for American peregrine falcon is present within the project area; however, suitable nesting habitat does not occur within or adjacent to the proposed development areas.<br>Less than significant after mitigation. | blue-line streams or habitat for rare, threatened or endangered plants. However, given the small amount of development allowed, projects could be sited to avoid habitat areas for special-status species.<br>Significant Rare, Threatened and Endangered plants. Projects could also affect habitat for rare, threatened or endangered plants. However, given the small amount of development allowed, projects could be sited to avoid habitat areas for special-status species.<br>Less than Significant; American peregrine falcon. Suitable nesting habitat does not occur within or adjacent to the potential development areas.<br>Less than significant after mitigation. | habitat.<br>Significant; Steelhead or California red-legged frog. New development projects could affect blue-line streams that provide habitat for steelhead or California red-legged frog.<br>Significant; Rare, Threatened, and Endangered Plants. New development could be proposed on undeveloped lands that have not been surveyed.<br>Less than Significant; American peregrine falcon. Suitable nesting habitat does not occur within or adjacent to the potential development areas.<br>Less than significant after mitigation. | makes avoidance of CTS habitat more feasible.<br>No Impact; Steelhead or California red-legged frog. No new development or other activities would occur within or adjacent to any of the creeks in the project area.<br>Significant; Rare, Threatened, and Endangered Plants. Development would occur on undeveloped lands that may support special-status plants.<br>Less than Significant; American peregrine falcon. Marginal foraging habitat for American peregrine falcon is present within the project area; however, suitable nesting habitat does not occur within or adjacent to the proposed development areas.<br>Less than significant after mitigation. |

## Table 7-2

### Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **BIO-2. Will the project cause a loss of individuals of CNPS List 3 or 4 plant species?** | Significant. One CNPS List 4 plant species has potential habitat in the project area. This species, Gairdner's yampah, is not known to occur in the project area. It is possible, however, that undiscovered occurrences of this or other species exist. Less than significant after mitigation. | Significant. Under this alternative, additional development could be proposed for areas that support habitat for CNPS List 3 or 4 plants. However, given the small amount of development allowed, projects could be sited to avoid these habitat areas. Less than significant after mitigation. | Significant. It is possible that undiscovered occurrences of CNPS List 3 or 4 species may exist in areas currently designated and zoned for future development. Less than significant after mitigation. | Significant. Development would occur on undeveloped lands that may support CNPS List 3 or 4 plants. Less than significant after mitigation. |
| **BIO-3. Will the project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites?** | Significant. Nesting pairs of Cooper’s hawk, sharp-shinned hawk, red-tailed hawk, red-shouldered hawk, white-tailed kite, American kestrel, great horned owl, and barn owl have been documented in the project area. Construction noise and visual disturbance associated with construction activities occurring during the nesting season may lead to nest abandonment and nest failure. Less than significant after mitigation. | Significant. This alternative would allow build-out of projects that are already permitted by the existing GUP. Noise and visual disturbance associated with construction activities occurring during the nesting season may lead to nest abandonment and nest failure. Less than significant after mitigation. | Significant. This alternative would allow build-out of projects consistent with the existing land use designations and zoning. Noise and visual disturbance associated with construction activities occurring during the nesting season may lead to nest abandonment and nest failure. Less than significant after mitigation. | Significant. Although less square footage of development would occur under this alternative, build-out of the Reduced Project would result in construction noise and disturbances. Construction activities occurring during the nesting season may lead to nest abandonment and nest failure. Less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **BIO-4. Will the project cause a permanent net loss of habitat for sensitive wildlife species?** | Less than Significant. The CP/GUP will not affect a substantial percentage of sensitive wildlife habitat at Stanford. | Less than Significant. Only minimal development would be allowed under this alternative, which would therefore not be expected to affect a substantial percentage of sensitive wildlife habitat within the project area. | Less than Significant. This alternative would be expected to have similar levels of development as proposed in the CP/GUP and would therefore not affect a substantial percentage of sensitive wildlife habitat within the project area | Less than Significant. This alternative would have a reduced level of development in the same areas as the CP/GUP and would therefore not affect a substantial percentage of sensitive wildlife habitat within the project area. |
| **BIO-5. Will the project cause a permanent loss of sensitive native plant communities?** | Significant. Vegetation mapping within the project area indicates that some development districts support sensitive plant communities. Sensitive native terrestrial plant communities identified within the development districts include oak woodland and riparian oak woodland. The communities could be impacted by CP/GUP development. | Significant. Portions of the existing campus area support sensitive plant communities, including oak woodland and riparian oak woodland. These communities could be impacted by build-out of permitted uses. However, given the small amount of development allowed, projects could be sited to avoid sensitive native plant communities. Less than significant after mitigation. | Significant. Portions of the existing campus area north of JSB support sensitive plant communities, including oak woodland and riparian oak woodland. These communities could be impacted by future development under the existing land use designations and zoning. Less than significant after mitigation. | Significant. Although less square footage of development would occur under this alternative, build-out of the Reduced Project could still result in a loss of sensitive plant communities. Less than significant after mitigation. |
| **BIO-6. Will the project substantially block or disrupt wildlife migration or travel corridors?** | Significant. Project activities within the Lathrop development district could block dispersal of the California tiger salamander between Lake Lagunita and | Significant. Development on occupied CTS habitat around Lake Lagunita could block dispersal of the California tiger salamander between the lake and surrounding upland | Significant. Development on occupied CTS habitat around Lake Lagunita could block dispersal of the California tiger salamander between the lake and | Significant. Project activities on occupied CTS habitat around Lake Lagunita or within the Lathrop development district could block |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | the upland foothill habitat south of JSB. Less than significant after mitigation. | habitats. However, given the small amount of development allowed, projects could be sited to avoid critical paths for CTS dispersal. Less than significant after mitigation. | surrounding upland habitats. Less than significant after mitigation. | dispersal of the California tiger salamander between the lake and surrounding upland habitats. Less than significant after mitigation. |
| **BIO-7. Will the project conflict with the County's tree preservation ordinance?** | Significant. Construction of project academic facilities and housing units could result in the need to remove trees that are protected by the Santa Clara County tree preservation ordinance. Less than significant after mitigation. | Significant. Construction of new academic facilities and housing units could result in the need to remove trees that are protected by the Santa Clara County tree preservation ordinance. However, given the small amount of development allowed, projects could most likely be sited to avoid protected trees. Less than significant after mitigation. | Significant. Construction of new academic facilities and housing units could result in the need to remove trees that are protected by the Santa Clara County tree preservation ordinance. Less than significant after mitigation. | Significant. Construction of new academic facilities and housing units could result in the need to remove trees that are protected by the Santa Clara County tree preservation ordinance. Less than significant after mitigation. |
| **BIO-8. Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?** | Less than Significant. The proposed CP/GUP would allow for new development and other activities within the current boundaries of the CTS Management Zone, but the CTS Management Agreement allows additional development if consistent with the Agreement and impacts are mitigated. | No impact. Proposed projects would be subject to the terms and conditions of the existing CTS Management Agreement. | Less than Significant. Proposed projects would be subject to the terms and conditions of the existing CTS Management Agreement. | Less than Significant. The Reduced Project alternative would allow for new development and other activities within the current boundaries of the CTS Management Zone. Less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **BIO-9. Will the project result in a net loss of wetlands or other waters of the U.S.?** | Significant. The proposed CP and GUP application may result in new development or other activities within or adjacent to small, isolated wetlands or other waters of the U.S. Less than significant after mitigation. | Significant. Build-out of permitted uses could affect wetlands or other waters of the U.S. However, given the small amount of development allowed, projects could most likely be sited to avoid jurisdictional resources. Less than significant after mitigation. | Significant. The existing land use designations and zoning would allow for new development that could affect wetlands or other waters of the U.S. Less than significant after mitigation. | Significant. The Reduced Project alternative may result in new development or other activities within or adjacent to small, isolated wetlands or other waters of the U.S. Less than significant after mitigation. |
| **9. Historic and Archaeological Resources** | | | | |
| **HA-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?** | Significant. If the General Use Permit is approved, it is possible that specific building projects would be proposed that would either alter or demolish resources that are either currently included in the County Inventory or that are determined by the County to be historical resources. Potentially significant after mitigation, because it cannot be determined at this time whether impacts to a particular resource can be mitigated to a less than significant level. | Significant. Allowed development at Stanford would have to implement the requirements of the 1989 GUP EIR, but would still have the potential to affect historic resources. Potentially significant after mitigation. | Significant. Because it is unknown whether all historical resources have been identified at Stanford, the potential exists for an historical resource to be impacted by a proposed academic or housing project. Potentially significant after mitigation. | Significant. The reduced project alternative would include the same type of alterations to the core campus as the CP/GUP. Based upon the lack of specifics regarding academic development, the potential exists for impacts to existing or potential historic resources. Potentially significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **HA-2. Will the project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?** | Significant. Five prehistoric archaeological sites have been identified and mapped within the Lathrop and West Campus development districts. It is also possible that earth-moving activities in these districts may uncover previously unknown archaeological sites, both prehistoric and historic. Less than significant after mitigation. | Significant. Allowed development at Stanford would have to implement the requirements of the 1989 GUP, but would still have the potential to affect archaeological resources. Less than significant after mitigation. | Significant. Because it is unknown whether all archaeological resources have been identified at Stanford, the potential exists for an undiscovered resource to be impacted by a proposed academic or housing project. Less than significant after mitigation. | Significant. Although the reduced project alternative would reduce development levels in Lathrop and West Campus, it would still include the same type of alterations to the core campus as the CP/GUP. Based upon the possibility of discovering buried archaeological resources during construction, the potential exists for adverse effects to those buried resources. Less than significant after mitigation. |
| **HA-3. Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?** | Significant. Fossils have previously been identified and mapped on Stanford lands. It is possible that excavation would uncover additional unique paleontological resources. Less than significant after mitigation. | Significant. Allowed development at Stanford would have to implement the requirements of the 1989 GUP, but would still have the potential to affect paleontological resources. Less than significant after mitigation. | Significant. Because it is unknown whether all paleontological resources have been identified at Stanford, the potential exists for an undiscovered resource to be impacted by a proposed academic or housing project. Less than significant after mitigation. | Significant. Fossils have previously been identified and mapped on Stanford lands. It is possible that excavation would uncover additional unique paleontological resources. Less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **HA-4. Will the project disturb any human remains, including those interred outside of formal cemeteries?** | Significant. It is possible that human remains, including Native American burials, will be encountered during ground disturbing activities. Less than significant after mitigation. | Significant. Allowed development at Stanford would have to implement the requirements of the 1989 GUP, but would still have the potential to affect human remains. Less than significant after mitigation. | Significant. It is possible that human remains, including Native American burials, will be encountered during ground disturbing activities. Less than significant after mitigation. | Significant. It is possible that human remains, including Native American burials, will be encountered during ground disturbing activities. Less than significant after mitigation. |
| **10. Public Services and Utilities** | | | | |
| **PS-1. Will the Project increase demand for police, fire, water, power, sewage treatment and disposal, or solid waste removal to such a degree that accepted service standards are not maintained?** | Significant, Police & Fire. The project would potentially reduce response times and the ratio of population to police officers and fire personnel.<br>Less than significant, Solid Waste. With continued implementation of ongoing waste diversion programs, the increase in solid waste generation at Stanford is not expected to reduce the estimated life of the Newby Island Landfill.<br>Significant, Water. The estimated new water demand exceeds current water allocations. | Significant, Police & Fire. Compliance with the existing “no net new commute trips” policy would reduce impacts to response times. However, the addition of up to 940 additional people would reduce the ratio of population to police officers and fire personnel.<br>Less than significant, Solid Waste. Remaining development under the 1989 GUP will not affect solid waste landfill life expectancy.<br>No Impact, Water. Existing allocations would not be exceeded with development | Significant, Police & Fire. Development would be proposed on a project by project basis, equal to the CP/GUP. Impacts to response times and the ratio of population to police and fire personnel would be similar, but commute trip reduction mitigates response time impacts.<br>Less than significant, Solid Waste. With continued implementation of ongoing waste diversion programs, the increase in solid waste generation at Stanford is not expected to reduce the estimated life of the Newby Island Landfill. | Significant, Police & Fire. The reduced project would lessen the impacts to response times and the ratio of population to police officers and fire personnel.<br>Less than significant Solid Waste. With continued implementation of ongoing waste diversion programs, the increase in solid waste generation at Stanford is not expected to reduce the estimated life of the Newby Island Landfill.<br>Less than Significant, Water. The new water demand for the reduced |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | Significant, Wastewater. Portions of the City's existing collection system may not be adequate to accommodate additional wastewater flows.<br><br>Less than significant, Electrical Power. Future growth over the next 10 years can be accommodated through the December 2000 Palou substation upgrade.<br><br>Less than significant after mitigation. | allowed under the 1989 GUP.<br><br>No Impact, Wastewater. Existing wastewater treatment and collection system capacity would not be exceeded with development allowed under the 1989 GUP.<br><br>Less than significant, Electrical Power. Remaining development allowed under the 1989 GUP can be accommodated through the December 2000 Palou substation upgrade.<br><br>Less than significant after mitigation. | Significant, Water. Water demand for projects that could be proposed under this alternative would be similar to demand of the CP/GUP, and allocations may be exceeded with less ability to require reduced water use through the permit process.<br><br>Significant, Wastewater. Wastewater generation for projects that could be proposed under this alternative would be similar to generation of the CP/GUP, and collection system capacity may be exceeded.<br><br>Less than significant, Electrical Power. Development up to the levels proposed in the CP/GUP can be accommodated through the December 2000 Palou substation upgrade.<br><br>Less than significant after mitigation. | project would not exceed current water allocations.<br><br>Significant, Wastewater. The City's existing collection system capacity is currently exceeded at peak flows, so any additional development would exceed capacity.<br><br>Less than significant, Electrical Power. Development in the level of the reduced project can be accommodated through the December 2000 Palou substation upgrade.<br><br>Less than significant after mitigation. |

## Table 7-2

### Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **PS-2. Will the project create a demand for additional school capacity that cannot be met by existing or planned capacity?** | Significant. Proposed construction of residential housing may have an adverse impact on school capacity. Payment of statutory school impact fees would mitigate this impact. Less than significant after mitigation. | Significant. Proposed development would result in much less demand for school capacity. Payment of statutory school impact fees would mitigate this impact. Less than significant after mitigation. | Significant. Proposed development under this alternative would result in similar demand for new school capacity. Payment of statutory school impact fees would mitigate this impact. Less than significant after mitigation. | Significant. Proposed development would result in approximately half of the demand for school capacity as the CP/GUP. However, existing capacity is not sufficient. Therefore, even a reduced demand would be significant. Payment of statutory school impact fees would mitigate this impact. Less than significant after mitigation. |
| **11. Air Resources** | | | | |
| **AIR-1. Will there be inadequate mitigation for potential construction-period emissions?** | Significant. Construction equipment typically operates using diesel fuel and particulate matter from diesel engine exhaust has been identified by the State of California as a toxic air contaminant (TAC). Less than significant after mitigation. | Significant. There would still be a potential for diesel emissions. However, remaining development could be required to implement the identical construction mitigation measures as the project and would be less than significant after mitigation. | Significant. There would still be a potential for diesel emissions. However, the individual projects would likely be required to implement the identical construction mitigation measures as the project and would be less than significant after mitigation. | Significant. There would still be a potential for diesel emissions. However, the reduced project would be required to implement the identical construction mitigation measures as the project and would be less than significant after mitigation. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **AIR-2. Will the project produce local CO concentrations that exceed federal and state standards?** | Less than Significant. The CAL3QHC dispersion model was used to estimate the 1- hour CO concentrations during the peak AM and PM hours at six intersections that exceed LOS and delay criteria. These intersections did not exceed state or federal CO significance criteria. | Less than significant. There would be less traffic so CO concentrations would not be expected to exceed state and federal air quality standards. | Less than Significant. The project would generate CO concentrations below the state and federal air quality standards. Therefore, development under this scenario would also be expected to comply with state and federal air quality standards. | Less than Significant. The project would generate CO concentrations below the state and federal air quality standards. Therefore, the reduced project would also comply with state and federal air quality standards. |
| **AIR-3. Is the project inconsistent with emission growth factors contained in any BAAQMD air plans or does it result in an emissions increase greater than the listed significance thresholds?** | Less than Significant. Policies contained within the CP support the applicable transportation control measures (TCMs) as referenced in the Bay Area 1997 Clean Air Plan and the San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard. Emissions do not exceed the BAAQMD significance thresholds. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP. | Less than Significant. TCMs might not be implemented under this alternative. Emissions would not exceed BAAQMD thresholds. | Less than Significant. Same as CP/GUP, except emissions would be lower by approximately half. |
| **AIR-4. Will the project create objectionable odors?** | Less than Significant. Nuisance odors are generated from traditional sources that include wastewater treatment plants, composting facilities, | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and is not expected to contain | Less than Significant. Potential development is not anticipated to contain inherently odorous new sources such as compost facilities or wastewater | Less than Significant. The reduced project is not anticipated to contain inherently odorous new sources such as compost facilities or wastewater |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| | chemical plants, and others. Such inherently odorous sources would not be constructed as part of the project. | inherently odorous new sources. | treatment plants | treatment plants. |
| **AIR-5. Will the project significantly alter air movement, moisture, or temperature, or change in climate, either locally or regionally?** | Less than Significant. The project would not contain any significant new sources capable of impacting local or global climate change or significantly altering air movement. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and is not expected to contain any significant new sources capable of impacting local or global climate change or significantly alter air movement. | Less than Significant. Development under this scenario is not expected to contain any significant new sources capable of impacting local or global climate change or significantly alter air movement. | Less than Significant. The reduced project would not contain any significant new sources capable of impacting local or global climate change or significantly alter air movement. |
| **AIR-6. Will the project expose sensitive receptors or the general public to substantial levels of toxic air contaminants?** | Less than Significant. Compliance with the BAAQMD's legally required standard permitting process would ensure that levels of toxic air contaminants are not significant. Mitigation for diesel emissions is addressed under impact AIR-1. | Less than significant. Allowed development at Stanford would be consistent with the requirements of the 1989 GUP and would be expected to contain sources below the BAAQMD permitting threshold, therefore not exposing receptors to substantive levels of toxic air contaminant levels. | Less than Significant. Projected development would still be expected to contain sources below the BAAQMD permitting threshold, therefore not exposing receptors to substantive levels of toxic air contaminant levels | Less than Significant. The reduced project would only contain sources below the BAAQMD permitting threshold, therefore not exposing receptors to substantive levels of toxic air contaminant levels. |

## Table 7-2

### Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **12. Noise** | | | | |
| **NOISE-1. Will construction of the project expose the public to high noise levels?** | Significant. Due to the potential exceedance of the County's noise regulations at residential locations outside the campus (e.g. residences on Stanford Avenue), this impact is considered to be significant, even after mitigation. | Less than significant. Construction of new development allowed under the 1989 GUP would not be expected to affect off-campus receptors. | Significant. Construction impacts would still occur and would potentially affect off-campus locations, even after mitigation. | Significant. Construction impacts would still occur and would potentially affect off-campus locations, even after mitigation. |
| **NOISE-2. Will operation of the project expose the public to high noise levels?** | Significant. The Quarry District includes a proposed parking structure and housing for hospital resident/postgraduate fellows. Depending on the distance between this development and the proposed parking structure, the Leq during AM and PM peak hours may exceed 55 dBA at the location of the nearest residence. Less than significant after mitigation. | Significant noise impacts could still occur under the 1989 GUP, but would be expected to be reduced to less than significant with mitigation. | Significant noise impacts could still occur, but would be expected to be reduced to less than significant with mitigation. | Significant noise impacts could still occur, but would be expected to be reduced to less than significant with mitigation. |
| **NOISE-3. Will operation of the project expose the public to high traffic noise levels?** | Less than significant. Traffic noise associated with increased Stanford traffic would be minimal and would not exceed evaluation criteria. | Less than significant. Traffic noise levels would be expected to be minimal. | Less than significant. Traffic noise levels would still be expected to be minimal. | Less than significant. Traffic noise levels would be expected to be less than with the proposed project. |

# Table 7-2

## Alternatives Impact Comparison

| Impact | CP/GUP (Project) | No Project – No Additional Permits | No Project – Additional Permits | Reduced Project |
|---|---|---|---|---|
| **NOISE-4. Will vibration from project construction cause any disturbance?** | Less than Significant. Noise vibration would be created during construction activities and may be perceived excessive by academic activities at certain facilities which rely on a “free of vibration” environment, such as engineering research, mechanical laboratories, and medical laboratories. However, Santa Clara County’s noise and vibration ordinance only pertains to impacts at the campus property line, and it is highly unlikely that vibration effects would cross the property line. | Less than significant. Vibration levels during the remaining construction allowed under the 1989 GUP would be the same as with the project, although less total construction would occur than under the proposed project. | Less than significant. Vibration levels during construction would be the same as with the project. | Less than significant. Vibration levels during construction would be the same as with the project, although less total construction would occur than under the proposed project. |

## 7.4 DESCRIPTION AND ANALYSIS OF ALTERNATIVE COMPONENTS

Alternative components have been developed to supplement the project-level alternatives described in Section 7.2 and analyzed in Section 7.3. The alternative components have been analyzed on a component level so that they may be combined with the proposed CP/GUP or any of the project-level alternatives. By studying alternative components to various aspects of the proposed CP and GUP, the EIR expands the range of alternatives available to reduce or avoid significant impacts of the project. This approach to alternatives analysis was selected in response to the complexity of the proposed project. This section evaluates to what extent significant environmental impacts can be avoided or reduced, and what new impacts might be created, by changing an individual element of the project, such as relocating housing proposed for sites that provide habitat for the California tiger salamander, or moving the academic growth boundary closer to the existing academic facilities in the Lathrop District. Because the alternative project components can be combined with the proposed project's components in numerous ways, this analysis results in the identification and evaluation of a wide range of potential project variations. Table 7-3 provides a description of the alternative components along with an analysis of the components benefits or impacts.

**Table 7-3**

Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Location of the Academic Growth Boundary (AGB)** | |
| Public scoping requested that alternatives to the Academic Growth Boundary (AGB) along Junipero Serra Blvd. (JSB) be considered. The AGB as defined in the Community Plan (CP) would allow development (20,000 square feet of development proposed in the GUP) south of JSB in the Lathrop Development District. Alternative AGB components would include the following:<br>**AGB-A -** AGB that parallels the boundary of existing academic development and excludes the golf course both north and south of JSB (would allow for the development of 20,000 square feet in Lathrop adjacent to existing development, and the proposed Carnegie Foundation if approved).<br>**AGB-B -** AGB that parallels JSB (would allow existing development to remain south of JSB, but would require the 20,000 square feet of development proposed in Lathrop to be relocated north of JSB).<br>Figure 7-1 shows the alternative AGB boundary locations. | **AGB-A**<br>This component would eliminate visual and open space impacts at lands south of JSB, and would eliminate the possibility of using the golf course north of JSB for high density housing. Placement of the AGB in this location would reduce potential impacts to California tiger salamander (CTS) that would occur as a result of future development in the Lathrop development district. The 20,000 square feet of development would still be allowed under this component, but would have to be constructed adjacent to the existing development area.<br>**AGB-B**<br>This component would prohibit any academic development south of JSB and would therefore increase the protection of open space and scenic viewsheds. The relocation of the 20,000 square feet of development proposed for Lathrop would not result in new or substantially more severe impacts if constructed in the campus center area. This alternative would also eliminate the potential impacts to CTS of development south of JSB. |

## Table 7-3

### Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Land Use Designations (LU)** | |
| Figure 7-2 shows the alternative land use designations.<br>**Golf Course Area**<br>**LU-A -** Change entire golf course from Academic Campus (E-SC) to Campus Open Space (E-SCO) and remaining undeveloped portions of E-SC south of JSB to E-SFR (Open Space and Field Research). This alternative component corresponds to alternative component AGB-A above.<br>**LU-B -** Change golf course from E-SC (north of JSB) to Campus Residential-Moderate Density (E-SR-2) and from E-SC (South of JSB) to Campus Open Space (E-SCO) or E-SFR. The portion of the golf course north of JSB will be evaluated as an alternative location for housing development. This site would provide an opportunity for relocation of some of the housing proposed in other locations in the CP/GUP. The site is not proposed for additional housing development in excess of CP/GUP numbers. This alternative component corresponds to alternative component AGB-B above because it reflects an AGB along JSB. | **LU-A**<br>This component would provide greater protection for the golf course and Stanford foothills lands. Future development potential would virtually be eliminated, thereby reducing impacts on open space and visual resources.<br>**LU-B**<br>This component would change the golf course designation to Campus Residential – Moderate Density north of JSB. This alternative would allow for housing to be constructed on golf course lands north of JSB instead of at sites closer to Lake Lagunita, thereby allowing for greater protection of lands within the CTS habitat management area. However, development of the golf course lands north of JSB would require the relocation of golf course holes one through seven to an area south of JSB (see Figure 7-3). This may be consistent with Open Space/Academic Reserve (E-SA) proposed in the CP, but is most likely inconsistent with an Open Space/Field Research (E-SFR) use alternative (see section below). The proposed 130-acre site for the relocation would result in open space, visual, and biological resources impacts to the Stanford foothills (see Figure 7-3). |
| **Stanford Foothills (LU-C)**<br>This alternative component would change the Open Space and Academic Reserve (E-SA) designation that is proposed in the CP for a majority of the foothills to Open Space and Field Research (E-SFR -new alternative designation). No development would be permitted in this new designation unless it supports field study activities. | This component would provide greater protection of Stanford foothills lands than provided in the CP. The use would require further definition, but would limit uses of the foothills to strictly scientific research. Additional use permits for development would not be permitted, as is proposed in the CP. Uses could be incompatible with recreational use of the foothills, which would result in potentially significant impacts to existing recreation. |
| **Arboretum Corner (LU-D)**<br>The land use designation would be changed from E-SC as proposed in the CP to Campus Open Space (E-SCO). | This component may somewhat reduce the potential for liquefaction impacts by maintaining the Arboretum corner site as open space. Further, it would maintain an open space area located adjacent to the Stanford Stadium. However, neither of these impacts is significant. Vegetation in this portion of the Arboretum consists mainly of eucalyptus trees, and the area is frequently used for event-related parking. |

# Table 7-3

## Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Special Conservation (LU-E)**<br>This alternative component recognizes that the County may identify additional or other lands for Special Conservation as mitigation for potential environmental effects of the CP/GUP. | Potential sites that may be considered for the special conservation designation include key habitat for sensitive species (e.g. California tiger salamander habitat areas located within 500 meters of Lake Lagunita), creek areas, and areas of geotechnical hazards. The designation of these sites as special conservation would ensure that they are protected for their habitat or environmental value. This alternative would have no direct environmental impacts, and could allow for protection of special resource areas. |
| **Transportation Improvements (TRAN)** | |
| **No Net New Commute Trips (TRAN-A)**<br>This standard is evaluated both as a mitigation measure and as an alternative to the CP. The standard will pertain to new trips during peak hours in the commute direction. | This component has been evaluated in Section 4.4 – Traffic and Circulation to determine if it could effectively mitigate intersection and roadway impacts that would result from adoption of the CP and construction of development included in the GUP. The Traffic section identifies existing and new Traffic Demand Management programs that may be used to maintain commute trips at present or reduced levels. The "no net new commute trips" standard would also potentially eliminate the need for some intersection improvements that would otherwise be needed to maintain required intersection levels of service. The benefit of not having to make the intersection improvements is the reduction of potential effects associated with right-of-way acquisition, roadway widening, and landscape and tree removal. Intersection improvements expand capacity but do not achieve trip reduction. |
| **Alpine Road/Sand Hill Road**<br>Several roadway and intersection improvements have been proposed and adopted in past environmental documents for these roadways. It is unlikely that some of these improvements will be implemented due to recent decisions made by Menlo Park. As an alternative to intersection and roadway improvements along Alpine Road and Sand Hill Road, the following is proposed:<br>**TRAN-B -** Construct a new roadway segment linking the campus to the I-280/Alpine Road intersection. This segment would use existing roadways from Sand Hill Road through campus to JSB, and would then connect with a new roadway to be constructed from JSB (at Links Road near the entrance to the golf course) to Alpine Road on Stanford-owned lands. | This component would result in the construction of a new roadway to connect Stanford land uses with the Alpine Road/I-280 interchange. This roadway would reduce significant intersection impacts at the intersections along Sand Hill and Alpine Roads (see Section 4.4.G). However, construction of the roadway would require substantial grading (over 100,000 cubic yards) and a crossing of Los Trancos Creek and therefore, potential water quality impacts associated with the construction of a new roadway in the foothills. Roadway runoff is a major source of nutrient loading of the local creeks. The addition of nighttime vehicular lighting along the ridgeline of the Stanford foothills would increase levels of local light and glare.<br>The roadway would traverse areas of grassland and oak woodland (a sensitive plant community), resulting in |

# Table 7-3

## Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| Figure 7-4 shows the alternative roadway alignment from Sand Hill Road to the Alpine Road/I-280 interchange. | the loss of 10 acres of oak woodland and 12 acres of annual grassland. Loss of oak woodland would be a significant impact. The crossing of Los Trancos Creek would have potential effects to California red-legged frog and steelhead.<br>Construction of a new roadway in the foothills would open up the area to additional growth pressures. The loss of the open space lands required for roadway construction could be worsened by future growth that could occur in the area with new vehicular access. This is a significant unavoidable impact of this alternative. |
| **Trails (TRAN-C)**<br>The CP/GUP identifies trails included in the County Trails Master Plan, but does not propose the official dedication of any new trail corridors, nor any trail improvements. As an alternative to the CP/GUP, Stanford would dedicate an easement for the sub-regional and connector trail routes identified in the CP (Figure 7-5) pursuant to the policies adopted in the County Trails Master Plan Guidelines. | This component would include the dedication of two County identified trail corridors. The dedication of the trail corridors would set up the possibility for the eventual improvement of the trails pursuant to the County Trails Master Plan. The trails would connect Stanford lands with other County trails, and could potentially allow for a trail corridor to connect the San Francisco bay with the I-280 foothills. The trails would help mitigate recreational impacts from the population increases that would result from the CP/GUP, and would provide alternative transportation choices to help mitigate traffic impacts. However, the trails could result in potential effects to potentially sensitive habitat that parallels San Francisquito and Matadero creeks. These impacts could be avoided through appropriate trail design. |
| **Reduced Parking (TRAN-D)**<br>The CP/GUP provides parking in association with proposed academic and residential expansion. As an alternative to the CP/GUP parking proposal, CP/GUP development levels would be maintained with a reduction in parking supply for academic uses by one-half. This alternative would be intended to encourage greater use of non-automobile modes of travel. | This component would reduce parking expansion for academic uses. A reduction in the parking supply could help Stanford implement TDM measures to reduce the reliance on the private automobile for commuting. The parking included in the CP/GUP exceeds parking supply relative to the existing ratios of parking provided on campus. However, too little parking could lead to off-site parking conflicts with residential uses. A shortage of on-site parking could result in parking on residential streets, and increased congestion on adjacent residential roadways. The analysis determined that the amount of parking needed to maintain current ratios would involve a 21% reduction from the amount proposed by Stanford. |

# Table 7-3

## Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Housing (HOUS)** | |
| **<u>Linkage between Housing and Academic Development (HOUS-A)</u>**<br>As an alternative to the CP/GUP, Stanford shall be required to construct housing prior to, or concurrently with, any increase in academic space. The commitment shall include 500 student and 175 hospital and postgraduate units within 2 years of GUP approval, 500 additional student units within 4 years of GUP approval, and 335 faculty and staff units within 6 years of GUP approval. This housing commitment shall be completed or permitted by the time an additional 1,000,000 square feet of academic development occurs. For approval of academic development above 1,000,000 square feet, further increments of housing shall be required. Seventy-five percent of the GUP housing shall be constructed by the time a total of 1,500,000 square feet of academic development occurs, and 100 percent of the housing shall be completed by the time 2,000,000 square feet of academic development occurs. If additional academic development beyond 1,000,000 square feet is desired prior to year 6 of the GUP implementation, the housing commitment would need to be accelerated. | This component would not result in any physical impacts. The benefits of this component would be to ensure that additional housing is constructed to match housing demand that would correspond with the proposed academic development thereby helping to mitigate impacts associated with development of off-campus housing. Construction of on-site housing would make the achievement of no net new commute trips possible, by reducing the number of faculty, staff and students who must commute to the campus in the AM and PM peak hours. |
| **<u>Golf Course Housing (HOUS-B)</u>**<br>As an alternative to the CP designation, the golf course site (north of JSB) would be developed as an alternate site for housing (Note: the site will not be used to increase the total number of housing units provided for in the CP). The purpose of this alternate site is to address the loss of housing potential that would result if other sites were found infeasible for housing. The availability of an alternate site addresses some problems that have been identified for some of the other CP proposed housing sites (e.g., California tiger salamander habitat disturbance). Use of this site for housing would require relocation of the golf course (see Figure 7-3). | **HOUS-B**<br>This component would result in the development of housing on the golf course site north of JSB. Construction of housing at this site would require the relocation of the holes one through seven to the foothills area south of JSB and east of the residential neighborhood that runs between Alpine Road and San Francisquito Creek. The relocation of the golf course would reduce the amount of natural open space available on Stanford lands, would increase the possibility of land use conflicts with the residential uses along Alpine Road, and could be inconsistent with the alternative Open Space/Field Research land use designation. In addition, the relocation of the golf course would result in negative changes to existing natural open space views from a scenic highway (Interstate 280) near the Alpine Road interchange. Housing in this location would conflict with the Sand Hill Road Development Agreement between Stanford and the City of Palo Alto. However, use of the golf course lands could allow for the protection of the Stable site and lower Knoll sites as CTS habitat. |

# Table 7-3

## Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Stanford Avenue (HOUS-C)**<br><br>An alternative to the CP/GUP is to not build the proposed housing on Stanford Avenue. | **HOUS-C**<br>This component would maintain the proposed faculty/staff housing along Stanford Avenue as open space. This alternative would therefore reduce potential visual effects from College Terrace viewpoints, which were determined to be less than significant. However, this component could require the development of other lands such as the golf course and foothills, which could result in potential visual effects to residences located in San Mateo County. This component would eliminate significant short-term construction noise impacts associated with building housing at this site. |
| **El Camino Real near Stanford Ave**.<br><br>Scoping comments cite the loss of open space along El Camino Real. Alternatives to the graduate student housing in the CP would include:<br><br>**HOUS-D -** No Build.<br><br>**HOUS-E -** Relocate the proposed graduate student housing to the existing Escondido Village (EV) area. | **HOUS-D**<br>This component would maintain the proposed graduate and postgraduate housing sites along El Camino Real as open space. This alternative would therefore reduce potential visual effects from El Camino Real viewpoints. However, mitigation incorporated in the proposed project would reduce these impacts to less than significant.<br><br>This component could require the development of other lands for graduate student housing, such as the golf course and foothills, which could result in potential visual effects to scenic roadways. The resultant visual impacts to this open space area would be greater than the impacts along El Camino Real, which is already a developed area.<br><br>**HOUS-E**<br>This component would relocate the proposed housing to the adjacent EV area and would maintain the El Camino Real sites as open space. This alternative would therefore reduce potential significant but mitigable visual effects from El Camino Real viewpoints while also providing for needed graduate and postgraduate housing units. Relocating the proposed graduate student housing to EV would result in visual impacts due to taller buildings, but these impacts would be less substantial than unmitigated impacts from housing along El Camino Real. |
| **Quarry Site (next to El Camino Real)**<br><br>Scoping comments from Palo Alto indicate the desire for a larger set back from El Camino Real than proposed in the CP. Alternatives to the CP would include: | **HOUS-F**<br>This component is similar to Mitigation Measure OS-4, which encourages Stanford to incorporate a 25-foot setback from El Camino Real into design of housing in this area, consistent with City of Palo Alto zoning |

# Table 7-3

## Description and Analysis of Alternative Components

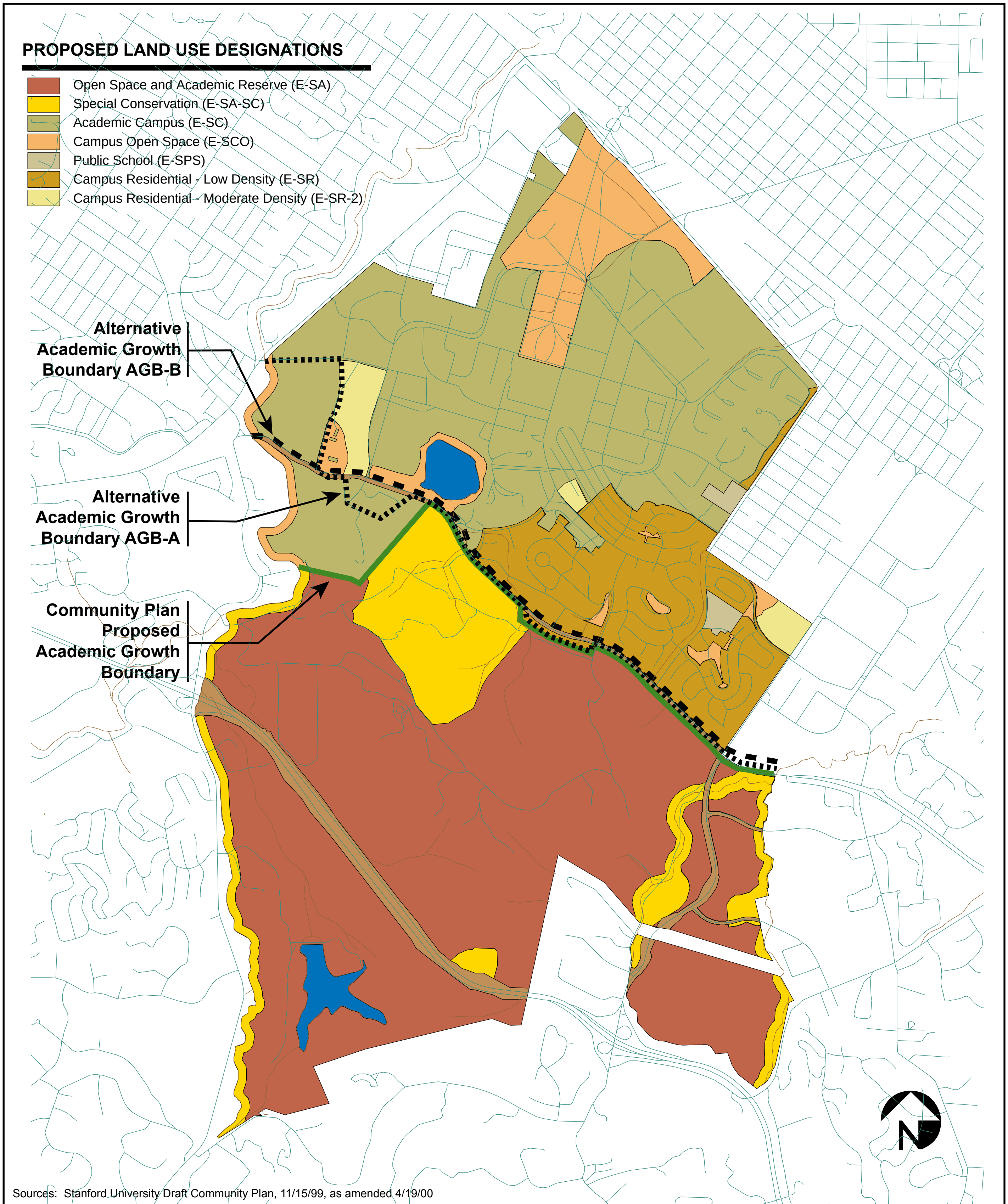
| Alternative Component | Analysis |
|---|---|
| **HOUS-F -** Provide requested set back from El Camino Real and reduce the number of postgraduate housing units on this site by half to 75 units (without constructing additional postgraduate housing units elsewhere).<br><br>**HOUS-G -** Provide requested set back from El Camino Real and relocate 75 postgraduate housing units to the Quarry & Arboretum site. | requirements for multifamily housing along arterial streets. With implementation of this measure impacts would be less than significant. The further reduction in housing units incorporated in this alternative would worsen an already significant housing impact, and could make it more difficult to achieve the "no net new commute trips" standard.<br><br>**HOUS-G**<br>This component provide the same open space/visual benefits as alternative HOUS-F, but would preserve the housing by relocating it to another site. This would avoid any worsening of housing impacts. The same set backs as proposed under Mitigation Measures OS-4 would be required. |
| **<u>Infill Housing (Faculty/Staff housing areas)</u>**<br><br>Scoping comments indicate that some existing residents think the high-end number of single-family units proposed in the CP would be out of character with this area. Alternatives to the CP would include:<br><br>**HOUS-H -** No Build.<br><br>**HOUS-I -** Reduce number of units per acre from 8 in the CP to 4. | **HOUS-H**<br>Elimination of these sites would preserve informal open space areas in the existing faculty staff housing area, but loss of these sites in the proposed project is mitigated by designation of open space areas. Further improvements to the designated open space areas would fully mitigate potential loss of infill housing sites. Thus no significant unmitigated impacts would be avoided.<br><br>**HOUS-I**<br>Reduction in number of units would not eliminate any impacts, but would reduce the amount and potentially the affordability of this housing. The proposed densities were not determined to be incompatible with surrounding housing. |
| **<u>Stable, Driving Range and the Lower Knoll Sites (HOUS-J)</u>**<br><br>The Stable, Driving Range and Lower Knoll housing sites are all located within the California tiger salamander management zone. This alternative would involve no housing on those sites. If housing could not be constructed within these sites, the golf course site (north of JSB) could be an alternative housing site. The use of golf course lands north of JSB would result in the need to relocate the golf course to lands south of JSB (see Figure 7-3). | **HOUS-J**<br>This component would preserve areas that could be habitat for CTS. The Driving Range site is a potential future restoration site, but does not currently provide habitat for the salamander. The Stable Site is lower quality habitat for CTS. Although the Lower Knoll site provides CTS habitat, with proposed mitigation, impacts to CTS were determined to be less than significant. Relocation of the golf course would result in greater loss of oak woodland habitat and annual grasslands that are also potential CTS habitat. Relocation of the golf course would also have open space impacts. |

## Table 7-3

Description and Analysis of Alternative Components

| Alternative Component | Analysis |
|---|---|
| **Schools (SCHOOL)** | |
| The Community Plan does not designate a site for a middle school, but the Palo Alto Unified School District has requested that Stanford set aside land for that purpose. This component includes a middle school site near the intersection of Page Mill and Deer Creek Roads. Stanford has proposed that if the School District and Stanford reach an agreement about a school site, that Stanford would recommend to the County that an appropriate land use designation be adopted for that site. Figure 7-6 shows the potential school site location that Stanford identified in their CP application. | **SCHOOL**<br>This component would result in potential development of a middle school on open lands near the intersection of Page Mill and Deer Creek Roads. This component would result in the potential loss of open space in the Stanford foothills, and the loss of oak woodland habitat (a sensitive native plant community). Loss of oak woodland habitat would be significant, but could likely be mitigated to a less than significant level. |

File: 736167\graphics\PropLU Date: 6/22/2000



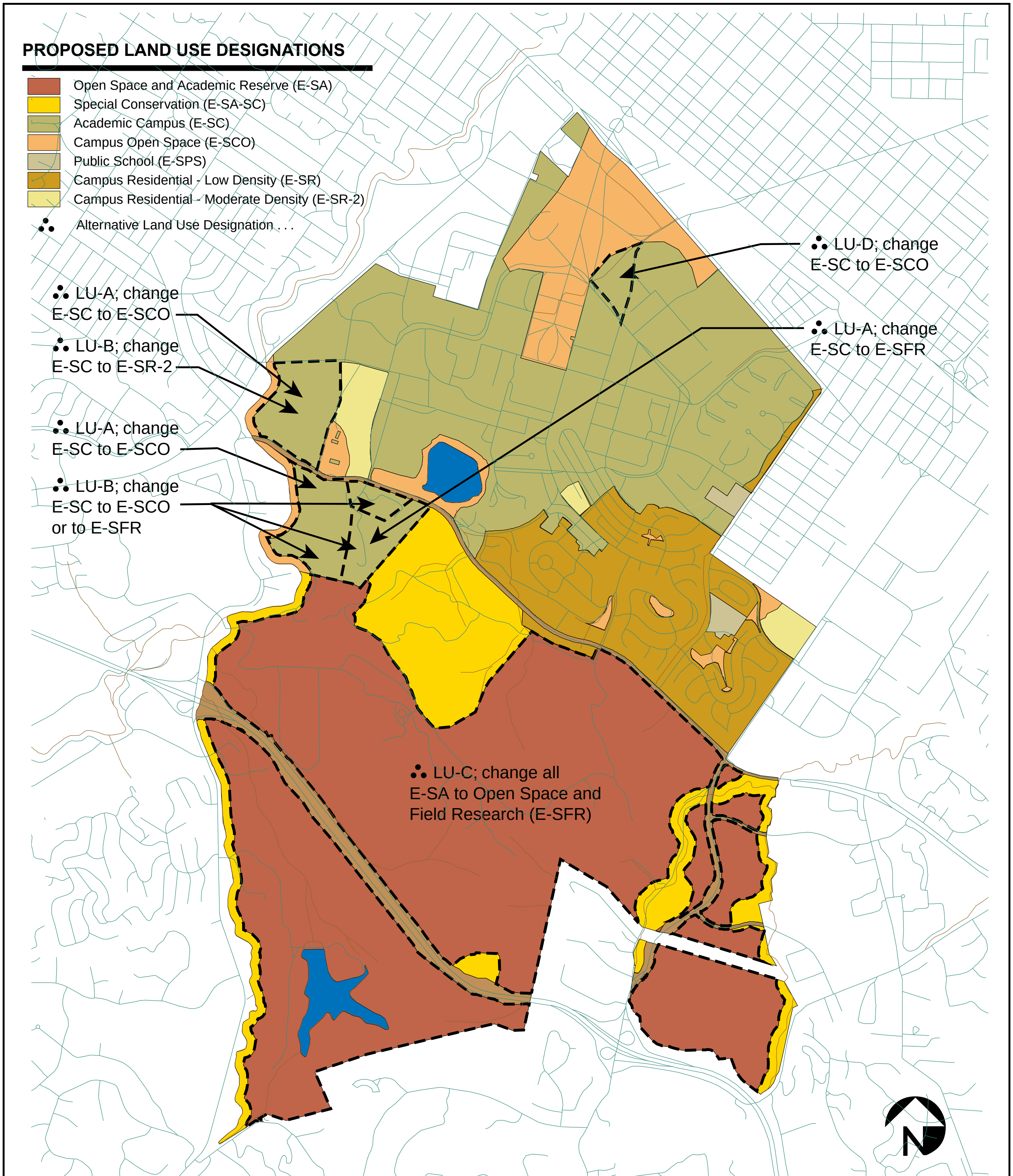

Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# ACADEMIC GROWTH BOUNDARY ALTERNATIVES

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 7-1




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Note: As a mitigation measure for potential environmental effects of the CP/GUP, additional or alternative areas of Stanford lands may be designated as E-SA-SC

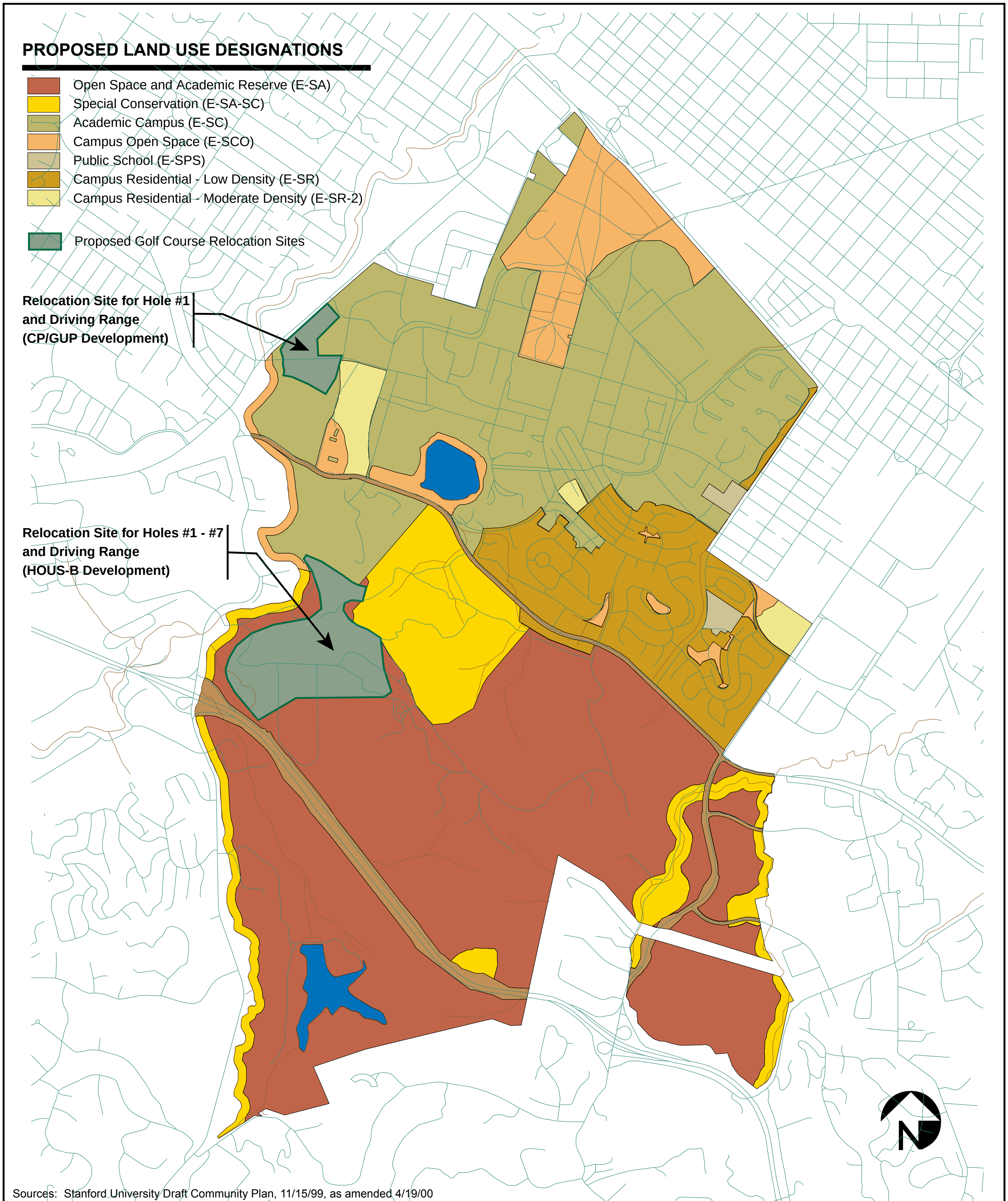
Stanford University
CP/GUP Project EIR

# LAND USE DESIGNATION ALTERNATIVES

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 7-2

File: 736167\graphics\PropLU Date: 6/22/2000



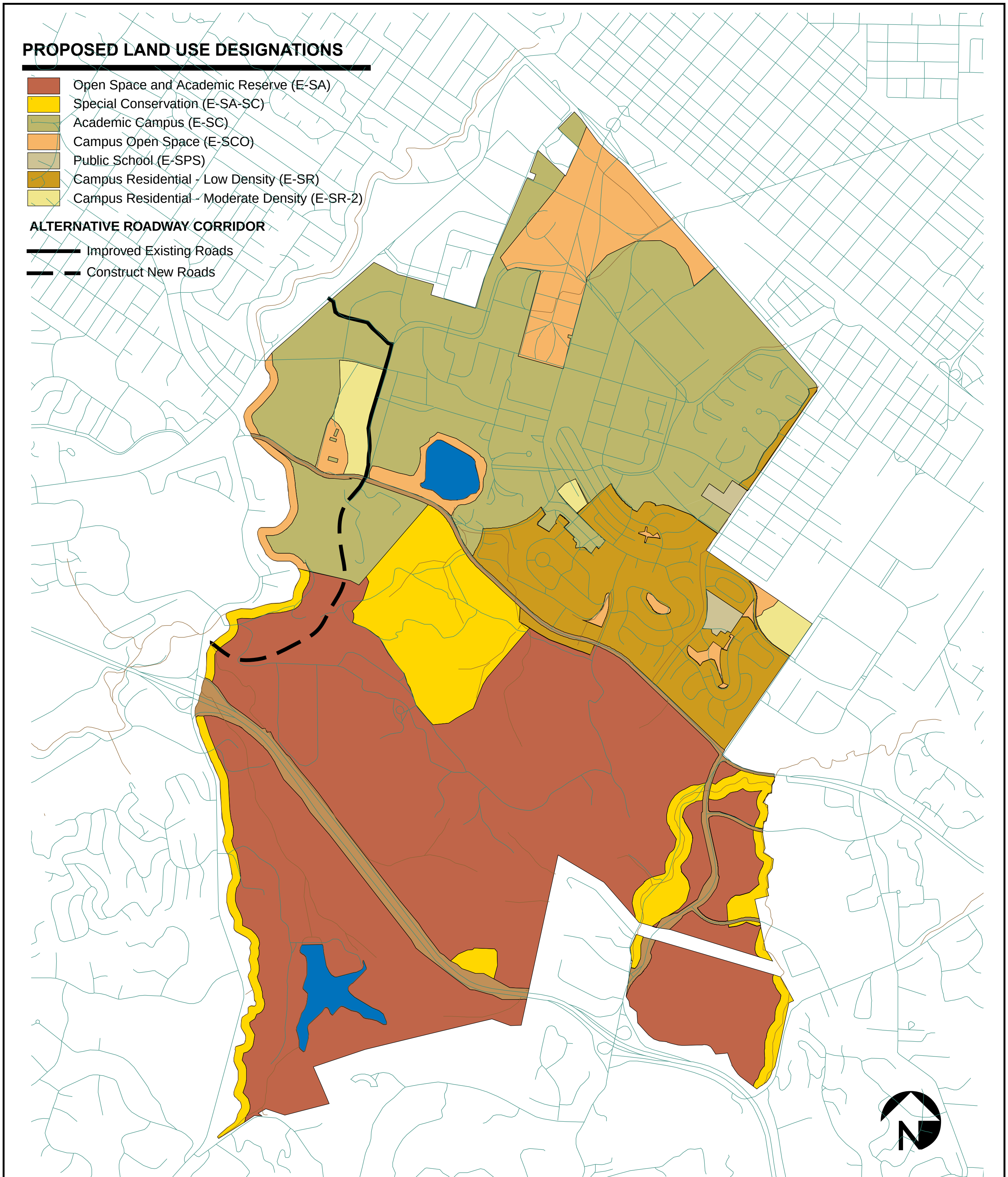

Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# PROPOSED GOLF COURSE RELOCATION SITES

PARSONS
HARLAND BARTHOLOMEW
& ASSOCIATES, INC.

Figure 7-3




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

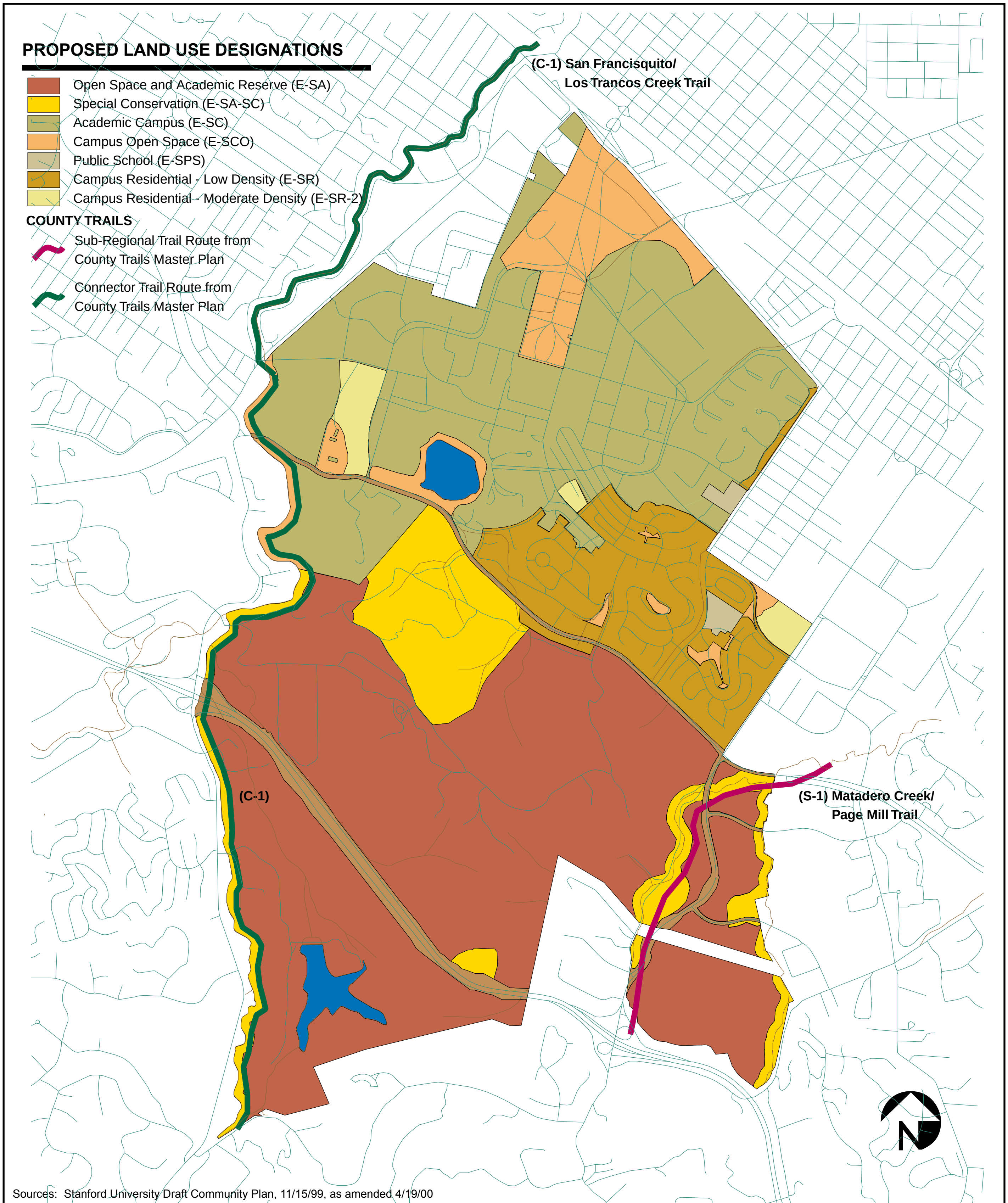
Stanford University
CP/GUP Project EIR

# NEW ROADWAY ALTERNATIVE

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 7-4

File: 736167\graphics\PropLU Date: 6/22/2000



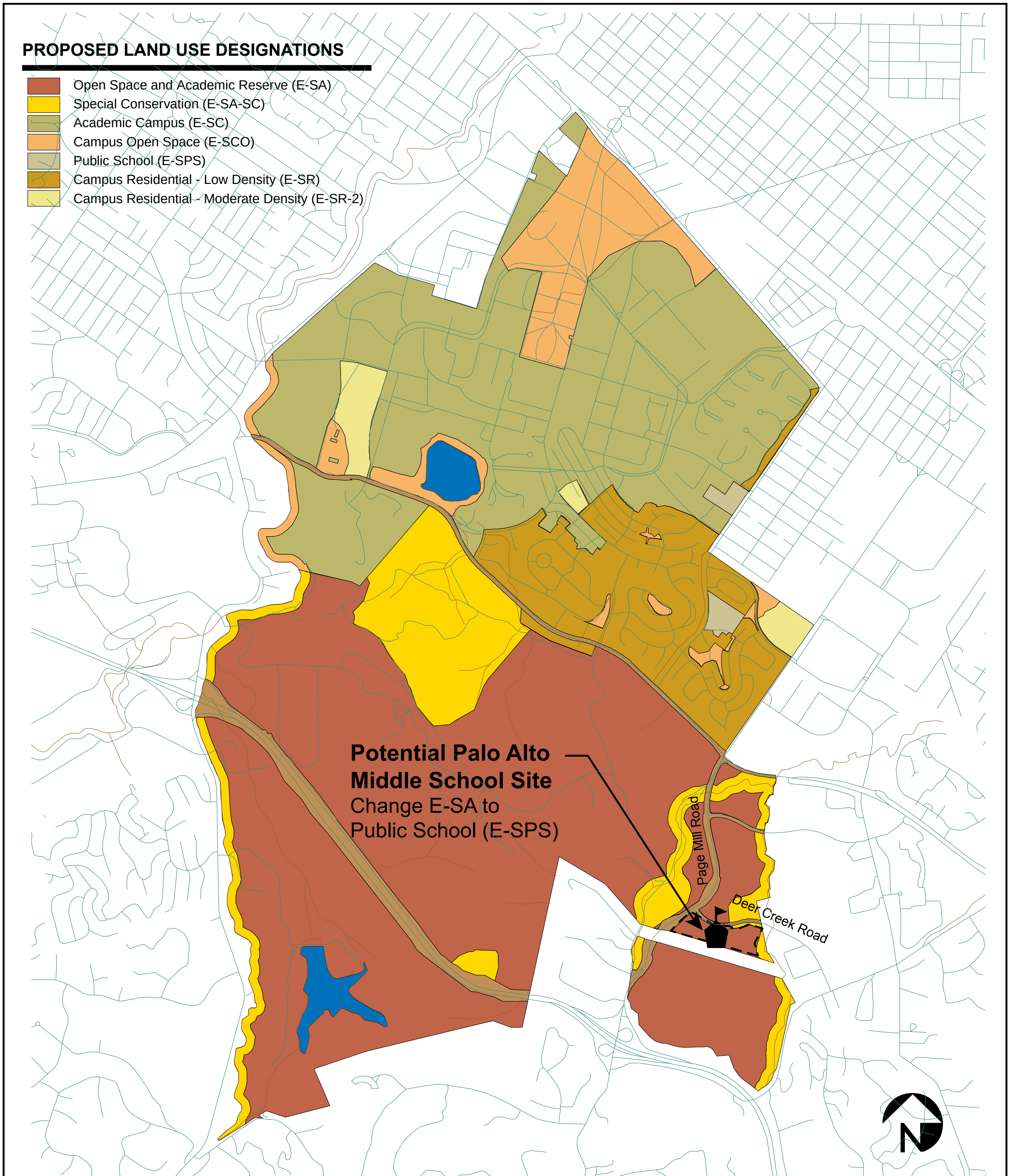

Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

# COUNTY TRAILS MASTER PLAN TRAIL LOCATIONS

PARSONS HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 7-5




Sources: Stanford University Draft Community Plan, 11/15/99, as amended 4/19/00

Stanford University
CP/GUP Project EIR

**NEW SCHOOL SITE ALTERNATIVE**

PARSONS
HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Figure 7-6

# 7.5 ALTERNATIVES IMPACT SUMMARY

Significant unavoidable impacts occur in five different areas: open space, traffic and circulation, historic resources, construction noise, and growth inducement. The impacts of alternatives are discussed below in relation to their ability to eliminate significant physical effects. The growth inducing effects are not summarized by alternative because none of the alternatives would eliminate the growth inducing effects.

Of the project-level alternatives, only the No Project Alternatives would eliminate any significant unavoidable effects of the proposed CP/GUP. Several of the Alternative Components would reduce open space impacts to less than significant.

## 7.5.A Open Space

### *Project Level Alternatives*

The two No Project Alternatives would eliminate the significant impact on open space associated with changing the land use designation of the Lathrop District from Open Space and Academic Reserve to Academic Campus. Both the Proposed CP/GUP and Reduced Project would include this change in land use, which has been determined to have unavoidable impacts to open space.

### *Alternative Components*

Both of the alternative Academic Growth Boundary options would eliminate open space impacts associated with changing the land use designation of the Lathrop District from Open Space and Academic Reserve to Academic Campus. Two land use options would also provide open space benefits, eliminating this significant impact: LU-A and LU-C. With implementation of these options, the golf course would be preserved as Campus Open Space, and additional open space protections would be afforded to areas south of JSB with the designation as Open Space and Field Research.

However, several components would have additional adverse effects on open space. The new roadway from Sand Hill Road to Alpine Road (TRAN-B) would have adverse effects on open space. Components associated with relocation of the golf course south of JSB would also have significant impacts on open space. Components LU-B, HOUS-B would result in conversion of open space south of JSB to golf course. Other housing components would not have direct effects on open space, but do not provide significant benefits to open space, because open space impacts of these housing sites were not determined to be significant. The school site would also result in a loss of open space.

## 7.5.B Traffic and Circulation

### *Project Level Alternatives*

Only the No Project-No Additional Permits Alternative reduces traffic impacts to less than significant. Although the Reduced Project would eliminate some significant impacts at intersections, a number of significant intersection impacts would remain because this alternative reduces both academic development and campus housing and because high levels of background traffic make achievement of significance thresholds, which are more stringent in congested areas, more likely.

### *Alternative Components*

Implementation of the No Net New Commute Trips standard (Alternative Component TRAN-A) would provide benefits by reducing commute traffic through the implementation of additional TDM programs. However, the County cannot legally require Stanford to implement TDM programs. Should Stanford voluntarily adopt these measures, this would provide transportation benefits. The dedication of trail easements (Alternative Component TRAN-C) would also encourage alternative means of transportation, and is considered beneficial. A reduced parking option (Alternative Component TRAN-D) may also encourage alternative means of transportation, if coupled with expanded Marguerite shuttle service. The new roadway linking campus to the I-280/Alpine Road Intersection (Alternative Component TRAN-B) does reduce some significant intersection impacts at the intersections along Sand Hill and Alpine Roads, but has unacceptable impacts to open space and biological resources.

## 7.5.C Historic Resources

### *Project Level Alternatives*

All of the project level alternatives have the potential to result in significant impacts to historic resources.

### *Alternative Components*

None of the alternative components can avoid the potential for significant effects to historic resources.

## 7.5.D Construction Noise

### *Project Level Alternatives*

Construction noise impacts are associated with the potential for construction to affect off-campus receptors (e.g. residences adjacent to the campus along Stanford Avenue). The CP/GUP, No Project-Additional Permits Alternative, and Reduced Project Alternative would all have the potential for development in areas of the campus that would affect off-campus receptors. Only the No Project-No Additional Permits Alternative would reduce this impact to less than significant. Construction could still take place, but would be expected to be within the central campus, thus not affecting off-campus receptors.

### *Alternative Components*

Elimination of the Stanford Avenue housing component (HOUS-C) would eliminate significant construction noise impacts at this site.

## 7.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Of the project-level alternatives, the No Project-No New Permits alternative is environmentally superior. This alternative would eliminate the significant open space impacts associated with changing the land use designation of the Lathrop District to Academic Campus. This alternative also reduces potential traffic impacts.

Of the build alternatives, the Reduced Project alternative would not avoid significant impacts associated with the Project, but would lessen some impacts. The environmentally superior alternative would consist of the Reduced Project with appropriate mitigation measures as described for the proposed project, plus several of the Alternative Components that have been designed to reduce impacts of the project. They include:

- AGB-A, the revised academic growth boundary that coincides with existing developed areas of the campus;
- LU-A and LUC, which change the golf course to Campus Open Space and designate undeveloped lands south of JSB as Open Space and Field Research;
- LU-E, which allows the County to identify additional lands for Special Conservation designation;
- TRAN-A, the “no net new commute trips” standard (although the County cannot require this of Stanford);
- TRAN-C, which dedicates an easement for trail routes identified in the CP;
- HOUS-A, which provides a linkage between academic development and housing; and
- HOUS-J, modified to eliminate housing only on the Lower Knoll site, with housing to be relocated to Escondido Village.

Collectively, these components avoid significant impacts to open space associated with changing land use south of JSB to Academic Campus. Impacts to California tiger salamander habitat are also reduced. Housing impacts are addressed by linking academic development to housing. Transportation impacts are reduced, but not eliminated by the trip reduction (TDM) measures incorporated in component TRAN-A. The Reduced Project lessens, but does not eliminate growth inducing impacts, which would still be significant.

## 7.7 ALTERNATIVES CONSIDERED AND REJECTED

The following alternatives (Table 7-4) were identified during project scoping. These alternatives have been rejected for further consideration for the reasons provided in the right hand column.

**Table 7-4**

Alternatives Considered and Rejected

| Suggested Alternative | Reason for Rejection in this EIR |
|---|---|
| Relocate proposed performing arts center to Stanford-owned lands on El Camino Real. | This alternative would not reduce any significant environmental impacts. This alternative would require the relocation of existing community services (ballfields, Red Cross facilities, and the Palo Alto intermodal transit station) and commercial businesses; as well as the termination of existing long-term leases, which may not be legally possible within the General Use Permit period. |
| Relocate all new faculty/staff housing, elementary and middle schools, and community services to either the area southwest of Page Mill Road and Junipero Serra Blvd., or to the area south of Page Mill Road between Foothill Expressway and Deer Creek Road. | This alternative was determined to have potentially significant impacts to open space. A school site at this location was found to have the potential for significant biological impacts to red-legged frog. |
| Relocate proposed housing farther into core campus area. | The undeveloped sites located closer into the core campus that would be sufficiently large enough for use as alternative housing sites are designated Campus Open Space areas such as the Arboretum and the Oval. Loss of these sites to housing would reduce open space and could result in significant visual impacts and impacts to historical resources. Infill sites for faculty staff housing in the existing residential subdivision and in the core campus area for student housing, have been identified in the Community Plan. This EIR also examines use of the golf course north of JSB as an alternative housing site. |
| Utilize existing housing on Stanford lands for eligible Stanford employees. | The EIR has evaluated Stanford's proposed housing and whether total housing on campus would be adequate to meet demands of faculty, staff and students. This alternative also would not meet the County's objective of augmenting the regional housing supply. |
| Reevaluate housing sites recommended in Stanford's 1983 and 1993 Housing Plans. | Most of the housing sites recommended in past housing plans have been developed or are being proposed in the GUP application. The following sites from past Housing Plans are not being considered. Housing sites not with the County were not considered adequate to ensure that housing objectives would be met, as construction of this housing is not within the County's approval authority:<br><br>Campus Drive East – not being considered because development may preclude future Campus Drive circulation improvements.<br><br>Gerona Triangle – this alternative site would not reduce any significant environmental impacts. The site contains California tiger salamander habitat, |

## Table 7-4

### Alternatives Considered and Rejected

| Suggested Alternative | Reason for Rejection in this EIR |
|---|---|
| | so development for housing would have the potential for additional environmental impacts.<br><br>Mayfield School – not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Stanford North – not being considered because of open space impacts of siting housing in the Foothills District<br><br>Stanford South – not being considered because of open space impacts of siting housing in the Foothills District<br><br>D.C. Powers Lab - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Horse's Head Parcel - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Quarry Trapezoid – no longer available because of construction of academic facilities<br><br>Rural Lane - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Buck Estate - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Arguello Site Along Sand Hill Road - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Sand Hill/SLAC - not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Guernsey Field – not included in GUP because it is not within Santa Clara County; may be considered for future housing<br><br>Woodside Parcels - not included in GUP because it is not within Santa Clara County; may be considered for future housing |
| Allocate the housing subdivisions annexed to Menlo Park to Stanford employees. | The EIR has evaluated Stanford's proposed housing and whether total housing on campus would be adequate to meet demands of faculty, staff and students. The market value of these homes exceeds one million dollars, making their potential use as a substantial and affordable supply of housing infeasible. |
| Convert lands currently in industrial use to housing as leases expire. | This alternative is incompatible with the City of Palo Alto Comprehensive Plan and zoning policies governing use of Stanford's lands in Palo Alto. In addition, there are further obstacles to residential development at these sites due to groundwater and soil contamination in this area. Thus, this alternative is not considered to be feasible within the GUP period. This alternative also may further increase traffic at intersections projected to operate at unacceptable levels of service, including the Sand Hill/Santa Cruz intersection. |

## Table 7-4

### Alternatives Considered and Rejected

| Suggested Alternative | Reason for Rejection in this EIR |
|---|---|
| Consider annexation of the existing campus residential area to the City of Palo Alto. | This alternative does not avoid or mitigate any environmental impacts, nor does it increase the regional housing supply. |
| Consider building new faculty housing on Stanford lands on Alpine Road in Portola Valley, San Mateo County. | Housing construction on this site is not included in the proposed Community Plan and GUP because the site is not within Santa Clara County. However construction of housing on this site is consistent with the Portola Valley General Plan. The Portola Valley General Plan estimates that up to 29 units could be built on the site under its current zoning. It is unknown how many units Portola Valley would approve. Construction on this site is not an alternative to any aspect of the proposed project because the site would not yield sufficient units to replace those faculty staff housing projects identified in the Community Plan for which significant environmental impacts have been identified. However, this EIR recommends a mitigation measure that would require Stanford to work with neighboring communities to attempt to identify additional housing sites to address the existing housing shortage in the Stanford vicinity. This site should be evaluated at that time. |
| Include alternatives based on the number of Stanford students increasing by 0%, 25%, 50%, 100% (or some other set of numbers). | Many of the significant impacts caused by the project are associated with construction of housing on campus, not construction of the academic square footage associated with the population increase. Thus, the population metric would not affect such impacts as impacts to biological resources, recreational resources, and visual resources associated with housing construction. The method used in this EIR, varying project components rather than population, better addresses means of reducing these types of impacts. Traffic impacts are, on the other hand, associated with population increases. (Although some of the traffic impacts also are associated with provision of housing units.) This EIR evaluates a no net commute trips alternative as a method of reducing traffic associated with population increases. This EIR also evaluates a reduced project alternative, in which only part of the population increase would occur but not the entire increase. |
| Consider use of lands bounded by Foothill Expressway northerly, Page Mill Road westerly, Coyote Hill Road southerly, and Deer Creek easterly for off-stream storage and potential habitat enhancement for endangered species. | This does not require analysis as an alternative; it would be allowed under the proposed land use designations. Off-stream storage was determined to have potentially significant impacts to the red-legged frog. |

# 8 DOCUMENTATION

## 8.1 LEAD AGENCY

The Santa Clara County Department of Planning and Development is the lead agency under CEQA for the preparation of the Stanford University CP/GUP Project EIR.

| Staff Member | Role |
|---|---|
| Ann Draper | Planning Director |
| Hugh Graham | Principal Planner |
| Sarah Jones | Project Manager |
| Sylvia Donati | Planner |

## 8.2 PROJECT COORDINATOR

The County retained Parsons and their subcontractor KORVE Engineering to prepare the Stanford University Community Plan/General Use Permit Application EIR.

### 8.2.A Parsons

| Staff Member | Role |
|---|---|
| Anders J. Hauge, V.P. | Principal in Charge |
| Robin Cort, Ph.D. | Project Manager |
| Robert Brueck | Deputy Project Manager/Land Use Analysis |
| Molly Enloe | Biological Resources Analysis |
| Ed West, Ph.D. | Biological Resources Analysis |
| Fred Kintzer | Geology and Seismic Analysis |
| Dennis Brown, Ph.D. | Hazardous Materials Analysis |
| Steve Herrera | Hydrology and Water Quality Analysis |
| Kelly Heidecker | Historic and Archaeological Resources Analysis |
| Nannie Turrell | Open Space/Visual Resources and Public Services Analysis |
| Areg Gharabegian | Noise Analysis |
| Philip Jo | Noise Analysis |
| Heidi Rous | Air Quality Analysis |
| Charles Botsford | Air Quality Analysis |
| Richard Shih | Air Quality Analysis |
| Robert Eckols | Traffic and Circulation Review |
| Bryan Ferguson | CADD/Graphics |

### 8.2.B KORVE Engineering

| Staff Member | Role |
|---|---|
| Paul Menaker, Ph.D., Senior Vice President | Principal in Charge |
| Dennis Struecker | Traffic and Circulation Project Manager |
| Paramsothy Thananjeyan, Ph.D. | Transportation Engineer |
| Sara Demirjian | Transportation Planner |

## 8.3 PERSONAL COMMUNICATIONS

Allaback, Mark. Consulting Biologist. Personal communication with Molly Enloe. June 9, 2000.

Baker, James. County Engineering Geologist, County of Santa Clara, Planning Office. Personal communication with Fred Kintzer. May – June 2000.

Harrington. Chief of Police, Stanford University Police Department. Personal Communication with Nannie Turrell, May 12, 2000.

Hertz. Personal Communication with Nannie Turrell, 2000.

Hilken, Henry. Senior Environmental Planner, Bay Area Air Quality Management District. Personal communication with Charles Botsford. May 15, 2000.

Jones, Dr. Laura. Campus Archaeologist, Stanford University. Personal communication with Kelly Heidecker. August 16, 1999.

Laporte. Personal Communication with Nannie Turrell, 2000.

Launer, Alan. Director, Stanford Center for Conservation Biology. Email communications with Molly Enloe. June 8, June 13, and June 16, 2000.

Miks, Bill. Plant Manager, Harold L. May Regional Wastewater Treatment Plant. Personal Communication with Nannie Turrell, May and July 1999, 2000.

Mischissin, Steve. Associate Director, Facilities Operations for Utilities, Stanford University. Letter to Nannie Turrell, January 6, May 26, 2000.

Reisner, Russel. Department of Public Works, City of Palo Alto. Personal Communication with Nannie Turrell, March 2000.

Schiller, June. Palo Alto Unified School District, Personal Communication with Jeff Goldman June 8, 2000.

Sullivan, Kathleen. Worklife Office, Stanford University. Fax Communication with Nannie Turrell, 2000.

## 8.4 REFERENCES

Allen, R., Ph.D., Medin, A., Baxter, R. S., Wickstrom, B., Yu, C. Y., Costello, J. G., White, G., Huberland, A., Johnson, H. M., Meyer, J., and M. Hylkema. 1999. *Upgrade of the Guadalupe Parkway, San Jose, Historic Properties Treatment Plan*. Prepared for California Department of Transportation, District 4. On file, Caltrans District 4 offices, Oakland.

Association of Bay Area Governments (ABAG). 1999. *The San Francisco Bay Area - On Shaky Ground.* Update to 1995 report (may be accessed at web site http://www.abag.gov). 13 October.

Bay Area Air Quality Management District (BAAQMD). 1996a. CEQA Guidelines, San Francisco, CA.

BAAQMD, MTC, ABAG. 1996b. San Francisco Bay Area Ozone Attainment Plan For The 1-Hour National Ozone Standard, San Francisco, CA.

BAAQMD. 1999. BAAQMD Web Site (http://www.baaqmd.gov/planning/resmod/baas.htm).

Bailey, R. G. 1982. Classification systems for habitat and ecosystems. Pages 16-26, *in* Mason, W. T., Jr. and S. Iker (eds.), *Research on Fish and Wildlife Habitat*. Office of Research and Development, United States Environmental Protection Agency, Washington, D. C.

Barry, S. J. and H. B. Shaffer. 1994. *The Status of the California Tiger Salamander (Ambystoma californiense) at Lagunita: A 50-year Update*. Journal of Herpetology, Vol. 28, No. 2, pp. 159-164. In: Letter report, M. Allaback, 17 April 2000, Subject "Revised Management Recommendations for Artificial Ponds as Breeding Sites for California Tiger Salamander and California Red-legged Frog at Stanford University."

Borchardt, R. D., Gibbs, J. F., and K. R. Lajoie. 1975. Maps Showing Maximum Earthquake Intensity Predicted in the Southern San Francisco Bay Region, California, for Large Earthquakes on the San Andreas and Hayward Faults. U.S. Geological Survey Miscellaneous Field Studies Map MF-709.

Brabb, E. E. and J. A. Olson. 1986. Map Showing Faults and Earthquake Epicenters in San Mateo County, California. U.S. Geological Survey Miscellaneous Investigations Series Map I-1257-F.

Brady & Associates. 1996. Palo Alto Comprehensive Plan Draft Environmental Impact Report.

Calderon, S. 1995. Science and Engineering Quad – File No. 6153-6-81-95A #3919C, GPB Modulars – File No. 6177-7-81-6-95 #3919G, Geologic Report. Letter from Stanford University Facilities Project Management to Mr. James Baker, County of Santa Clara Planning Office, December 15.

California Air Resources Board, CARBIS Web-Site (www.arb.ca.gov), 1999.

California Department of Fish and Game (CDFG). 1999. Natural Diversity Data Base. California Department of Fish and Game, Natural Heritage Division. July 9, 1999.

CDFG. 2000. Special Plants List. California Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base. Biannual publication. January 2000.

California Division of Mines and Geology (CDMG). 1996. *Probabilistic Seismic Hazard Assessment for the State of California*. CDMG Open-File Report 96-08. 18 December.

CDMG. 1997. *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. CDMG Special Publication 117.

Dames & Moore. 1995a. *Evaluation of Deformation Potential Across the Stock Farm Monocline*. Consultants report for Stanford University. June 19.

Dames & Moore. 1995b. *Surface Fault Rupture Analysis, Governor's Corner Student Housing for Stanford University*. Consultants report for Stanford University. July 7.

Dames & Moore. 1995c. *Design and Construction Implications, Stock Farm Monocline, Stanford University Campus*. Letter from R.H. Rice and J.V. Hengesh to Mr. Mark Jones, Stanford University, December 14.

Davis, M., and R. Nilan. 1989. *The Stanford Album: A Photographic History, 1885-1945*. Stanford University Press, Stanford, CA.

Department of Toxic Substances Control. 1999. Letter from Mr. Salvatore Ciriello, P.E., Supervising Hazardous Substances Engineer, Northern California Permitting Branch, Department of Toxic Substances Control to Mr. Lawrence M. Gibbs, C.I.H. Associate Vice Provost, Stanford University, Environmental Health and Safety Department. July 7.

Earthquake Engineering Research Institute (EERI). 1989. *Loma Prieta Earthquake, October 17, 1989, Preliminary Reconnaissance Report*. EERI Publication 89-03. November.

EIP. 2000. Stanford University Medical Center, Center for Cancer Treatment and Prevention/Ambulatory Care Pavilion and Parking Structure IV Draft Environmental Impact Report. March 21.

EMCON. 1997. *RCRA Facility Investigation/Interim Measures Workplan DTSC Consent Agreement CAD 982 049 439.* Stanford University, California. February 20.

EMCON. 1996. *Current Conditions Report RCRA Facility Investigation Stanford University*. September 25.

Federal Highway Administration (FHWA). 1978. FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, by T. M. Barry and J. A. Reaga. December.

Fluor Daniel GTI. 1998. *RCRA Facility Investigation Report DTSC Consent Agreement CAD 982 049 439*. Stanford, California. January 15.

Grenfell, Jr., W. E. 1988. Valley-foothill riparian. Pages 86-87, *in* Mayer, K. and W. Laudenslayer Jr. (eds.), *A Guide to Wildlife Habitats of California*. California Department of Forestry and Fire Protection, Sacramento, CA.

Hickman, J. C., editor. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA.

Holland, R. 1986. *Preliminary descriptions of the terrestrial natural communities of California*. California Department of Fish and Game, Sacramento, CA.

Hoover, M. B., Rensch, H. E., Rensch, E., and W. N. Abeloe. 1990. *Historic Spots in California, Fourth Edition*, revised by D. E. Kyle. Stanford University Press, Stanford, CA.

Jones, M. M. 1996a. *Stock Farm Monocline*. Letter from Director, Stanford University Facilities Project Management to Michael Lopez, Manager, Planning Office, Environmental Resources Agency, County of Santa Clara, CA. August 12.

Jones, M. M. 1996b. *Stanford University, Stock Farm Monocline*. Letter from Director, Stanford University Facilities Project Management to Michael Lopez, Manager, Planning Office, Environmental Resources Agency, County of Santa Clara. May 20.

Kovach, R. L. and B. M. Page. 1995. *Seismotectonics Near Stanford University*. California Geology, Vol. 48, No. 4, p. 91-98. July/August.

Launer, A. and C. Fee. 1996. *Biological Research on California Tiger Salamander at Stanford University*. Annual Report, August 8, 1996.

Launer, A. and C. Fox. 1997. *California Tiger Salamander at Stanford University. 1996/1997*. Annual Report.

Launer, A., W. Fox, and L. Staffcup. 1998. *Conservation Planning for California Tiger Salamanders at Stanford University: 1997/1998*. Annual Report.

Levy, R. 1978. Costanoan. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, vol. 81, W. C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Mayer, K. and W. Laudenslayer Jr. (eds.). 1988. *A Guide to Wildlife Habitats of California*. California Department of Forestry and Fire Protection, Sacramento, CA.

McNutt, S. R. and R. H. Sydnor, editors. 1990. *The Loma Prieta (Santa Cruz Mountains), California, Earthquake of 17 October 1989*. California Division of Mines and Geology, Special Publication 104.

Menlo Park. 1999. City of Menlo Park Noise Municipal Code, Chapter 8.06: Noise.

Moratto, M. J. 1984. *California Archaeology*. Academic Press, San Diego, CA.

Meneffee, C.A. 1873.

National Research Council. 1981. *Prudent Practices for Handling Hazardous Chemicals in Laboratories*. Committee on Hazardous Substances in the Laboratory, Assembly of Mathematical and Physical Sciences, National Academy Press, Washington, D.C.

Palo Alto. 1987. City of Palo Alto, Palo Alto Municipal Code, Chapter 9.10: Noise.

Palo Alto. 1999. City of Palo Alto, Palo Alto Comprehensive Plan.

Pampeyan, E. H. 1993. Geologic Map of the Palo Alto and Part of the Redwood Point 7-1/2' Quadrangles, San Mateo and Santa Clara Counties, California. U.S. Geological Survey Miscellaneous Investigations Series Map I-2371.

Rogers, T. H. and Williams, J. W. 1974. *Potential Seismic Hazards in Santa Clara County, California*. Calif. Division of Mines and Geology, Special Report 107.

Santa Clara, County of. 1964. Photomosaic Soils Map. March.

Santa Clara, County of. 1978. Geologic Hazard Zone Maps (Sheets 15, 16, 30 and 31).

Santa Clara, County of. 1984. County of Santa Clara, Santa Clara County Code, Chapter VII. Control of Noise And Vibration.

Santa Clara, County of. 1994. *Santa Clara County General Plan*. Planning Office, County of Santa Clara, San Jose, California. December 20.

Santa Clara, County of. 2000. Draft Environmental Impact Report for Carnegie Foundation Research/Office Facility.

Sawyer, J. O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, CA.

Shaffer, H. B., Fisher, R. N., and S. E. Stanley. 1993. *Status report: The California tiger salamander (Ambystoma californiense)*. University of California, Davis. Final report prepared for California Department of Fish and Game, Inland Fisheries Division under Contracts (FG 9422 and FG 1383). In: Letter report, M. Allaback, 17 April 2000, Subject "Revised Management Recommendations for Artificial Ponds as Breeding Sites for California Tiger Salamander and California Red-legged Frog at Stanford University."

Skinner, M. W. and B. M. Pavlik (eds.). 1994. *Inventory of Rare and Endangered Vascular Plants of California, Fifth Edition*. California Native Plant Society, Sacramento, CA.

Stanford University. 1993. *Emergency and Hazardous Material Release Response Policy*, Research Policy Handbook, Stanford University, Stanford, California. Revised May 20. http://www-portfolio.stanford.edu/100917

Stanford University. 1995a. *Stanford University Biosafety Manual*. Administrative Panel on Biosafety and the Department of Environmental Health and Safety, Stanford University, Stanford, California. January.

Stanford University. 1995b. *Stanford Safety Manual*. Department of Environmental Health and Safety, Stanford University, Stanford, California. February. http://www-portfolio.stanford.edu/104303

Stanford University. 1997a. *Annual Report #9, Santa Clara County General Use Permit*. Stanford University, Stanford, California.

Stanford University. 1997b. *Radiation Safety Manual*. Health Physics, Department of Environmental Health and Safety, Stanford University, Stanford, California. Fall. http://www.stanford.edu/dept/EHS/rad/manual/index.html

Stanford University. 1997c. *Toxic Gas User's Handbook*, Department of Environmental Health and Safety, Stanford University, Stanford, California. December. http://www.stanford.edu/dept/EHS/lab/tgo/index.html

Stanford University. 1997d. *Department Emergency Planning Guidelines*, Emergency Preparedness Planning Steering Committee, Stanford University, Stanford, California. http://www.stanford.edu/dept/EHS/erprep/plans/dept.pdf

Stanford University. 1998a. *Annual Report #10, Santa Clara County General Use Permit*. Stanford University, Stanford, California.

Stanford University. 1998b. *Chemical Hygiene Plan at Stanford*. Department of Environmental Health and Safety, Stanford University, Stanford, California. October 23.

Stanford University. 1999a. *Campus Emergency Plan*, Emergency Preparedness Planning Steering Committee, Stanford University, Stanford, California. Revised, January. http://www.stanford.edu/dept/EHS/erprep/plans/campus.pdf

Stanford University. 1999b. *Hazardous Chemical Waste Management Reference Guide for Laboratories*. Hazardous Waste Programs, Department of Environmental Health and Safety, Stanford University, Stanford, California. August. http://portfolio-www.stanford.edu/104470

Stanford University Website. 1999. Stanford History. http://www.stanford.edu/home/stanford/history.html. Accessed on September 10, 1999.

Stanford University Department of Environmental Health and Safety Website. 1999. http://www.stanford.edu/dept/EHS/.

Thomas Reid Associates. 1998. *Management Agreement for the California Tiger Salamander at Stanford University*. Palo Alto, CA.

U.S. Department of Agriculture, Soil Conservation Service. 1968. *Soils of Santa Clara County*.

U.S. Environmental Protection Agency. 1992. *Guideline For Modeling Carbon Monoxide from Roadway Intersections,* USEPA Office of Air Quality Planning and Standards, Research Triangle Park, NC.

Wald, D. J., Quitoriano, V., Heaton, T. H., and H. Kanamori. 1999. *Relationships between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California, Earthquake Spectra*. V. 15, No. 3, pp. 557-564. August.

Woodward-Clyde Consultants. 1995a. *Evaluation of Site Response and Design Earthquake Motions, Stanford University, Palo Alto, California*. Report to Stanford University, Facilities Project Management. May.

Woodward-Clyde Consultants. 1995b. *Supplemental Ground Motion Study, Stanford University, Palo Alto, California*. Report to Stanford University, Facilities Project Management. May.

Working Group on California Earthquake Probabilities. 1999. *Earthquake Probabilities in the San Francisco Bay Region: 2000 to 2030 – A Summary of Findings*. U.S. Geological Survey Open-File Report 99-517.

Youd, T. L. and Hoose, S. N. 1978. *Historic Ground Failures in Northern California Associated with Earthquakes*. U.S. Geological Survey Professional Paper 993.

Zeiner, D. C., W. F. Laudenslayer Jr., and K. E. Mayer, (eds.). 1988. *California's Wildlife, Volume 1, Amphibians and Reptiles*. California Statewide Wildlife Habitat Relationship System, California Department of Fish and Game, Sacramento, CA.

Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White, (eds.). 1990a. *California's Wildlife, Volume 2, Birds*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

Zeiner, D. C., W. F. Laudenslayer Jr., K.E. Mayer, and M. White, (eds.). 1990b. *California's Wildlife, Volume 3, Mammals*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

23 CFR Part 772, 1997. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, 23 Codes of Federal Regulations, Part 772, April 1.

# STANFORD UNIVERSITY CP/GUP MITIGATION MONITORING AND REPORTING PROGRAM

## A. INTRODUCTION

This document presents the Mitigation and Monitoring Program for the Stanford University Community Plan and General Use Permit. The mitigation measures are presented in four sections; Compliance with Existing Programs, Planning Measures, Construction Measures and Operation and Maintenance Measures. More mitigation will be required in review of individual projects and will be identified, conditioned, and incorporated into individual project monitoring programs at that time.

- **Section B - Compliance with Existing Programs**. This section presents the applicable federal, state, regional, county and local policies and regulations that which the Project must comply.

- **Section C - Planning Measures**. This section contains mitigation measures that are to be implemented during the planning and design of each project. These measures often required refinement of the final project design to accommodate particular constraints.

- **Section D - Construction Measures**. This section contains mitigation measures to be implemented prior to, during, and immediately following project construction. These measures generally require the construction manager to follow certain constraints during construction and to repair and rehabilitate impacts resulting from construction of each project

- **Section E - Operation and Maintenance Measures**. This section contains mitigation measures to be implemented during operation of the project. These measures generally require monitoring of system operations over time and the modification of operations to reduce adverse environmental impacts.

# B. COMPLIANCE WITH EXISTING PROGRAMS

## BIO-7: Implement Santa Clara County's Tree Preservation Ordinance

Development projects will be sited and designed to minimize loss of trees protected by the Santa Clara tree ordinance.

If protected trees will be removed or impacted by project activities, Stanford shall implement the construction management practices and tree replacement requirements set forth in the County's tree ordinance.

**Impacts Mitigated:** Loss of trees protected by Santa Clara County's tree preservation ordinance.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review.

**Complete:** End of Construction

# C. PLANNING MEASURES

### OS-2: Cluster Development in Lathrop Development District

To mitigate for potential loss of open space in the Lathrop District, the 20,000 square feet of development proposed in the GUP shall be clustered in areas identified in the GUP conditions of approval. Structures that are not for the purposes of occupancy, such as fences or golf course access bridges, may be permitted in other areas of the Lathrop District in accordance with the requirements of the Santa Clara County Zoning Ordinance.

In addition to this measure, areas proposed as Campus Open Space in the CP will offset loss of existing Academic Reserve and Open Space areas within the central campus. Additional measures to mitigate for impacts of housing on El Camino Real are discussed below under Impact OS-4.

**Impacts Mitigated:** Loss of recognized open space.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University/Santa Clara County

**Timing:**

**Start:** CP/GUP approval and/or individual project design/review.

**Complete:** Prior to approval of any individual projects in the Lathrop area

### OS-3A: Improvement of Parks

In addition to designating lands for use as parks, Stanford shall improve parks in the faculty area in such a way as to provide suitable recreational opportunities for the campus population and shall continue to provide neighborhood recreation opportunities in new residential areas. At a minimum, the park improvement shall provide facilities equal or greater to those lost from development of proposed GUP housing sites.

**Impacts Mitigated:** Recreational opportunities for existing or new campus residents and facility users.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** A proposed recreation facility improvement program shall be submitted to the County within twelve months of CP/GUP Approval.

**Complete:** Phased as residential development under the GUP proceeds.

### OS-3B: Dedication of Trails

To replace and expand recreational opportunities in the foothills, Stanford shall also dedicate the trail easements shown on the County Trails Master Plan. Stanford will work with the County Parks Department to clarify the process for developing the easement agreement, to identify the general location and type of uses that will be permitted for the trails being dedicated, and to discuss future construction and management considerations. The proposed location of the trail corridors will need to address conflicts with existing agricultural leases and sensitive riparian habitats along the adjacent creeks. Dedication of the trail corridors does not include a requirement for Stanford to make any improvements to the trail corridors at this time, but such improvement may be agreed to by Stanford and the County Parks Department. Dedication shall be phased as academic and residential development under the GUP proceeds.

**Impacts Mitigated:** Recreational opportunities for existing or new campus residents and facility users.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University/Santa Clara County Parks and Recreation Department

**Timing:**

**Start:** Stanford shall identify trail easements and complete Agreements for Trail Easements within one year of CP/GUP Approval.

**Complete:** Phased as academic and residential development under the GUP proceeds.

## OS-4: Protect Visual Quality Along El Camino Real

Stanford University shall develop an overall design for the streetscape on the south side of El Camino Real. The development of CP housing sites "I" and "D" shall be incorporated into this overall design. Landscaping with drought resistant native plants should be encouraged. This overall design shall be prepared in consultation with the City of Palo Alto Planning Division, and shall be submitted to the County Planning Office for approval prior to, or in connection with the first application for development along El Camino Real. Stanford is encouraged to incorporate a 25-foot setback from El Camino Real into the design, consistent with City of Palo Alto zoning requirements for multifamily housing along arterial streets.

**Impacts Mitigated:** Foreground or middle ground views from a high volume travel way (excluding scenic routes and scenic highways), recreation use areas, or other public use areas.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review.

**Complete:** Prior to approval of development along El Camino Real.

## OS-6: Control Light and Glare

A lighting plan shall be prepared and approved by the County for each development project that would include exterior light sources. The plan shall show the extent of illumination that would be projected from proposed outdoor lighting. State of the art luminaries shall be used where necessary, with high beam efficiency, sharp cut-off, and glare and spill control. Upward glow shall not be allowed in residential or academic uses.

**Impacts Mitigated:** Light source or glare affecting private residences, passing pedestrians, or motorists.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review.

**Complete:** Prior to construction

## PH-3A: Identify Additional Housing Sites

In conjunction with neighboring communities, Stanford shall continue to identify additional sites, on- and off- campus, that are suitable for housing development and could accommodate additional housing units over and above the number included in the project. Such sites should be developable within the time period covered by the project and be suitable for the types of housing that would address the current and future shortfall of faculty/staff and postgraduate housing.

**Impacts Mitigated:** Demand for housing thereby causing indirect environmental impacts.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University/Santa Clara County

**Timing:** **Start:** CP/GUP approval

**Complete:** Ongoing

### PH-3B: Condition New Academic Space on the Construction of Housing

As a condition of approval for additional academic space, Stanford shall be required to construct housing prior to, or concurrently with, any increase in academic space. Stanford shall provide a cumulative net increase in housing commensurate with academic development that counts toward the GUP building area cap as specified below:

| Academic Development (gsf) | # of Housing Units |
|---|---|
| 500,000 | 605 |
| 1,000,000 | 1,210 |
| 1,500,000 | 1,815 |

This housing shall be provided on Stanford land in unincorporated Santa Clara County in compliance with the Community Plan. For additional academic development between 1,500,000 and 2,035,000 feet that counts toward the GUP building area cap, Stanford shall provide a net increase in housing a a rate commensurate with academic development by providing 1 additional housing unit for each 884 square feet of development.

**Impacts Mitigated:** Demand for housing thereby causing indirect environmental impacts.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University/Santa Clara County

**Timing:** **Start:** CP/GUP approval.

**Complete:** Prior to construction of additional academic space and time thresholds as defined in the measure.

### TR-5A: Tier 1 Intersection Capacity Expansion

**Arboretum Road and Palm Drive (Palo Alto and Stanford University).** Mitigation at this intersection would require adding an exclusive northbound left turn lane.

**Welch Road and Campus Drive West (Palo Alto and Stanford University).** Mitigation at this intersection would require adding a westbound right turn lane.

**Impacts Mitigated:** TR-5: Transportation impacts at identified intersections

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** CP/GUP approval.

**Complete:** No later than 2005

### TR-5B: Trip Reduction and Monitoring

Implementation of Measure TR-5B: Trip Reduction would require the implementation of existing and new TDM measures and a monitoring program. This program is anticipated to reduce the amount of commute trips, so that the net commute trips with CP/GUP would not increase.

The use of TDM to control commute trips would allow Stanford to continue working toward the goal of "no net new commute trips", and also reduce impacts to freeways and other roadways as described in Impacts TR-4 and TR-6. However, direct monitoring by the County will be required to determine compliance with the conditions if Stanford chooses this mitigation alternative. No net new commute trips is defined as no increase in automobile trips during peak commute times in the peak commute direction, as counted at a defined cordon location around the central campus.

Monitoring will continue to gauge the effectiveness of these measures. A traffic monitoring program will need to be developed for the project to determine the baseline for current traffic volumes and to measure traffic over the coming years as the CP/GUP is implemented. Monitoring will be conducted by a qualified consultant retained by the County.

To monitor compliance with the TDM standard, a cordon line will be developed to monitor CP/GUP related traffic. The cordon line would isolate all traffic into and out of Stanford University. A cordon line completely encircles an area and all roads leading into and out of the area to be counted. The following is a preliminary list of the cordon intersections. Figure 4.4-16 from the EIR illustrates the cordon line around Stanford.

1. Campus Drive West, east of Junipero Serra Boulevard
2. Stockfarm Road, south of Sand Hill Road
3. Welch Road, east of Oak Road
4. Quarry Road, east of Campus Drive West
5. Palm Drive, west of Arboretum Road
6. Lasuen Street, west of Arboretum Road
7. Galvez Street, west of Arboretum Road
8. Serra Street, west of El Camino Real
9. Yale Street, north of Stanford Avenue
10. Wellesley Street, north of Stanford Avenue
11. Oberlin Street, north of Stanford Avenue
12. Escondido Road, north of Stanford Avenue
13. Bowdoin Street, north of Stanford Avenue
14. Raimundo Way, north of Stanford Avenue
15. Santa Maria Avenue, east of Junipero Serra Boulevard
16. Campus Drive East, east of Junipero Serra Boulevard

The following steps will be followed for the peak hour traffic monitoring.

**1. Traffic Volume Counts**. During the AM peak hour and the PM peak hour, the total amount of traffic crossing the cordon line will be counted by travel direction. The monitoring will be from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The peak hour within the two-hour count period will be calculated based on total traffic volumes to determine the campus-wide peak hours. Counts will be conducted during the regular academic year, which does not include academic breaks or end-of-quarter finals. The three annual counts shall be averaged to determine the annual traffic level for the baseline and each monitoring year.

**2. License Plate Survey**. All vehicles will also need to be identified in order that through trips can be removed from the total volume. Through trips will be identified by recording the last four digits of the license plate on each vehicle. Five-minute increments of time will be noted on the survey forms in order to determine when a vehicle crosses the cordon in either direction. In the past, approximately 75 percent of the license plates have been able to be recorded for the heavily traveled roadways and nearly 100 percent for the lighter traveled roadways. These percentages will adequately estimate the amount of through traffic across the campus.

**3. License Plate Matching**. Matching license plates will be determined by comparing numbers that crossed both an entering and exiting cordon within a defined period (e.g., 20 minutes). Vehicles that enter and exit the cordon within the time period will be through trips across the campus without a campus-related purpose.

**4. Adjust Cordon Volumes**. Several parking lots along Campus Drive West and Stockfarm are inside the cordon, but serve hospital uses. These correctly include Stockfarm, Stockfarm Expansion, Stockfarm Wedge, PS-1, Beckman West, Beckman South, East of Fairchild, MSOB, Welch Road, Oak Road, Dean's Lawn, Evening Shift, Mudd, and Keck. Three lots along Quarry Road are outside the cordon, but serve campus uses. These include Quarry South, Quarry Psychiatry, and Rectangle. The driveways to these lots will be counted with tube counters. Hospital trips will be subtracted from the cordon and campus trips will be added to the cordon count. The cordon count adjustment will also need to factor in the potential for hospital trips to park in the campus lots and campus trips to park in the hospital lots. At the beginning and end of the peak hour each lot will need to be scanned to determine if any incorrect parking has occurred. If campus parking permits are observed in hospital lots, they will be added back into the cordon count. If hospital trips are observed in the campus lots they will be subtracted from the cordon count. All vehicles without a parking permit will be assumed to be correctly parked in their respective lots.

**5. Determine Cordon Line Traffic**. Total entering and total exiting traffic will be summed for the 16 cordon stations. A single peak hour will be determined for the entire campus based on the traffic volumes. The percent of through trips calculated by the license plate matching from Item 3 above will be removed. The through vehicles will be removed from both the inbound and the outbound traffic since they will have been observed crossing both an entering and exiting cordon line. Finally, the entering and exiting traffic for hospital uses along Campus Drive West and the campus uses in the Quarry Road lots calculated in Item 4 above will be subtracted from or added to the cordon counts

**Impacts Mitigated:** Transportation impacts due to increased project-generated vehicle trips

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Baseline traffic counts in first year of GUP approval

**Complete:** Ongoing on an annual basis, with monitoring to be conducted three times per year.

### TR-5C. Cooperative Trip Reduction

Stanford may be recognized for participation in initiatives, either on its own or in cooperation with other jurisdictions or agencies, that contribute to reduction of trips in the area surrounding the campus. The County may elect to credit Stanford towards achievement of the "no net new commute trips" standard for participation in these initiatives, to a degree commensurate with the predicted or actual number of trips reduced and the proportion of the cost of the initiative that Stanford is contributing. Only programs that would lead to trip reduction in the area bounded by US 101, Valparaiso Avenue/Sand Hill Road, Interstate 280, and Arastradero Road/Charleston Road may be considered for this credit.

For each program in which Stanford intends to participate, a proposal shall be submitted to the County Planning Office for review and approval in order to receive the credit. The proposal shall describe the program, identify Stanford's role and contribution to the overall cost, and propose a monitoring method and/or mechanism for calculating commute trips reduced. The County Planning Office may elect to modify the monitoring method or trip reduction calculation proposed, or may choose not to approve credit towards trip reduction for Stanford's participation in the program. Once the County Planning Office has accepted the proposal and the program implementation begins, the County Planning Office will factor a calculation of the trip reduction credit into its conclusion regarding Stanford's annual compliance with the "no net new commute trips" standard, with the continuing requirement that Stanford provide continuing evidence of its participation in the program in a manner that can be independently verified.

**Impacts Mitigated:** Reduction in off-campus commute trips to compensate for increase in on-campus trips

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University/Partnering jurisdictions

**Timing:**
**Start:** Upon proposal by Stanford
**Complete:** Ongoing on an annual basis

### TR-5D. Tier 2 Intersection Capacity Expansion

Tier 2 intersection improvements would only be required if trip reduction monitoring determines that Stanford commute trips are increasing. If cordon counts, as modified by trip reduction credits, exceed the baseline volume as calculated under Measure TR-5B, by 1% or more for any two our of three consecutive years, mitigation of impact to intersections will be required as described below. Many of these intersections are located in jurisdictions other than Santa Clara County, and the County does not have control over approval of the modifications.

If these mitigation measures are needed, Stanford's contribution to the cost of the modifications would be determined by the project's percentage contribution toward the intersections impact. The jurisdiction may choose to use the funds that Stanford contributes for the intersection modifications or for trip reduction measures that benefit the intersection in question. This limitation on Stanford's contribution to the funding does not include those intersections within Menlo Park for which Stanford has agreed to pay the entire cost of a defined set of modifications, if the City chooses to pursue these changes.

**El Camino Real and Valparaiso Avenue (Menlo Park).** Mitigation at this intersection would require changing the right-turn only lanes in both the northbound and southbound directions to shared through/right lanes.

**El Camino Real and Ravenswood Avenue (Menlo Park).** Mitigation at this intersection would require changing the exclusive right turn lanes in both the northbound and southbound directions to shared through/right lanes.

**El Camino Real and Middle Avenue (Menlo Park).** Mitigation at this intersection would require adding a southbound right turn lane. This improvement is not considered feasible because right-of-way would need to be acquired from the Safeway parcel, the sidewalk would have to be relocated, and landscaping would have to be removed.

**Junipero Serra Boulevard and Alpine Road / Santa Cruz Avenue (Menlo Park).** Mitigation at this intersection would require adding an eastbound right turn lane.

**Sand Hill Road and Sand Hill Circle and I-280 (Menlo Park).** Mitigation at this intersection would require adding an exclusive eastbound left turn lane.

**Sand Hill Road and Santa Cruz Avenue (Menlo Park).** Mitigation at this intersection would require adding a westbound right turn lane.

**Sand Hill Road and Oak Avenue (Menlo Park).** Mitigation at this intersection would require adding a through lane in both the eastbound and westbound directions.

**Middlefield Road and Willow Avenue (Menlo Park).** Mitigation at this intersection would require the addition of an eastbound right turn lane. The existing right turn lane is proposed in the future to be a shared through/right. To eliminate impacts at this intersection an eastbound right turn lane will be needed. To make this improvement, right-of-way will need to be acquired, the sidewalk relocated, and existing landscape removed.

**El Camino Real and Churchill Avenue (Palo Alto).** Mitigation at this intersection would require adding a westbound right turn lane and changing the shared left/right turn to an exclusive left turn lane. This improvement is physically feasible with the purchase of right-of-way, and relocation of the existing curb/gutter and sidewalk. An impact occurs at this intersection only with the Project plus the Arena and Theater scenario.

**El Camino Real and Stanford Avenue (Palo Alto).** Mitigation at this intersection would require adding an eastbound right turn lane. This mitigation is not considered feasible because right-of-way would need to be acquired, which would affect the business located in the southwest corner of the intersection. This improvement may cause added traffic to Stanford Avenue that would be undesirable from a neighborhood perspective.

**Middlefield Road and University Avenue (Palo Alto).** Mitigation at this intersection would require adding a northbound right turn lane. This improvement is considered technically feasible. To make this improvement, right-of-way would need to be acquired, the sidewalk relocated, and existing landscaping removed. However, the improvement could be made without affecting existing development.

**El Camino Real and Palm Drive / University Avenue (Palo Alto).** Mitigation at this intersection would require adding a westbound right turn lane. This mitigation is considered technically feasible by moving the existing curb, modifying the access to the CalTrain station, and possibly removing mature landscaping.

**Junipero Serra Boulevard and Page Mill Road (Congestion Management Plan in Palo Alto).** Mitigation at this intersection would require adding a second southbound right turn lane.

**Junipero Serra Boulevard and Stanford Avenue (Santa Clara County).** Mitigation at this intersection would require adding a second exclusive westbound left turn lane on Stanford Avenue. Adding a second westbound left turn lane is physically possible. Southbound Junipero Serra will need to be widened to receive the second left turn lane. The widening shall be extended to the Page Mill Road intersection as an extension of the right turn lane that is currently being constructed. This improvement may cause added traffic to Stanford Avenue that would be undesirable from a neighborhood perspective.

**Junipero Serra Boulevard and Campus Drive West (Santa Clara County).** Mitigation at this intersection would require adding a second westbound right turn lane.

**Sand Hill Road Widening as Alternate Mitigation.** If Sand Hill Road were widened to two lanes in each direction across San Francisquito Creek, along with other improvements identified in the Sand Hill Road project, some of the traffic volumes which use Campus Drive West from the main Stanford Campus and SUMC to I-280 could shift onto Sand Hill Road. The effect of widening Sand Hill Road to a complete arterial would be to reduce Project impacts in some locations. In particular, the shift of traffic from Campus Drive West to Sand Hill Road would eliminate the need for mitigation measures at the intersections of Junipero Serra/Campus Drive West, Santa Cruz/Alpine/Junipero Serra, Santa Cruz/Sand Hill and Sand Hill/Oak Avenue. Mitigation measures identified for Welch Road/Campus Drive West would continue to be necessary in the event that Sand Hill Road is widened. If Menlo Park approved the widening of Sand Hill Road across San Francisquito Creek, it is assumed that they would also approve the entire funded mitigation package from the Sand Hill Road Development Agreement. This agreement included the Sand Hill/Santa Cruz intersection.

**Impacts Mitigated:** Intersection congestion.

**Lead Agency:** Santa Clara County

**Implementing Agency** Various agencies are responsible for these intersections; Stanford is responsible for paying their fair share of improvements

**Timing:**

**Start:** When Stanford commute trips increase as calculated in “no net new commute trips” monitoring.

**Complete:** When funds are provided.

### TR-6A: Reduce Cut Through Traffic on Residential Streets

Stanford shall participate in any future neighborhood traffic studies initiated by the County of Santa Clara, City of Palo Alto or City of Menlo Park that address neighborhood cut-through traffic. Stanford's participation shall be for the purpose of determining how much, if any, of the cut-through traffic is attributable to cars travelling to or from the Stanford central campus. The studies in which Stanford could be required to participate would include those for any neighborhood west of Middlefield Road, south of Willow Road/Santa Cruz Avenue/Sand Hill Road, east of I-280, and north of Page Mill Road/Oregon Expressway. It is the responsibility of each jurisdiction to contact the County Planning Office at the time of study initiation to alert the Planning Office to the need to enforce this requirement. The relevant jurisdiction may waive this requirement of Stanford if desired at the time of each study. If impacts attributable to Stanford traffic are identified from the studies, Stanford would contribute to the identified mitigation measures to a degree proportional to Stanford's impact.

**Impacts Mitigated:** Localized traffic impacts resulting from new development.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University and jurisdictions conducting studies

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### TR-6B: Require Site-Specific Traffic Studies for Large GUP Projects

Stanford shall be required by the County to prepare site-specific traffic studies for large projects allowed in the GUP development. These projects will potentially include, but not be limited to: redevelopment of Escondido Village that exceeds 100 units (including but not limited to housing along El Camino Real adjacent to Escondido Village), West Campus and Lagunita faculty/staff housing development, the Performing Arts Center, the sports arena expansion, Stanford Avenue housing, and major parking structures, among others. These traffic studies will address traffic generation, trip distribution, project access, safety and the effects of the project on nearby streets and intersections, pedestrian and bicycle facilities, parking, transit, and other facilities as deemed appropriate by the County Planning Office. Appropriate mitigation measures will be developed in the study, conditioned through the County review and approval process, and implemented by Stanford to reduce these potential impacts to less than significant levels. The scope of the traffic analysis will be reviewed and approved by the County before the study is undertaken, and the County will review and comment on a draft Report before it is finalized.

**Impacts Mitigated:** Traffic impacts to surrounding residential neighborhoods.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### HWQ-1: Manage Stormwater Runoff

In order to prevent site development from contributing to downstream flooding, Stanford shall accomplish the following:

- Construct and operate storm drainage detention facilities;
- Consider site design features that would decrease post-development runoff, including features presented in the Bay Area Stormwater Management Agencies' "Start at the Source – Design Manual for Stormwater Quality Protection and Site Planning for Urban Stream Protection"; and
- Consider the use of diversion of parking lot and building runoff to vegetated swales, pervious pavement, reduced building foot prints, infiltration of storm runoff, and other similar measures to reduce peak runoff rates and increased runoff volumes.

The detention facilities and other site features and measures designed, constructed, and implemented by Stanford shall be sufficient to assure that there is no increase in peak downstream storm runoff following development and that the increased post-development runoff volume does not cause downstream flooding. Santa Clara County shall specify the criteria (including the storm event or events and models) that shall be used by Stanford to design detention facilities, site features, or other measures used to prevent impacts caused by increases in post-development storm runoff. The facilities shall be designed to only temporarily store the storm water runoff and not create extended ponding that could result in mosquito breeding. In establishing the appropriate design criteria (e.g., 100 year, 24 hour storm event), Santa Clara County shall consult with Santa Clara Valley Water District regarding the storm events that Stanford shall use in designing facilities that have sufficient capacity to prevent impacts on downstream storm drainage facilities.

Two alternative approaches are possible for implementation of this mitigation measure:

(a) Stanford shall prepare a site-specific hydrology and drainage study for each individual building project. Based on the results of this study, Stanford shall design, construct, and maintain project specific storm drainage system improvements, site features, or measures that are sufficient to assure that the peak storm runoff leaving the project area does not increase and that the increased runoff leaving the project area does not cause downstream flooding. Individual detention facilities, site features, or measures may serve more than one building project, but Stanford must demonstrate adequate capacity to prevent increased runoff as part of the project application. All detention facilities shall be designed to only store the storm water runoff temporarily and not create extended ponding that could result in mosquito breeding. Prior to storm water facility construction, Santa Clara County shall approve the proposed improvements.

(b) As an alternative to preparing site-specific studies for each project, Stanford can elect to prepare a hydrology and drainage study for all or a specified portion of a particular watershed area. Based on the results of this study, Stanford shall design, construct, and maintain storm drainage improvements that include on-site detention facilities, site features, or measures sufficient to assure that the peak storm runoff leaving Stanford lands covered by the study does not increase as a result of new development, and that the increased runoff does not cause downstream flooding. After approval of such stormwater facility construction by Santa Clara County, no further site-specific hydrology and drainage studies would be required for new development, provided that the stormwater facility is in place prior to issuance of new building permits in the subarea addressed by the study.

**Impacts Mitigated:** Increased storm water runoff

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review for each project, or for GUP area on a comprehensive level.

**Complete:** Prior to construction of each project.

### HWQ-2: Maintain Groundwater Recharge

(a) Stanford shall prepare a site-specific groundwater recharge study for each project that is proposed to occur within the unconfined zone.

(b) Alternatively, Stanford could prepare a recharge study for development proposed to occur in all or a portion of the unconfined zone. The study or studies may be conducted in conjunction with hydrology and drainage studies as appropriate. The study shall identify the extent that new development will occur in the unconfined zone and the estimated average annual groundwater recharge that occurs in that area under pre-development conditions. Based on the results of this study, Stanford shall design, construct, and maintain facilities (e.g. shallow infiltration basins) that offset “lost“ groundwater recharge by increasing recharge in other portions of the unconfined zone. The recharge facilities shall be designed to only temporarily store the storm water runoff and not create extended ponding that could result in mosquito breeding. Prior to construction, Santa Clara County shall approve the “replacement” groundwater recharge facilities. Storm drainage facilities that detain runoff within the project area may also serve as groundwater recharge facilities.

(c) So as to not pollute the groundwater resource, Best Management Practices and site design features shall be used to maintain the quality of storm runoff diverted by Stanford to groundwater recharge facilities shall be equal or better in quality to the runoff that would have recharged naturally at the developed site.

(d) In order to avoid overdraft of the groundwater basin during dry periods when Stanford’s Hetch Hetchy allocation may be reduced, Stanford shall develop and implement a plan for responding to such a supply shortage. The plan shall include identification of conservation methods, and an evaluation of other potential sources of supply sources, including any treated water supply that may be soon available to Stanford through Santa Clara Valley Water District.

**Impacts Mitigated:** Change in groundwater levels

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**
**Start:** Project design/review or for GUP area on a comprehensive basis.
**Complete:** Prior to construction

**HWQ-3: Protect Water Quality**

(a) Stanford shall submit a Notice of Intent (NOI) to the State Water Resources Control Board for the construction activities allowed by the GUP to be covered under NPDES General Permit CAS000002. As an alternative, Stanford may also submit additional NOIs for specific major projects. Stanford shall be required to comply with the terms of the NPDES permit at all construction sites (even sites where less than 5 acres are disturbed). This includes preparation of Storm Water Pollution Prevention Plans (SWPPP) covering all projects involving land disturbance that will be constructed pursuant to the General Use Permit. The SWPPPs shall identify effective Best Management Practices (BMPs) for preventing groundwater pollution caused by any construction activities. The SWPPPs shall also identify BMPs that have been demonstrated to be effective in preventing storm water pollution caused by runoff occurring during construction. The NOI shall be submitted to the State Water Resources Control Board (SWRCB) with a vicinity map and the appropriate fee prior to commencement of the construction activities as stated in the General Permit. The SWPPP for construction sites covered under the General Permit shall be developed and maintained at each construction site, prior to any land disturbance, and made available upon request.

(b) Prior to any new construction, Stanford shall perform a survey where development is proposed to occur to determine the location of wells that have not been properly abandoned within the proposed site. If any such wells are located on the site proposed for development, Stanford shall perform an investigation to verify that the well was properly abandoned. If Stanford cannot confirm that the well was properly abandoned, Stanford shall take steps to locate and abandon the well in accordance with State and local standards. Stanford shall request assistance and information from the Santa Clara Valley Water District to locate existing inactive wells on sites to be developed and to confirm procedures for properly destroying inactive wells.

(c) Prior to any construction, demolition, grading, or landscaping within 50 feet from the top of a bank of a Santa Clara Valley Water District watercourse, Stanford shall obtain a permit from the District.

(d) During construction, Stanford shall monitor the effectiveness of storm water pollution prevention best management practices at all construction sites during and after storm events.

(e) As a General Use Permit condition, Santa Clara County shall require that, within the boundaries of the unconfined zone, Stanford shall not engage in new land uses or practices (e.g. storage of chemicals in single wall tanks, application of pesticides that could be transported down to the groundwater supply) that could pose a threat to the groundwater supply. If Stanford leases portions of its property in the unconfined zone, Stanford shall notify and require that the leaseholders comply with the restriction regarding land use practices that could threaten the groundwater supply. Santa Clara County will enforce Stanford's compliance with this restriction.

**Impacts Mitigated:** Reduction in water quality.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review for each project and on a comprehensive level.

**Complete:** Prior to construction of each project

**HWQ-4: Best Management Practices for Preventing Post-Construction Urban Runoff Pollution**

(a) Stanford shall implement site improvements for new buildings and parking lots that include BMPs that are effective for preventing post-construction storm water and groundwater pollution caused by urban runoff, including grassy swales and vegetated filter strips.

(b) Prior to construction, Santa Clara County Land Development Engineering shall review and approve the proposed post-construction BMPs to assure conformance with the Santa Clara County Urban Runoff Management Plan (URMP).

**Impacts Mitigated:** Reduction in water quality.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Project design/review for each project.

**Complete:** At completion of construction of each project

## BIO-1 (a-e): California Tiger Salamander

**Option 2: Alternative CTS Mitigation Program (not proposed by project applicant)**

(a) In order to ensure that there is no net loss of CTS habitat and to provide for the long-term protection and management of CTS habitat at Stanford:

(1) Before any development activity in the CTS Management Zone, Stanford shall dedicate an easement over the entirety of Lake Lagunita to the top of the lake banks. The acreage of this easement shall count toward other existing habitat easement dedication requirements as defined below. Prior to Architectural and Site Approval of development of sites in the project area that contain occupied CTS habitat Stanford shall provide for the long-term protection and management, through easements or other equally protective mechanism, of an amount of land equal to 3 times the acreage of the occupied portion of the site to be developed. Occupied CTS habitat includes but is not limited to, the Lower Knoll, Gerona Triangle, and the open areas around Lake Lagunita. Other areas within the CTS management zone shall be surveyed by an independent qualified biologist, hired by the County at the expense of Stanford to determine if they contain occupied CTS habitat as defined through the survey. The survey shall be coneucted in accordance with the survey protocol for CTS approved by the California Department of Fish and Game (CDFG) or the USFWS.

As an alternative to the easement at a 3:1 ratio of protected area to disturbed area described above, Stanford may restore, protect, and manage for CTS use areas within 500 meters of Lake Lagunita which do not currently serve as occupied CTS habitat. Areas which may be used for restoration include the driving range and any areas currently developed with buildings, parking areas, or roadways. The restoration area shall be equal in size to the area disturbed by a proposed building project. Restored areas shall be placed in easements subject to all terms described below.

- The total area for which mitigation shall be provided includes building footprints, roads, paved and unpaved parking areas, pathways, ornamental landscape plantings, and any other areas where CTS habitat will be lost or modified, or where CTS access to habitat will be impeded.
- The first mitigation site shall consist of preserved, created, or restored upland habitat that is located within 500 meters of breeding habitat. Breeding habitat includes Lake Lagunita or created ponds in which successful CTS reproduction has been documented for at least three consecutive seasons with near- or above-normal rainfall, excluding any intervening years with substantially below normal rainfall. The mitigation site shall be contiguous to the breeding habitat, or contiguous to other open space lands that provide migration and dispersal corridors for CTS to the breeding habitat. When all areas that meet this description have been placed in easement protection, easements may be granted on other open space lands that provide migration and dispersal corridors for CTS to breeding habitat.

- A detailed management and monitoring plan shall be created to ensure the long-term maintenance of habitat values on the mitigation lands. The plan shall be approved by the USFWS prior to the Architectural and Site Approval of any project that will affect occupied CTS habitat, and shall address requirements for fencing, vegetation control, enhancement of small mammal populations, maintenance of safe migration and dispersal corridors, and management of other potential sources of mortality (e.g., road kills, utility boxes).
- The habitat mitigation lands shall be protected through adoption of a permanent conservation easement or other long-term land control mechanism that adequately protects CTS habitat. Easements shall remain in effect until such time as protection of CTS is no longer warranted, either through removal from consideration for listing or de-listing under the state or federal Endangered Species Act or other local, state, or federal laws, ordinances and regulations related to the prtection of the species, or if the species becomes extinct. Easements may also be abandoned by the County if all buildings constructed under the General Use Permit in the CTS management zone are removed and the habitat is restored for CTS.
- In addition, prior to commencement of construction on occupied CTS habitat that is within 500 meters of Lake Lagunita, land within the foothills area south of JSB shall be enhanced with three new breeding ponds (these new ponds shall be in addition to any breeding ponds created thusfar). The design, management requirements, and success criteria for the ponds shall be established in consultation with the USFWS. The new breeding ponds shall be monitored annually until successful CTS breeding is demonstrated for at least three consecutive seasons of near- to above-normal rainfall, excluding any intervening years with substantially below normal rainfall, prior to building permit issuance. After successful breeding is demonstrated, development of sites in occupied CTS habitat may proceed with the dedication of suitable upland mitigation lands contiguous to the created ponds.
- All CTS monitoring shall be verified or conducted by an independent, qualified biologist selected and hired by the County of Santa Clara at the expense of Stanford University.

(b) In order to minimize the potential for loss of individual CTS during project construction, the following measures shall be required for construction of projects in the CTS Management Zone.

(1) Pre-construction surveys for CTS shall be conducted by an independent, qualified biologist at the beginning of the rainy season prior to construction of any project that would affect potential CTS habitat. Surveys shall be conducted in accordance with CDFG standard procedures for pre-construction surveys. If CTS are found in the construction areas, the University shall consult with CDFG and USFWS to determine if salvage of salamanders is warranted, and if so, what method should be used. The construction area shall

be calculated and identified on construction drawings, and the area of impacts shall be monitored by the contractor during construction.

(2) Construction vehicles shall be limited to a speed of 10 mph. This speed limit shall be stipulated in all construction contracts and enforced through regular monitoring of construction sites by the County. Any fuels on these sites shall be double contained and excess asphalt shall be removed from the site upon completion of construction.

(3) Drift fences (e.g., silt fences or other effective salamander barriers) shall be erected around the project site prior to November 15 to prevent CTS from wandering into areas where they could experience mortality or injury.

(c) In order to minimize the potential for loss of individual CTS during project operation, the following measures shall be required at sites within the CTS Management Zone.

(1) Utility boxes and other ground-level fixtures shall be maintained to prevent accidental trapping of salamanders. Outdoor lighting shall be minimized, since artificial light is known to affect amphibian populations. Facilities on the sites shall be kept clean from exposed garbage to avoid attracting potential salamander predators and other nuisance animals. Domestic animals shall not be allowed as regular residents of the sites. The drip-line of oak trees present on site shall be kept clear of structures. Ground squirrel control shall not be allowed except as required in the Lake Lagunita dam and levee pursuant to the requirements of the State Division of Dam Safety. Landscaping features shall be limited to native species, to the extent feasible, that do not require the use of pesticides and fertilizers.

(2) Curbs, planters, and other landscape elements shall be designed to direct salamanders away from the building complex, access road, and parking area. Gravel-covered french drains shall be constructed instead of typical storm drains. Utility boxes with as few openings to the surface as possible shall be selected to prevent accidental trappings of salamanders.

(d) If the CTS is listed as threatened or endangered by the federal government, an appropriate permit will be obtained from the USFWS. The mitigation measures provided herein shall be superseded by any subsequent HCP approved by the USFWS, so long as the HCP provides at least as much habitat value and protection for CTS.

(e) Stanford and the County Planning Office shall continue to comply with all requirements and recommendations of the 1998 California Tiger Salamander Management Agreement.

(f) Within 3 years of General Use Permit approval, Stanford shall construct between one and three passageways for salamanders providing for safe passage across Junipero Serra Boulevard. The number and design of these passageways shall be determined in consultation with the United States Fish and Wildlife Service and submitted to the County Planning Office for approval. If an alternate, equally or more effective measure is approved by the County Planning Office in consultation with the USFWS, such a measure may replace these passageways.

**Impacts Mitigated:** Impacts to California tiger salamander and loss of habitat.
**Lead Agency:** Santa Clara County, California DFG and USFWS
**Implementing Agency** Stanford University
**Timing:** **Start:** Project design/review.
**Complete:** After validation of success; ongoing.

**BIO-1 (f-k): Rare, Threatened, and Endangered Plant Protection Program**

(f) The County at the expense of Stanford shall retain an independent qualified biologist to conduct floristically-based surveys for special status plants following the California Department of Fish and Game's "Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities" prior to application for approval of any new development project within a riparian, disturbed riparian, oak woodland, annual grassland-oak woodland, or modified oak woodland area as identified in the Community Plan/General Use Permit Environmental Impact Report. Stanford shall notify the County of potential proposed building projects in adequate time to conduct the appropriate surveys at the appropriate time of year. The purpose of these surveys will be to located and identify any special-status plants that may occur in the proposed construction zone. The survey shall be included with Stanford's application for the necessary planning permits from the County or conducted during the analysis process as appropriate.

(g) The designated construction zone for new facilities shall be designed to provide, to the extent feasible, an exclusionary buffer from any special-status plant resources discovered (recommend a minimum 30-foot buffer, with exact size of buffer to be determined in consultation with the California Department of Fish and Game on a case-by-case basis, depending upon the species to be impacted).

(h) A mesh fence shall be installed at the boundary of exclusionary buffer zones established for special-status plant resources prior to the initiation of ground-disturbing activities.

(i) Where complete avoidance cannot be achieved, Stanford shall submit a site-specific mitigation and compensation program for the affected resources in consultation with the California Department of Fish and Game and/or the U.S. Fish and Wildlife service.

(j) All special-status plants within the construction zone shall be transplanted (after seed and cuttings have been secured and propagated for translocation) on Stanford lands in consultation with the California Department of Fish and Game and U.S. Fish and Wildlife Service. Lost special-status plant habitat shall be replaced and/or known rare plant habitat preserved at a ratio to be determined in consultation with CDFG on a case-by-case basis, depending upon the degree of rarity of the species in question.. Seed and cuttings shall be used for translocation efforts as needed to meet the minimum success criteria. Stanford shall provide for long-term protection and management of the replacement habitat, through easements or other equally protective mechanism.

(k) Stanford shall provide funding for the County to retain a qualified biologist to monitor the mitigation sites annually for five years using success criteria developed in coordination with the California Department of Fish and Game and U.S. Fish and Wildlife Service. The success of the transplantation program shall be considered to have been achieved if 80% or more of the transplanted plants have survived five years after transplantation. The translocation and monitoring shall continue until the success criteria are met.

**Impacts Mitigated:** Loss of Rare, Threatened, and Endangered Plants, CNPS List 3 and 4 species, and loss of habitat.

**Lead Agency:** Santa Clara County, California Department of Fish and Game and U.S. Fish and Wildlife Service

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review.

**Complete:** Validation of transplantation success.

### BIO-3: Active Raptor and Migratory Bird Nest Protection Program

Pre-construction surveys for breeding raptors and migratory birds on the Stanford campus will be conducted to determine the location of active nest sites. If active nest sites are located, Stanford shall consult with a biologist under contract to Santa Clara County, or the California Department of Fish and Game to determine appropriate construction setbacks from the nest sites. No construction activities shall occur within the construction setback during the nesting season of the affected species.

**Impacts Mitigated:** Disturbance of active raptor nests, migratory bird nests and native wildlife nursery sites.

**Lead Agency:** Santa Clara County and California Department of Fish and Game

**Implementing Agency** Stanford University

**Timing:** **Start:** Project review.

**Complete:** Ongoing

### BIO-5: Protect Oak Woodland Habitat

Stanford will compensate for the loss of oak woodland habitat through the creation, restoration, and long-term preservation of comparable habitat. Opportunities for restoration and long-term preservation of oak woodland habitat are present within the CTS Management Zone. Restoration of oak woodland habitat shall be conducted at a ratio of 1.5:1 (1.5 acres of restored habitat: 1 acre of developed habitat).

**Impacts Mitigated:** Loss of oak woodland habitat.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### BIO-9: Wetland Avoidance and Replacement

(a) Prior to application for Architectural and Site Approval of development of sites within the CP area, Stanford shall retain a qualified biologist to conduct a delineation of potential jurisdictional wetlands and other waters of the U.S. present on the site.

(b) Development projects will be sited and designed to minimize impacts to jurisdictional wetlands or other waters of the U.S.

(c) If jurisdictional wetlands or other waters of the U.S. will be unavoidably lost as a result of project activities, Stanford shall obtain appropriate authorization from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. In coordination with the U.S. Army Corps of Engineers, any wetlands or other waters of the U.S. that are lost as a result of future development in the project area shall be replaced through the creation, preservation, or restoration of wetlands or other waters of the U.S. of equal function and value to those that are lost.

**Impacts Mitigated:** Loss of wetlands.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**

**Start:** Within six months of General Use Permit approval, Stanford shall retain a qualified biologist to generally define areas with potential jurisdictional wetlands and other waters of the U.S. Within one year of the GUP approval, this description shall be submitted to the County Planning Office for review and approval. Delineation of wetlands at individual sites shall take place at project design/review for each project.

**Complete:** At completion of each project.

## HA-1: Protection of Historic Resources

(a) If a construction project to be carried out pursuant to the General Use Permit includes remodeling of, or development that could physically affect, a structure that is included in the Santa Clara County Heritage Resource Inventory, the California Register of Historical Resources, or the National Register of Historic Places, or that County planning staff determines is eligible for listing or is a potential historic resource, the following shall apply:

1. *Remodeling:* The remodeling shall be conducted following the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995).

If the structure to be remodeled is not on the County Inventory, but is 50 or more years old, Stanford will assess the structure to evaluate whether it appears eligible for inclusion in the County Inventory, and will submit its assessment to County planning staff for independent review. If County planning staff determines that the structure is potentially eligible for the Inventory, or is a potential historic resource, planning staff will submit the assessment to the Santa Clara County HHC for review. If the structure is determined to be eligible, then the mitigation described above shall be required.

*2. New Development:* New development plans shall be reviewed by the Santa Clara County HHC for appropriateness of design and siting to ensure that the historical significance of the structure is not adversely affected. If the structure is listed on the California Register or the National Register, the HHC shall request SHPO comment prior to approving the proposed project.

(b) Prior to demolishing any structure that is 50 or more years old, Stanford shall submit an assessment of the structure regarding its eligibility for listing to the County planning staff. If the planning staff determines that the structure is potentially eligible for listing, or is a potential historic resource, then a site-specific analysis of the impact and any feasible mitigation measures, including avoidance of the resource, shall be prepared as part of the environmental review of the project and the demolition will be referred to the Santa Clara County HHC for its recommendation prior to County approval of a demolition permit.

(c) Mitigation measures to protect The Oval from significant impacts during construction and operation of the proposed parking structure shall include, but not be limited to, all of the following.

- The parking structure shall be designed so that entrance ramps for both vehicular and pedestrian traffic are located far enough to the east and west sides of the Oval, or potentially outside the Oval itself (on the existing roadway or in the "ears" east and west of the Oval), as to not be noticeable by traffic approaching the main Campus on Palm Drive.
- Above ground ventilation systems, and other necessary structures shall be designed in a manner compatible with a park-like setting (i.e. installing the ventilation ducts below/as part of park benches). Structures will not exceed a ground height of two feet and will be placed to the east and west of the main view corridor so as not to detract the eye from the intended approach to the main Campus.
- During all construction activities, heavy equipment and earth-disturbing activities shall be screened from view by temporary construction fencing.
- Following completion of the proposed parking structure, the Oval will be returned to its pre-construction appearance and opened to public access.

**Impacts Mitigated:** Substantial adverse changes in the significance of historical resources as defined in Section 15064.5 of the CEQA Guidelines.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**
**Start:** Project design/review for each project.
**Complete:** At completion of each project.

### HA-2: Protection of Archaeological Resources

(a) Stanford shall provide a map to the County Planning Office, to be maintained as a confidential record, that shows the location of all known prehistoric and historic archaeological resources in the unincorporated Santa Clara County portion of Stanford lands. If a project proposed pursuant to the General Use Permit were sited on a mapped prehistoric archaeological site, further site-specific analysis will be required to determine whether a significant impact would occur. Site-specific mitigation shall be identified by the County in accordance with the provisions of Section 21083.2 of the Public Resources Code.

(b) Should previously unidentified historic or prehistoric archaeological resources be discovered during construction, the contractor shall cease work in the immediate area and the County and Campus Archaeologist shall be contacted. The County may choose to retain an independent archaeologist to evaluate the site. Stanford's archaeologist shall assess the significance of the find and make mitigation recommendations (e.g., manual excavation of the immediate area), if warranted. If performed by Stanford's archaeologist, the assessment shall be forwarded to County planning staff for independent review. If the County deems it appropriate, the County may hire an independent archaeologist to review the finds, proposed treatment plans, and reports prepared by the Campus Archaeologist.

Construction monitoring shall be conducted at any time ground-disturbing activities (greater than 12 inches in depth) are taking place in the immediate vicinity of archaeological resources discovered as described above. This includes building foundation demolition and construction, tree or tree-root removal, landscape irrigation installation, and utility line excavation.

If data recovery does not produce evidence of significant archaeological resources within the project area, further mitigation shall be limited to construction monitoring, unless additional testing or other specific mitigation measures are determined by a qualified archaeologist (Stanford's archaeologist or an independent archaeologist retained by the County) to be necessary to ensure avoidance of damage to significant archaeological resources. A technical report of findings describing the results of all monitoring shall be prepared in accordance with professional standards. The archaeological monitoring program shall be implemented by an individual meeting the Secretary of Interior Professional Qualifications Standards in Archaeology (36 CFR 61); individual field monitors shall be qualified in the recognition of archaeological resources of both the historic and/or prehistoric periods and possess sufficient academic and field training as required to conduct the work effectively and without undue delay.

(c) In the event that human skeletal remains are encountered, the applicant is required by County Ordinance No. B6-18 to immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of section 7050.5 of the Health and Safety Code and the County Coordinator of Indian affairs. No further disturbance of the site may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts. If artifacts are found on the site the Campus Archaeologist shall be contacted along with the County Planning Office. No further disturbance of the artifacts may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts.

**Impacts Mitigated:** Substantial adverse changes in the significance of archaeological resources as defined in Section 15064.5 of the CEQA Guidelines.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review for each project.

**Complete:** At completion of each project.

### PS-1A: Maintain Police Services

(a) The Stanford Police and PAPD would be informed of the construction, locations, and alternate evacuation and emergency routes to facilitate response times during construction periods.

(b) Stanford shall provide funding to maintain at least one sworn officer on staff for each 1,000 adjusted daytime population at Stanford.

**Impacts Mitigated:** Increased demand for police services.

**Lead Agency:** Stanford University

**Implementing Agency** Stanford University/Santa Clara County

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### PS-1B: Maintain Fire Services

Stanford shall inform the Palo Alto Fire Department of construction locations, and alternative evacuation and emergency routes shall be designated to maintain response times during construction periods.

Stanford shall negotiate fire protection services to maintain at least 0.88 fire suppression personnel for each 1,000 additional daytime population at Stanford and to maintain an adequate level of equipment in response to the increased population.

**Impacts Mitigated:** Increased demand for fire services.

**Lead Agency:** Stanford University

**Implementing Agency** Stanford University/contract fire protection agency

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### PS-1C: Water Conservation and Recycling

(a) Stanford shall embark on an aggressive program of water conservation and water recycling. The conservation program shall include measures to reduce domestic water use (e.g., retrofit existing residences with low-flow toilets and showerheads) and to reduce use of water for irrigation (e.g., require use of drought-tolerant landscaping). The recycling program shall include consideration of recycled water or gray water use for toilet flushing in new buildings. Stanford will continue to implement water conservation measures for proposed new buildings to minimize future water use. Stanford should consider the use of recycled water for turf irrigation for the golf course, athletic fields, and other landscaped areas.

To implement these recommendations, Stanford shall prepare and submit to the County Planning Office a Water Conservation and Recycling Master Plan, which will lay out the proposed measures for reducing potable water use on campus. The goal of the plan shall be to ensure that Stanford does not exceed its allocation of 3.033 mgd. The Plan shall be prepared following the adoption of the CP and approval of the GUP. Increased water withdrawals from Stanford creeks shall not be used to meet this goal. A ten percent reduction in average daily water use would keep water consumption well within Stanford’s existing allocation of 3.0333 mgd, while a six percent reduction (0.18 mgd), would meet the current allocation. A ten percent reduction in average daily water use is feasible with implementation of the program described above.

(b) If conservation and recycling does not achieve at least a six percent reduction in potable water demand from Hetch Hetchy, the University would have to apply for an increase in the allocation of water from the San Francisco Water Department, and receive approval prior to exceeding the existing allocation. Alternatively, Stanford could reduce its water consumption or seek other sources of water.

**Impacts Mitigated:** Increase in water consumption.

**Lead Agency:** Stanford University

**Implementing Agency** Stanford University

**Timing:** **Start:** GUP Approval/individual project design/review

**Complete:** Ongoing

### PS-1D: Improve the Wastewater Collection System

Mitigation described above to reduce water use would also reduce wastewater generation. If parts of the existing collection system are undersized, including the sanitary sewer lines at Yale Street and Stanford Avenue, Stanford shall replace these lines with larger diameter pipes. The improvements shall be required prior to the approval of projects that would exceed existing capacity. Information of existing capacity and expected wastewater generation for the portion of the system affected shall be provided to the County Planning Office at the time of permit application submittal for a GUP project.

**Impacts Mitigated:** Adequate wastewater collection system

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review.

**Complete:** Ongoing

### PS-2: Maintain School Capacity

By law, the only mitigation of school impacts that the County can require is payment of statutory school impacts fees. The impact will be mitigated to a less than significant level through imposition of statutory school fees.

In order to continue to address school needs, Stanford is encouraged to voluntarily provide a detailed schedule to the PAUSD as soon as feasible indicating the schedule and unit mix of planned housing so that the timing and pattern of enrollment growth (elementary school, middle school, high school) can be estimated with greater certainty by the School District.

**Impacts Mitigated:** Demand for schools

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review.

**Complete:** Building permit issuance

### GI-1: Identify Additional Housing Sites and Implement Traffic and Service Mitigation Measures

The University shall work with the City of Palo Alto, City of Menlo Park, and Santa Clara County to identify additional sites on- and off-campus that would be suitable for housing development to meet the needs of additional workers who will be attracted to the area as a result of the project. Part of this effort shall be the identification of University, city, county, private, state, and federal funding that could be used to assist in the development of housing affordable to low- and moderate-income households and to develop regulatory mechanisms that create incentives for Stanford to participate in off-campus housing initiatives. Provision of additional low- and moderate-income housing would help mitigate the traffic and other impacts of projected employment growth by reducing commute distances and increasing the potential for use of non-auto transportation.

The University shall work with Santa Clara County and the City of Palo Alto to develop and implement appropriate traffic, public services/utilities, and other related mitigation measures to address growth-inducing impacts of the Stanford CP/GUP (refer to Sections 4.4 – Traffic and Circulation, and 4.10 – Public Services and Utilities for measures recommended to mitigate project impacts).

**Impacts Mitigated:** Growth inducement

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project Review

**Complete:** Ongoing

# D. CONSTRUCTION MEASURES

### HA-3: Protection of Undiscovered Paleontological Materials

In the event that fossilized or unfossilized shell or bone is uncovered during any earth-disturbing operation resulting from development under the proposed project, contractors shall stop work in the immediate area of the find and notify the Campus Archaeologist and the County Building Inspector assigned to the project. The Campus Archaeologist shall visit the site and make recommendations for treatment of the find (including consultation with a paleontologist and excavation, if warranted), which would be sent to the County Building Inspection Office and the County Planning Office. If a fossil find is confirmed, it will be recorded with the USGS and curated in an appropriate repository.

**Impacts Mitigated:** Adverse impacts to paleontological resources or unique geologic features.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Start of Construction

**Complete:** Ongoing

### TR-7: Construction Traffic Control Measures

The following traffic control measures are required to ensure that access is maintained during construction of Stanford GUP projects.

**a. Off-street Parking for Construction Related Vehicles**. Stanford shall be required to provide adequate off-street parking for all construction-related vehicles throughout the construction period. If adequate parking cannot be provided on the construction sites, a satellite parking area shall be designated, and a shuttle bus shall be operated to transfer construction workers to/from the job site.

**b. Maintenance of Pedestrian Access**. Stanford shall be prohibited from substantially limiting pedestrian access during construction of the project, without prior approval from the City of Palo Alto, Department of Public Works. Such approval shall require submittal and approval of specific construction management plans to mitigate the specific impacts to a less than significant level. Pedestrians access-limiting actions would include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian re-routing at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions which may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, covered walkways shall be provided.

**c. Maintenance of Bicycle Access**. Stanford shall be prohibited from substantially limiting bicycle access while constructing the project without prior approval from the City of Palo Alto Department of Public Works. Such approval shall require submittal and approval of specific construction management plans to mitigate the specific impacts to a less than significant level. Bicycle access-limiting actions would include, but not be limited to, bike lane closures or narrowing, closing or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period.

**d. Restriction on Construction Hours**. Stanford shall make feasible attempts to limit the number of construction material deliveries from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM on weekdays When feasible, Stanford shall be required to prohibit or limit the number of construction employees arriving or departing the site between the hours of 4:30 PM and 6:00 PM.

**e. Construction Truck Routes**. Stanford shall be required to deliver and remove all construction-related equipment and materials on truck routes designated by the Cities of Palo Alto and Menlo Park. Heavy construction vehicles shall be prohibited from accessing the site from other routes. Figure 8.4-15 illustrates the Stanford area truck routes that must be used by all trucks.

**f. Phone Number for Complaints**. Stanford shall post at least one sign no smaller than 1,296 square inches at all active construction sites. The sign shall contain the name and telephone number or e-mail address of the appropriate Stanford person the public may contact to report alleged violations of this mitigation measure or to register complaints about construction traffic associated with building projects under this GUP. Stanford shall keep a written record of all such complaints and shall provided copies of these records to the County Planning Office as part of the annual report process.

**g. Protection and Maintenance of Public Transit Access and Routes**. Stanford shall be prohibited from limiting access to public transit, and from limiting movement of public transit vehicles, without prior approval from the VTA or other appropriate jurisdiction. Such approval shall require submittal and approval of a mitigation plan to reduce specific impacts to a less than significant level. Potential actions that would impact access to transit include, but are not limited to, relocating or removing bus stops, limiting access to bus stops or transfer facilities, or otherwise restricting or constraining public transit operations.

**h. Construction Impact Mitigation Plan**. In lieu of the above mitigation measures, Stanford shall submit a detailed construction impact mitigation plan to County prior to commencing any construction activities with potential transportation impacts. This plan shall address in detail the activities to be carried out in each construction phase, the potential transportation impacts of each activity, and an acceptable method of reducing or eliminating significant transportation impacts. Details such as the routing and scheduling of materials deliveries, construction employee arrival and departure schedules, employee parking locations, and emergency vehicle access shall be described and approved.

**i. Construction During Special Events**. Stanford shall implement a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events, which attract a substantial number of visitors to the campus. This measure may require a special supplemental permit to be obtained to host such events during significant construction phases.

**Impacts Mitigated:** Traffic and access impacts from construction activities.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:**
**Start:** Prior to start of Construction
**Complete:** Ongoing

## NOISE-1: Reduce Construction Noise

The following measures shall be used to reduce construction-related noise.

- Comply with all the provisions of the County of Santa Clara and the City of Palo Alto Noise Ordinances, including, but not limited to the restrictions on hours of construction and mechanical equipment noise levels.
- Use of a noise-attenuating jacket around the jackhammer.
- Schedule the construction such that the absolute minimum number of equipment would be operating at the same time.
- Use of the latest technology to mitigate construction equipment noise, i.e., engine enclosures, intake and exhaust silencers, etc.
- Construct 8 to 10 foot high temporary walls along the property lines of the project site adjacent to residential areas, where possible, at the beginning of construction to reduce noise impacts on nearby residents.
- Coordinate classroom relocations with school faculties before demolition or site preparation.
- Maintain good relations with the community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections to unavoidable noise. Communities should be notified in advance of the construction and the expected temporary noise impacts during the construction period.
- Stanford shall post at least one sign no smaller than 1,296 square inches at all active construction sites. The sign shall contain the name and telephone number or e-mail address of the appropriate Stanford person the public may contact to report alleged violations of this Condition R.1 or to register a complaint about construction noise associated with building projects under this GUP. Stanford shall keep a written record of all such complaints and shall provided copies of these records to the County Planning Office as part of the annual report process. One sign may be used to meet the requirements

**Impacts Mitigated:** Noise impacts from construction activities.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Prior to Start of Construction

**Complete:** Ongoing

## AQ-1: Reduce Diesel Emissions

Mitigation measures beyond those required by BAAQMD for all construction projects would be needed to reduce diesel emissions. Currently, there are few “clean fuel” engines in construction equipment fleets, but it is anticipated that this will change over time. Therefore, as a mitigation measure to minimize diesel engine exhaust particulate emissions, Stanford shall require all construction contractors performing work on projects under the GUP/CP to properly maintain the equipment and, where feasible, use “clean fuel” equipment and emissions control technology (e.g., CNG-fired engines, catalytic converters, particulate traps, turbocharged/intercooled engines, $4^{o}$ of retard for engine timing). Measures to reduce diesel emission would be considered feasible when they are capable of being used on equipment without interfering substantially with equipment performance.

**Impacts Mitigated:** Noise impacts from construction activities.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Start of Construction

**Complete:** Ongoing

# E. OPERATION AND MAINTENANCE MEASURES

### NOISE-2: Reduce Operational Noise

- Mechanical equipment should be acoustically engineered, with the final engineering design of facilities with such equipment reviewed by a qualified acoustical engineer. Design shall incorporate mufflers, enclosures, and parapets so that the noise generated by these operations would not exceed the noise standard at noise sensitive receptor locations.
- All operational noise sources shall comply with the County Noise Ordinance.
- The project should incorporate design measures to locate noise sources such as loading zones, trash bins, and mechanical equipment as far away from the noise sensitive receptor locations as possible.
- Separate residential uses from parking structures by at least 150 feet.

**Impacts Mitigated:** Operational noise

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project design/review

**Complete:** Ongoing

### PHS-1: Risk Management Plan

Stanford shall disclose the projected quantities and types of hazardous materials associated with each proposed building project and identify measures for storing materials and protecting users from potential risks as part of their application to the County Planning Office. If a specific development project is proposed that would involve quantities of hazardous materials that trigger the California Accidental Release Prevention Law requirements, the University shall prepare a Risk Management Plan and shall implement all measures identified in the accident prevention program to reduce the off-site consequences to a point at which the public would not be exposed to harmful levels of hazardous materials. If feasible, the quantities of hazardous materials stored shall be reduced to below the California Accidental Release Prevention law thresholds, or a less hazardous type of chemical shall be used.

**Impacts Mitigated:** Accidental release of hazardous materials.

**Lead Agency:** Santa Clara County

**Implementing Agency** Stanford University

**Timing:** **Start:** Project approval

**Complete:** Ongoing

## Final
## Environmental Impact Report
## Volume I

# Stanford University
# Draft Community Plan and
# General Use Permit Application

State Clearing House Number
1999112107
Certified December 12, 2000

Prepared For:
Santa Clara County
Department of Planning and Development

Prepared By:
Parsons
2101 Webster Street, Suite 700
Oakland, California 94612

December 18, 2000